

# Language, Style and Format drivers for **Listings**

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## Abstract

This article describes the implementation of the language drivers for the listings package.

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## 1 Installation and configuration

```

1 %% The listings package is copyright 1996--2004 Carsten Heinz, and
2 %% continued maintenance on the package is copyright 2006--2007 Brooks
3 %% Moses. From 2013 on the maintenance is done by Jobst Hoffmann.
4 %% The drivers are copyright 1997/1998/1999/2000/2001/2002/2003/2004/2006/
5 %% 2007/2013 any individual author listed in this file.
6 %%
7 %% This file is distributed under the terms of the LaTeX Project Public
8 %% License from CTAN archives in directory macros/latex/base/lppl.txt.
9 %% Either version 1.3 or, at your option, any later version.
10 %%
11 %% This file is completely free and comes without any warranty.
12 %%
13 %% Send comments and ideas on the package, error reports and additional
14 %% programming languages to Jobst Hoffmann at <j.hoffmann@fh-aachen.de>.
15 %%
16 <*install>
17 \input docstrip
18 \preamble
19 \endpreamble
20
21 \ifToplevel{
22 \usedir{tex/latex/listings}
23 \keepsilent
24 \askonceonly
25 }
26
27
28 \generate{
29   \file{lstlang1.sty}{\from{lstdrvrs.dtx}{lang1}}
30   \file{lstlang2.sty}{\from{lstdrvrs.dtx}{lang2}}
31   \file{lstlang3.sty}{\from{lstdrvrs.dtx}{lang3}}
32 }
33
34 \generate{
35   \file{listings-acm.prf}{\from{lstdrvrs.dtx}{acm-prf}}
36   \file{listings-fortran.prf}{\from{lstdrvrs.dtx}{fortran-prf}}

```

```

37 \file{listings-lua.prf}{\from{lstdrvrs.dtx}{lua-prf}}
38 \file{listings-python.prf}{\from{lstdrvrs.dtx}{python-prf}}
39 }
40
41
42 \ifToplevel{
43 \Msg{*}
44 \Msg{* You probably need to move all created '.sty' and '.cfg'}
45 \Msg{* files into a directory searched by TeX.}
46 \Msg{*}
47 \Msg{* Run 'lstdrvrs.dtx' through LaTeX2e to get the documentation.}
48 \Msg{*}
49 }
50
51 \endbatchfile
52 </install>
53 <*config>

```

We mainly define default dialects.

```

54 \ProvidesFile{listings.cfg}[2014/03/04 1.5c listings configuration]
55 \def\lstlanguagefiles
56   {lstlang0.sty,lstlang1.sty,lstlang2.sty,lstlang3.sty}
57 \lstset{defaultdialect=[R/3 6.10]ABAP,
58   defaultdialect=[2005]Ada,
59   defaultdialect=[68]Algol,
60   defaultdialect=[gnu]Awk,
61   defaultdialect=[ANSI]C,
62   defaultdialect=[light]Caml,
63   defaultdialect=[1985]Cobol,
64   defaultdialect=[WinXP]command.com,
65   defaultdialect=[ISO]C++,
66   defaultdialect=[95]Fortran,
67   defaultdialect=[5.2]Mathematica,
68   defaultdialect=[OMG]OCL,
69   defaultdialect=[Standard]Pascal,
70   defaultdialect=[67]Simula,
71   defaultdialect=[plain]TeX,
72   defaultdialect=[97]VRML}
73 \lstalias[]{\TclTk}{tk}{tcl}

```

And now some shortcuts for the ABAP versions (provided by Knut Lickert). I (Knut) think the leading R/2, R/3 is not necessary (The support for R/2 is finished). The version number with letter is important for the runtime-system, but the programming language should be the same for each version.

```

74 \lstalias[6.1]{ABAP}[R/3 6.10]{ABAP}
75 \lstalias[3.1]{ABAP}[R/3 3.1C]{ABAP}
76 \lstalias[4.6]{ABAP}[R/3 4.6C]{ABAP}
77 </config>
78 <+lang1>\ProvidesFile{lstlang1.sty}

```

```

79 <+lang2>\ProvidesFile{lstlang2.sty}
80 <+lang3>\ProvidesFile{lstlang3.sty}
81 <+acm-prf>\ProvidesFile{listings-acm.prf}
82 <+fortran-prf>\ProvidesFile{listings-fortran.prf}
83 <+lua-prf>\ProvidesFile{listings-lua.prf}
84 <+python-prf>\ProvidesFile{listings-python.prf}
85 <-config> [2014/03/04 1.5c listings language file]

```

## 2 Language drivers

### 2.1 Abap

Knut Lickert added support for Abap.<sup>1</sup>

```

86 <*lang2>
87 %%
88 %% Abap definition by Knut Lickert
89 %%
90 \lst@definlanguage[R/3 6.10]{ABAP}[R/3 4.6C]{ABAP}%
91 {morekeywords={try,endtry},%
92 }[keywords,comments,strings]
93 \lst@definlanguage[R/3 4.6C]{ABAP}[R/3 3.1]{ABAP}%
94 {morekeywords={method,ref,class,create,object,%
95             methods,endmethod,private,protected,public,section,%
96             catch,system-exceptions,endcatch,%
97             },%
98 moreprocnamekeys={class},%
99 literate={->}{<math>\rightarrow</math>}}1{=>}{<math>\Rightarrow</math>}}1,%
100 }[keywords,comments,strings,procnames]

```

Yes there are also some more releases in R/3 (2.1...), but I know them not really. So let's start with R/3 3.1.

```

101 \lst@definlanguage[R/3 3.1]{ABAP}[R/2 5.0]{ABAP}{}%

```

As I remember all this commands exists in R/2. Many commands are new in R/2 5.0 (compared with R/2 4.3). But as I am not using R/2 4.3 any more, I start with R/2 5.0.

```

102 \lst@definlanguage[R/2 5.0]{ABAP}%
103 {sensitive=f,%
104 procnamekeys={report,program,form,function,module},%
105 morekeywords={*,add,after,alias,analyzer,and,append,appending,area,assign,at,%
106             authority-check,before,binary,blank,break-point,calendar,call,%
107             case,change,changing,check,clear,cnt,co,collect,commit,common,%
108             component,compute,condense,corresponding,cos,cp,cs,currency-conversion,%

```

---

<sup>1</sup>In this section 'I' is Knut Lickert.

```

109      cursor,data,database,dataset,decimals,define,delete,deleting,dequeue,%
110      describe,detail,dialog,directory,div,divide,do,documentation,%
111      during,dynpro,else,end-of-page,end-of-selection,endat,endcase,%
112      enddo,endfor,endform,endif,endloop,endmodule,endselect,%
113      endwhile,enqueue,exceptions,exit,exp,export,exporting,extract,%
114      field,fields,field-groups,field-symbols,find,for,form,format,free,%
115      from,function,generating,get,giving,hide,id,if,import,%
116      importing,in,incl,include,initial,initialization,input,insert,%
117      interrupt,into,is,language,leave,leading,left-justified,like,line,lines,line-count,%
118      line-selection,list-processing,load,local,log,logfile,loop,%
119      margin,mark,mask,memory,menue,message,mod,modify,module,move,%
120      move-text,multiply,na,new,new-line,new-page,no-gaps,np,ns,%
121      number,obligatory,occurs,of,on,or,others,output,parameter,%
122      parameters,parts,perform,pf-status,places,position,process,%
123      raise,raising,ranges,read,refresh,refresh-dynpro,reject,remote,%
124      replace,report,reserve,reset,restart,right-justified,run,screen,scroll,search,%
125      segments,select,select-options,selection-screen,set,shift,sin,%
126      single,sqrt,start-of-selection,statement,structure,submit,%
127      subtract,summary,summing,suppress,system,table,tables,task,%
128      text,time,to,top-of-page,trace,transaction,transfer,%
129      transfer-dynpro,translate,type,unpack,update,user-command,%
130      using,value,when,where,while>window,with,workfile,write,},%
131      morecomment=[l]" ,%
132      morecomment=[f][commentstyle][0]*,%
133      morestring=[d]'%
134      }[keywords,comments,strings,procnames]

This section for R/2 4.3 is not really maintained. It is just what I remember of
the past.

135 \lst@definlanguage[R/2 4.3]{ABAP}[R/2 5.0]{ABAP}%
136 {deletekeywords={function,importing,exporting,changing,exceptions,%
137      raise,raising}%
138      }[keywords,comments,strings]
139 </lang2>

```

## 2.2 ACM

ACM is the language of the Aspen Custom Modeler (<http://www.aspentech.com/products/aspen-custom-modeler.aspx>), the language definition was provided by Stefan Pinnow. It is intended for writing models.

```

140 <*lang2>
141 %%
142 %% ACM and ACMscript definition
143 %% (c) 2013 Stefan Pinnow
144 %%
145 \lst@definlanguage{ACM}{
146   morekeywords={
147     abs,After,acos,And,As,asin,atan,At,Call,Compatibility,Connect,cos,cosh,%
148     Create,Delay,Difference,Do,Else,ElseIf,End,EndFor,EndIf,EndParallel,%

```

```

149     EndState,EndSwitch,EndText,EndWith,exp,External,Fixed,For,ForEach,Free,%
150     Global,Hidden,If,Implementation,In,Initial,Input,InterSection,%
151     IntegerSet,Invoke,Is,Language,Library,Link,Log10,LogE,Max,Min,Model,Of,%
152     Once,Options,Output,Parallel,Parameter,Pause,Port,Print,Private,%
153     Procedure,Product,Ramp,Repeat,Restart,Return,Round,Runs,Sigma,sin,sinh,%
154     Size,Snapshot,sqr,sqrt,SRamp,State,Stream,StringSet,Structure,Switch,%
155     SubRoutine,SymDiff,tan,tanh,Task,Text,Time,Then,Truncate,Union,Until,%
156     Uses,Variable,Wait,When,With,WithIn,WorkSpace%
157 },%
158 sensitive=false,%
159 morecomment=[l]{//},%
160 morecomment=[s]{/*}{*/},%
161 string=[b]{"},%
162 }[keywords,comments,strings]%
163 </lang2>

```

In addition to writing models there is a language ACMscript, which is similar to VBScript. According to Stefan Pinnow this language is used for writing scripts for the models.

```

164 <*lang2>
165 \lstdefinelanguage{ACMscript}[] {VBScript}{%
166     morekeywords={%
167         ElseIf,False,In,Resume,True%
168     },%
169     deletekeywords={%
170         Abs,Array,Clear,CreateObject,CStr,Err,ForReading,ForWriting,%
171         OpenTextFile,Replace,WriteLine%
172     }%
173 }[keywords,comments,strings]%
174 </lang2>

```

Stefan Pinnow also supplied a definition of a style for printing ACM code:

```

175 <*acm-prf>
176 \usepackage[rgb, x11names]{xcolor}
177
178 \definecolor{Comments}{rgb}{0.00,0.50,0.00}
179 \definecolor{KeyWords}{rgb}{0.00,0.00,0.63}
180 \definecolor{Strings}{rgb}{0.84,0.00,0.00}
181
182 \lstdefinestyle{ACM}{%
183     basicstyle=\scriptsize\ttfamily,%
184     keywordstyle=\color{KeyWords},%
185     showstringspaces=false,%
186     identifierstyle=\color{black},%
187     commentstyle=\color{Comments},%
188     stringstyle=\color{Strings},%
189     frame=shadowbox,%           % for ACM-Code scrartcl commented out
190 %     frame=1,%                 % line on the left side

```

```

191 rulesepcolor=\color{black},%
192 numbers=left,%           % left
193 firstnumber=1,%
194 stepnumber=5,%
195 columns=fixed,%         % to prevent inserting spaces
196 fontadjust=true,%
197 basewidth=0.5em,%
198 captionpos=t,%
199 abovecaptionskip=\smallskipamount,% same amount as default
200 belowcaptionskip=\smallskipamount,% in caption package
201 }%

```

This code is provided in the file `listings-acm.prf`, see section 2.4.1 (Preferences) of the `listings` documentation.

```
202 </acm-prf>
```

## 2.3 ACSL

This language was provided by Andreas Matthias. I'm sorry for forgetting to add this language for a long time.

```

203 <*lang1>
204 %%
205 %% ACSL definition (c) 2000 by Andreas Matthias
206 %%
207 \lst@definlanguage{ACSL}[90]{Fortran}%
208   {morekeywords={algorithm,cinterval,constant,derivative,discrete,%
209                 dynamic,errtag,initial,interval,maxterval,minterval,%
210                 merror,xerror,nsteps,procedural,save,schedule,sort,%
211                 table,terminal,termt,variable},%
212   sensitive=false,%
213   morecomment=[1]!%
214   }[keywords, comments]%
215 </lang1>

```

## 2.4 Ada

Data come from

- BARNES, JOHN GILBERT PRESSLIE: **Programming in Ada plus language reference manual**; © 1991 Addison-Wesley Publishing Company, Inc.; ISBN 0-201-56539-0.

Torsten Neuer added support for Ada 95. I changed the definition to reduce the required string memory.

```

216 <*lang1>
217 %%
218 %% Ada 95 definition (c) Torsten Neuer
219 %%

```



```

220 %% Ada 2005 definition (c) 2006 Santiago Urue\~{n}a Pascual
221 %%                               <Santiago.Uruena@upm.es>
222 %%
223 \lst@definlanguage[2005]{Ada}[95]{Ada}%
224 {morekeywords={interface,overriding,synchronized}}%
225 \lst@definlanguage[95]{Ada}[83]{Ada}%
226 {morekeywords={abstract,aliased,protected,requeue,tagged,until}}%
227 \lst@definlanguage[83]{Ada}%
228 {morekeywords={abort,abs,accept,access,all,and,array,at,begin,body,%
229     case,constant,declare,delay,delta,digits,do,else,elsif,end,entry,%
230     exception,exit,for,function,generic,goto,if,in,is,limited,loop,%
231     mod,new,not,null,of,or,others,out,package,pragma,private,%
232     procedure,raise,range,record,rem,renames,return,reverse,select,%
233     separate,subtype,task,terminate,then,type,use,when,while,with,%
234     xor},%
235     sensitive=f,%
236     morecomment=[l]--, %
237     morestring=[m]", % percent not defined as stringizer so far
238     morestring=[m]' %
239 }[keywords,comments,strings]%
240 </lang1>

```

## 2.5 Algol

Data come from

- UWE PAPE: **Programmieren in ALGOL 60**; © 1973 Carl Hanser Verlag München; ISBN 3-446-11605-2
- FRANK G. PAGAN: **A practical guide to ALGOL 68**; © 1976 by John Wiley & Sohn Ltd.; ISBN 0-471-65746-8 (Cloth); ISBN 0-471-65747-6 (Pbk).

The definition of Algol 68 doesn't support comments enclosed by  $\phi$ .

```

241 <*lang3>
242 \lst@definlanguage[68]{Algol}%
243 % ??? should 'i' be a keyword
244 {morekeywords={abs,and,arg,begin,bin,bits,bool,by,bytes,case,channel,%
245     char,co,comment,compl,conj,divab,do,down,elem,elif,else,empty,%
246     end,entier,eq,esac,exit,false,fi,file,flex,for,format,from,ge,%
247     goto,gt,heap,if,im,in,int,is,isnt,le,leng,level,loc,long,lt,lwb,%
248     minusab,mod,modab,mode,ne,nil,not,od,odd,of,op,or,ouse,out,over,%
249     overab,par,plusab,plusto,pr,pragmat,prio,proc,re,real,ref,repr,%
250     round,sema,shl,short,shorten,shr,sign,skip,string,struct,then,%
251     timesab,to,true,union,up,upb,void,while},%
252     sensitive=f,% ???
253     morecomment=[s]{\#}{\#},%
254     keywordcomment={co,comment}%
255 }[keywords,comments,keywordcomments]%

```

```

256 \lst@definlanguage[60]{Algol}%
257 {morekeywords={array,begin,Boolean,code,comment,div,do,else,end,%
258     false,for,goto,if,integer,label,own,power,procedure,real,step,%
259     string,switch,then,true,until,value,while},%
260     sensitive=f,% ???
261     keywordcommentsemicolon={end}{else,end}{comment}%
262 }[keywords,keywordcomments]%
263 \</lang3>

```

## 2.6 Assembler

Credits go to Michael Franke.

```

264 \<lang3>
265 %%
266 %% Motorola 68K definition (c) 2006 Michael Franke
267 %%
268 \lst@definlanguage[Motorola68k]{Assembler}%
269 {morekeywords={ABCD,ADD,%
270 ADDA,ADDI,ADDQ,ADDX,AND,ANDI,ASL,ASR,BCC,BLS,BCS,BLT,BEQ,BMI,BF,BNE,BGE,BPL,%
271 BGT,BT,BHI,BVC,BLE,BVS,BCHG,BCLR,BRA,BSET,BSR,BTST,CHK,CLR,CMP,CPA,CMPA,CMPI,CMPM,%
272 DBCC,DBLS,DBCS,DBLT,DBEQ,DBMI,DBF,DBNE,DBGE,DBPL,DBGT,DBT,DBHI,DBVC,DBLE,DBVS,DIVS,%
273 DIVU,EOR,EORI,EXG,EXT,ILLEGAL,JMP,JSR,LEA,LINK,LSL,LSR,MOVE,MOVEA,MOVEM,MOVEP,MOVEQ,%
274 MULS,MULU,NBCD,NEG,NEGX,NOP,NOT,OR,ORI,PEA,RESET,ROL,ROR,ROXL,ROXR,RTE,RTR,RTS,SBCD,%
275 SCC,SLS,SCS,SLT,SEQ,SMI,SF,SNE,SGE,SPL,SGT,ST,SHI,SVC,SLE,SVS,STOP,SUB,SUBA,SUBI,SUBQ,%
276 SUBX,SWAP,TAS,TRAP,TRAPV,TST,UNLK},%
277     sensitive=false,%
278     morecomment=[1]*,%
279     morecomment=[1];%
280 }[keywords,comments,strings]
281 \</lang3>

```

Credits go to Andrew Zabolotny.

```

282 \<lang3>
283 %%
284 %% x86masm definition (c) 2002 Andrew Zabolotny
285 %%
286 \lst@definlanguage[x86masm]{Assembler}%
287 {morekeywords={al,ah,ax,eax,bl,bh,bx,ebx,cl,ch,cx,ecx,dI,dh,dx,edx,%
288     si,esi,di,edi,bp,ebp,sp,esp,cs,ds,es,ss,fs,gs,cr0,cr1,cr2,cr3,%
289     db0,db1,db2,db3,db4,db5,db6,db7,tr0,tr1,tr2,tr3,tr4,tr5,tr6,tr7,%
290     st,aaa,aad,aam,aas,adc,add,and,arpl,bound,bsf,bsr,bswap,bt,btc,%
291     btr,bts,call,cbw,cdq,clc,cld,cli,clts,cmc,cmp,cmps,cmpsb,cmpsw,%
292     cmpsd,cmpxchg,cwd,cwde,daa,das,dec,div,enter,hlt,idiv,imul,in,%
293     inc,ins,int,into,invd,invlpg,iret,ja,jae,jb,jbe,jc,jcxz,jecxz,%
294     je,jg,jge,jl,jle,jna,jnae,jnb,jnbe,jnc,jne,jng,jnge,jnl,jnle,%
295     jno,jnp,jns,jnz,jo,jp,jpe,jpo,js,jz,jmp,lahf,lar,lea,leave,lgdt,%
296     lidt,lldt,lmsw,lock,lods,lodsb,lodsw,lodsd,loop,loopz,loopnz,%
297     loope,loopne,lds,les,lfs,lgs,lss,lsI,ltr,mov,movs,movsb,movsw,%
298     movsd,movsx,movzx,mul,neg,nop,not,or,out,outs,pop,popa,popad,%
299     popf,popfd,push,pusha,pushad,pushf,pushfd,rcl,rcr,rep, repe,%

```

```

300     repne,repz,repnz,ret,retf,rol,ror,sahf,sal,sar,sbb,scas,seta,%
301     setae,setb,setbe,setc,sete,setg,setge,setl,setle,setna,setnae,%
302     setnb,setnbe,setnc,setne,setng,setnge,setnl,setnle,setno,setnp,%
303     setns,setnz,seto,setp,setpe,setpo,sets,setz,sgdt,shl,shld,shr,%
304     shrd,sidt,sldt,smsw,etc,std,sti,stos,stosb,stosw,stosd,sub,%
305     test,verr,verw,wait,wbinvd,xadd,xchg,xlatb,xor,fabs,fadd,fbld,%
306     fbstp,fchs,fclex,fcom,fcos,fdecstp,fdiv,fdivr,ffree,fiadd,ficom,%
307     fidiv,fidivr,fild,fimul,fincstp,finit,fist,fisub,fisubr,fld,fldi,%
308     fldl2e,fldl2t,fldlg2,fldln2,fldpi,fldz,fldcw,fldenv,fmul,fnop,%
309     fpatan,fprem,fprem1,fptan,frndint,frstor,fsave,fscale,fsetpm,%
310     fsin,fsincos,fsqrt,fst,fstcw,fstenv,fstsw,fsub,fsubr,ftst,fucom,%
311     fwait,fxam,fxch,fxtract,fyl2x,fyl2xp1,f2xm1},%
312     morekeywords=[2]{.align,.alpha,assume,byte,code,comm,comment,.const,%
313     .cref,.data,.data?,db,dd,df,dosseg,dq,dt,dw,dword,else,end,endif,%
314     endm,endp,ends,eq,equ,.err,.err1,.err2,.errb,.errdef,.errdif,%
315     .erre,.erridn,.errnb,.errndef,.errnz,event,exitm,extrn,far,%
316     .fardata,.fardata?,fword,ge,group,gt,high,if,if1,if2,ifb,ifdef,%
317     ifdif,ife,ifidn,ifnb,ifndef,include,includelib,irp,irpc,label,%
318     .lall,le,length,.lfcond,.list,local,low,lt,macro,mask,mod,.model,%
319     name,ne,near,offset,org,out,page,proc,ptr,public,purge,qword,.%
320     radix,record,rept,.sall,seg,segment,.seq,.sfcond,short,size,%
321     .stack,struc,subttl,tbyte,.tfcond,this,title,type,.type,width,%
322     word,.xall,.xcref,.xlist},%
323     alsoletter=.,alsodigit=?,%
324     sensitive=f,%
325     morestring=[b]",%
326     morestring=[b]',%
327     morecomment=[l];%
328     }[keywords,comments,strings]
329 </lang3>

```

## 2.7 Awk

Thanks to Dr. Christoph Giess for providing these definitions.

```

330 <*lang1>
331 %%
332 %% awk definitions (c) Christoph Giess
333 %%
334 \lst@definlanguage[gnu]{Awk}[POSIX]{Awk}%
335 {morekeywords={and,asort,bindtextdomain,compl,dcgettext,gensub,%
336     lshift,mktime,or,rshift,strftime,strtonum,systemtime,xor,extension}%
337 }%
338 \lst@definlanguage[POSIX]{Awk}%
339 {keywords={BEGIN,END,close,getline,next,nextfile,print,printf,%
340     system,fflush,atan2,cos,exp,int,log,rand,sin,sqrt,srand,gsub,%
341     index,length,match,split,sprintf,strtonum,sub,substr,tolower,%
342     toupper,if,while,do,for,break,continue,delete,exit,function,%
343     return},%
344     sensitive,%

```

```

345     morecomment=[l]\#,%
346     morecomment=[l]//,%
347     morecomment=[s]{/*}{*/},%
348     morestring=[b]"%
349   }[keywords,comments,strings]%
350 </lang1>

```

## 2.8 Basic

Credits go to Robert Frank.

```

351 <{*lang1>
352 %%
353 %% Visual Basic definition (c) 2002 Robert Frank
354 %%
355 \lstdefinlanguage[Visual]{Basic}
356 {morekeywords={Abs,Array,Asc,AscB,AscW,Atn,Avg,CBool,CByte,CCur,%
357   CDate,CDBl,Cdec,Choose,Chr,ChrB,ChrW,CInt,CLng,Command,Cos,%
358   Count,CreateObject,CSng,CStr,CurDir,CVar,CVDate,CVErr,Date,%
359   DateAdd,DateDiff,DatePart,DateSerial,DateValue,Day,DDB,Dir,%
360   DoEvents,Environ,EOF,Error,Exp,FileAttr,FileDateTime,FileLen,%
361   Fix,Format,FreeFile,FV,GetAllStrings,GetAttr,%
362   GetAutoServerSettings,GetObject,GetSetting,Hex,Hour,IIf,%
363   IMEStatus,Input,InputB,InputBox,InStr,InstB,Int,Integer,IPmt,%
364   IsArray,IsDate,IsEmpty,IsError,IsMissing,IsNull,IsNumeric,%
365   IsObject,LBound,LCase,Left,LeftB,Len,LenB,LoadPicture,Loc,LOF,%
366   Log,Ltrim,Max,Mid,MidB,Min,Minute,MIRR,Month,MsgBox,Now,NPer,%
367   NPV,Oct,Partition,Pmt,PPmt,PV,QBColor,Rate,RGB,Right,RightB,Rnd,%
368   Rtrim,Second,Seek,Sgn,Shell,Sin,SLN,Space,Spc,Sqr,StDev,StDevP,%
369   Str,StrComp,StrConv,String,Switch,Sum,SYD,Tab,Tan,Time,Timer,%
370   TimeSerial,TimeValue,Trim,TypeName,UBound,Ucase,Val,Var,VarP,%
371   VarType,Weekday,Year},% functions
372 morekeywords=[2]{Accept,Activate,Add,AddCustom,AddFile,AddFromFile,%
373   AddFromTemplate,AddItem,AddNew,AddToAddInToolbar,%
374   AddToolboxProgID,Append,AppendChunk,Arrange,Assert,AsyncRead,%
375   BatchUpdate,BeginTrans,Bind,Cancel,CancelAsyncRead,CancelBatch,%
376   CancelUpdate,CanPropertyChange,CaptureImage,CellText,CellValue,%
377   Circle,Clear,ClearFields,ClearSel,ClearSelCols,Clone,Close,Cls,%
378   ColContaining,ColumnSize,CommitTrans,CompactDatabase,Compose,%
379   Connect,Copy,CopyQueryDef,CreateDatabase,CreateDragImage,%
380   CreateEmbed,CreateField,CreateGroup,CreateIndex,CreateLink,%
381   CreatePreparedStatement,CreateProperty,CreateQuery,%
382   CreateQueryDef,CreateRelation,CreateTableDef,CreateUser,%
383   CreateWorkspace,Customize>Delete>DeleteColumnLabels,%
384   DeleteColumns>DeleteRowLabels>DeleteRows,DoVerb,Drag,Draw>Edit,%
385   EditCopy>EditPaste,EndDoc,EnsureVisible,EstablishConnection,%
386   Execute,ExtractIcon,Fetch,FetchVerbs,Files,FillCache,Find,%
387   FindFirst,FindItem,FindLast,FindNext,FindPrevious,Forward,%
388   GetBookmark,GetChunk,GetClipString,GetData,GetFirstVisible,%
389   GetFormat,GetHeader,GetLineFromChar,GetNumTicks,GetRows,%

```

```

390     GetSelectedPart,GetText,GetVisibleCount,GoBack,GoForward,Hide,%
391     HitTest,HoldFields,Idle,InitializeLabels,InsertColumnLabels,%
392     InsertColumns,InsertObjDlg,InsertRowLabels,InsertRows,Item,%
393     KillDoc,Layout,Line,LinkExecute,LinkPoke,LinkRequest,LinkSend,%
394     Listen,LoadFile,LoadResData,LoadResPicture,LoadResString,%
395     LogEvent,MakeCompileFile,MakeReplica,MoreResults,Move,MoveData,%
396     MoveFirst,MoveLast,MoveNext,MovePrevious,NavigateTo,NewPage,%
397     NewPassword,NextRecordset,OLEDrag,OnAddinsUpdate,OnConnection,%
398     OnDisconnection,OnStartupComplete,Open,OpenConnection,%
399     OpenDatabase,OpenQueryDef,OpenRecordset,OpenResultset,OpenURL,%
400     Overlay,PaintPicture,Paste,PastSpecialDlg,PeekData,Play,Point,%
401     PopulatePartial,PopupMenu,Print,PrintForm,PropertyChanged,Pset,%
402     Quit,Raise,RandomDataFill,RandomFillColumns,RandomFillRows,%
403     rdoCreateEnvironment,rdoRegisterDataSource,ReadFromFile,%
404     ReadProperty,Rebind,ReFill,Refresh,RefreshLink,RegisterDatabase,%
405     Reload,Remove,RemoveAddInFromToolbar,RemoveItem,Render,%
406     RepairDatabase,Reply,ReplyAll,Requery,ResetCustom,%
407     ResetCustomLabel,ResolveName,RestoreToolbar,Resync,Rollback,%
408     RollbackTrans,RowBookmark,RowContaining,RowTop,Save,SaveAs,%
409     SaveFile,SaveToFile,SaveToolbar,SaveToOle1File,Scale,ScaleX,%
410     ScaleY,Scroll,Select,SelectAll,SelectPart,SelPrint,Send,%
411     SendData,Set,SetAutoServerSettings,SetData,SetFocus,SetOption,%
412     SetSize,SetText,SetViewport,Show,ShowColor,ShowFont,ShowHelp,%
413     ShowOpen,ShowPrinter,ShowSave,ShowWhatsThis,SignOff,SignOn,Size,%
414     Span,SplitContaining,StartLabelEdit,StartLogging,Stop,%
415     Synchronize,TextHeight,TextWidth,ToDefaults,TwipsToChartPart,%
416     TypeByChartType,Update,UpdateControls,UpdateRecord,UpdateRow,%
417     Upto,WhatsThisMode,WriteProperty,ZOrder},% methods
418     morekeywords=[3]{AccessKeyPress,AfterAddFile,AfterChangeFileName,%
419     AfterCloseFile,AfterColEdit,AfterColUpdate,AfterDelete,%
420     AfterInsert,AfterLabelEdit,AfterRemoveFile,AfterUpdate,%
421     AfterWriteFile,AmbienChanged,ApplyChanges,Associate,%
422     AsyncReadComplete,AxisActivated,AxisLabelActivated,%
423     AxisLabelSelected,AxisLabelUpdated,AxisSelected,%
424     AxisTitleActivated,AxisTitleSelected,AxisTitleUpdated,%
425     AxisUpdated,BeforeClick,BeforeColEdit,BeforeColUpdate,%
426     BeforeConnect,BeforeDelete,BeforeInsert,BeforeLabelEdit,%
427     BeforeLoadFile,BeforeUpdate,ButtonClick,ButtonCompleted,%
428     ButtonGotFocus,ButtonLostFocus,Change,ChartActivated,%
429     ChartSelected,ChartUpdated,Click,ColEdit,Collapse,ColResize,%
430     ColumnClick,Compare,ConfigChageCancelled,ConfigChanged,%
431     ConnectionRequest,DataArrival,DataChanged,DataUpdated,Db1Click,%
432     Deactivate,DeviceArrival,DeviceOtherEvent,DeviceQueryRemove,%
433     DeviceQueryRemoveFailed,DeviceRemoveComplete,DeviceRemovePending,%
434     DevModeChange,Disconnect,DisplayChanged,Dissociate,%
435     DoGetNewFileName,Done,DonePainting,DownClick,DragDrop,DragOver,%
436     DropDown,EditProperty,EnterCell,EnterFocus,Event,ExitFocus,%
437     Expand,FootnoteActivated,FootnoteSelected,FootnoteUpdated,%
438     GotFocus,HeadClick,InfoMessage,Initialize,IniProperties,%
439     ItemActivated,ItemAdded,ItemCheck,ItemClick,ItemReloaded,%

```

```

440     ItemRemoved,ItemRenamed,ItemSeletedected,KeyDown,KeyPress,KeyUp,%
441     LeaveCell,LegendActivated,LegendSelected,LegendUpdated,%
442     LinkClose,LinkError,LinkNotify,LinkOpen,Load,LostFocus,%
443     MouseDown,MouseMove,MouseUp,NodeClick,ObjectMove,%
444     OLECompleteDrag,OLEDragDrop,OLEDragOver,OLEGiveFeedback,%
445     OLESetData,OLEStartDrag,OnAddNew,OnComm,Paint,PanelClick,%
446     PanelDbClick,PathChange,PatternChange,PlotActivated,%
447     PlotSelected,PlotUpdated,PointActivated,PointLabelActivated,%
448     PointLabelSelected,PointLabelUpdated,PointSelected,%
449     PointUpdated,PowerQuerySuspend,PowerResume,PowerStatusChanged,%
450     PowerSuspend,QueryChangeConfig,QueryComplete,QueryCompleted,%
451     QueryTimeout,QueryUnload,ReadProperties,Reposition,%
452     RequestChangeFileName,RequestWriteFile,Resize,ResultsChanged,%
453     RowColChange,RowCurrencyChange,RowResize,RowStatusChanged,%
454     SelChange,SelectionChanged,SendComplete,SendProgress,%
455     SeriesActivated,SeriesSelected,SeriesUpdated,SettingChanged,%
456     SplitChange,StateChanged,StatusUpdate,SysColorsChanged,%
457     Terminate,TimeChanged,TitleActivated,TitleSelected,%
458     TitleActivated,UnboundAddData,UnboundDeleteRow,%
459     UnboundGetRelativeBookmark,UnboundReadData,UnboundWriteData,%
460     Unload,UpClick,Updated,Validate,ValidationError,WillAssociate,%
461     WillChangeData,WillDissociate,WillExecute,WillUpdateRows,%
462     WithEvents,WriteProperties},% VB-events
463     morekeywords=[4]{AppActivate,Base,Beep,Call,Case,ChDir,ChDrive,%
464     Const,Declare,DefBool,DefByte,DefCur,DefDate,DefDbl,DefDec,%
465     DefInt,DefLng,DefObj,DefSng,DefStr,Deftype,DefVar,DeleteSetting,%
466     Dim,Do,Else,ElseIf,End,Enum,Erase,Event,Exit,Explicit,FileCopy,%
467     For,ForEach,Friend,Function,Get,GoSub,GoTo,If,Implements,Kill,%
468     Let,LineInput,Lock,Lset,MkDir,Name,Next,OnError,On,Option,%
469     Private,Property,Public,Put,RaiseEvent,Randomize,ReDim,Rem,%
470     Reset,Resume,Return,Rmdir,Rset,SavePicture,SaveSetting,%
471     SendKeys,SetAttr,Static,Sub,Then,Type,Unlock,Wend,While,Width,%
472     With,Write},% statements
473     sensitive=false,%
474     keywordcomment=rem,%
475     MoreSelectCharTable=\def\lst@BeginKC@{% chmod
476     \lst@ResetToken
477     \lst@BeginComment\lst@GPmode{{\lst@commentstyle}%
478     \lst@Lmodetrue\lst@modetrue}\@empty},%
479     morecomment=[l]{'},%
480     morecomment=[s]{/*}{*/},%
481     morestring=[b]",%
482     }[keywords,comments,strings,keywordcomments]
483 \</lang1>

```

Thanks to Jonathan de Halleux for reporting a missing comma after `MoreSelectCharTable`, which was the cause of a problem reported by Robert Frank. Martina Hansel also found the bug and the fix.

## 2.9 Clean

Thanks to José Romildo Malaquias. Markus Pahlow found a missing comma

```
484 <*lang3>
485 %%
486 %% Clean definition (c) 1999 Jos'e Romildo Malaquias
487 %%
488 %% Clean 1.3 : some standard functional language: pure, lazy,
489 %%             polymorphic type system, modules, type classes,
490 %%             garbage collection, functions as first class citizens
491 %%
492 \lst@definlanguage{Clean}%
493 {otherkeywords={:,:=:,::=:,::=:,>,>,<,<,<:-,\{,\},\{|\,|\},\#,\#!,|,\&,%
494   [,],!,.,.,\\,;,_,}%
495   morekeywords={from,definition,implementation,import,module,system,%
496     case,code,if,in,let,let!,of,where,with,infix,infixl,infixr},%
497   moreendkeywords={True,False,Start,Int,Real,Char,Bool,String,World,%
498     File,ProcId},%
499   sensitive,%
500   morecomment=[l]//,% missing comma: Markus Pahlow
501   morecomment=[n]{/*}{*/,}%
502   morestring=[b]"%
503 }[keywords,comments,strings]%
504 </lang3>
```

## 2.10 Corba IDL

This language definition is due to Jens T. Berger Thielemann.

```
505 <*lang2>
506 %%
507 %% Corba IDL definition (c) 1999 Jens T. Berger Thielemann
508 %%
509 \lst@definlanguage[CORBA]{IDL}%
510 {morekeywords={any,attribute,boolean,case,char,const,context,default,%
511   double,enum,exception,fixed,float,in,inout,interface,long,module,%
512   native,Object,octet,oneway,out,raises,readonly,sequence,short,%
513   string,struct,switch,typedef,union,unsigned,void,wchar,wstring,%
514   FALSE,TRUE},%
515   sensitive,%
516   moredirectives={define,elif,else,endif,error,if,ifdef,ifndef,line,%
517     include,pragma,undef,warning},%
518   moredelim=[*][directive]\#,%
519   morecomment=[l]//,%
520   morecomment=[s]{/*}{*/,}%
521   morestring=[b]"%
522 }[keywords,comments,strings,directives]%
523 </lang2>
```

## 2.11 C, C++, et al

524 `<*lang1>`

For compatibility the ‘ANSI’ language is defined in terms of ISO.

525 `\lst@definelanguage[ANSI]{C++}[ISO]{C++}{}%`

Michael Piefel suggested some more changes and added GNU C++.

526 `\lst@definelanguage[GNU]{C++}[ISO]{C++}%`

527 `{morekeywords={__attribute__, __extension__, __restrict, __restrict__, %`  
528 `typeof, __typeof__}, %`

529 `}%`

530 `\lst@definelanguage[Visual]{C++}[ISO]{C++}%`

531 `{morekeywords={__asm, __based, __cdecl, __declspec, __declspec, %`

532 `__declspec, __except, __fastcall, __finally, __inline, __int8, __int16, %`

533 `__int32, __int64, __naked, __stdcall, __thread, __try, __leave}, %`

534 `}%`

535 `\lst@definelanguage[ISO]{C++}[ANSI]{C}%`

536 `{morekeywords={and, and_eq, asm, bad_cast, bad_typeid, bitand, bitor, bool, %`

537 `catch, class, compl, const_cast, delete, dynamic_cast, explicit, export, %`

538 `false, friend, inline, mutable, namespace, new, not, not_eq, operator, or, %`

539 `or_eq, private, protected, public, reinterpret_cast, static_cast, %`

540 `template, this, throw, true, try, typeid, type_info, typename, using, %`

541 `virtual, wchar_t, xor, xor_eq}, %`

542 `}%`

543 `</lang1>`

Objective-C is due to Detlev Dröge.

544 `<*lang1>`

545 `%%`

546 `%% Objective-C definition (c) 1997 Detlev Droege`

547 `%%`

548 `\lst@definelanguage[Objective]{C}[ANSI]{C}`

549 `{morekeywords={bycopy, id, in, inout, oneway, out, self, super, %`

550 `@class, @defs, @encode, @end, @implementation, @interface, @private, %`

551 `@protected, @protocol, @public, @selector}, %`

552 `moredirectives={import}%`

553 `}%`

554 `</lang1>`

Jörg Viemann provided the keywords for Handel-C.

555 `<*lang1>`

556 `%%`

557 `%% Handel-C definition, refer http://www.celoxica.com`

558 `%%`

559 `\lst@definelanguage[Handel]{C}[ANSI]{C}`

560 `{morekeywords={assert, chan, chanin, chanout, clock, delay, expr, external, %`

561 `external_divide, family, ifselect, in, inline, interface, internal, %`

562 `internal_divid, intwidth, let, macro, mprom, par, part, prialt, proc, ram, %`



```

563         releasesema,reset,rom,select,sema,set,seq,shared,signal,try,%
564         reset,trysema,typeof,undefined,width,with,wom},%
565     }%
566 </lang1>
567 <*lang1>
568 \lst@definelanguage[ANSI]{C}%
569     {morekeywords={auto,break,case,char,const,continue,default,do,double,%
570         else,enum,extern,float,for,goto,if,int,long,register,return,%
571         short,signed,sizeof,static,struct,switch,typedef,union,unsigned,%
572         void,volatile,while},%
573     sensitive,%
574     morecomment=[s]{/*}{*/},%
575     morecomment=[l]//,% nonstandard
576     morestring=[b]",%
577     morestring=[b]',%
578     moredelim=[directive]\#,%
579     moredirectives={define,elif,else,endif,error,if,ifdef,ifndef,line,%
580         include,pragma,undef,warning}%
581     }[keywords,comments,strings,directives]%
582 </lang1>
583 <*lang1>

```

Thanks go to Martin Brodbeck.

```

584 %%
585 %% C-Sharp definition (c) 2002 Martin Brodbeck
586 %%
587 \lst@definelanguage[Sharp]{C}%
588     {morekeywords={abstract,base,bool,break,byte,case,catch,char,checked,%
589         class,const,continue,decimal,default,delegate,do,double,else,%
590         enum,event,explicit,extern,false,finally,fixed,float,for,foreach,%
591         goto,if,implicit,in,int,interface,internal,is,lock,long,%
592         namespace,new,null,object,operator,out,override,params,private,%
593         protected,public,readonly,ref,return,sbyte,sealed,short,sizeof,%
594         static,string,struct,switch,this,throw,true,try,typeof,uint,%
595         ulong,unchecked,unsafe,ushort,using,virtual,void,while,%
596         as,volatile,stackalloc},% Kai K\"ohne
597     sensitive,%
598     morecomment=[s]{/*}{*/},%
599     morecomment=[l]//,%
600     morestring=[b]"
601     }[keywords,comments,strings]%
602 </lang1>

```

## 2.12 Caml and Objective Caml

Patrick Cousot mailed me the definition. Tom Hirschowitz added two keywords.

```

603 <*lang2>

```

```

604 %%
605 %% (Objective) Caml definition (c) 1999 Patrick Cousot
606 %%
607 %% Objective CAML and Caml light are freely available, together with a
608 %% reference manual, at URL ftp.inria.fr/lang/caml-light for the Unix,
609 %% Windows and Macintosh OS operating systems.
610 %%
611 \lst@definlanguage[Objective]{Caml}[light]{Caml}
612 {deletekeywords={not,prefix,value,where},%
613   morekeywords={assert,asr,class,closed,constraint,external,false,%
614     functor,include,inherit,land,lazy,lor,lsl,lsr,lxor,method,mod,%
615     module,new,open,parser,private,sig,struct,true,val,virtual,when,%
616     object,ref},% TH
617   }%
618 \lst@definlanguage[light]{Caml}
619 {morekeywords={and,as,begin,do,done,downto,else,end,exception,for,%
620   fun,function,if,in,let,match,mutable,not,of,or,prefix,rec,then,%
621   to,try,type,value,where,while,with},%
622   sensitive,%
623   morecomment=[n]{(*)},%
624   morestring=[b]",%
625   moredelim=[directive]\#,%
626   moredirectives={open,close,include}%
627 }[keywords,comments,strings,directives]%
628 </lang2>

```

## 2.13 Common Intermediate Language

This language definition for CIL (Common Intermediate Language, part of Microsoft's .NET interface) was provided by Olaf Conradi

```

629 <*lang3>
630 \lstdefinlanguage{CIL}%
631 {morekeywords=[1]{assembly,beforefieldinit,class,default,cdecl,cil,corflags,%
632   culture,custom,data,entrypoint,fastcall,field,file,%
633   hidebysig,hash,il,imagebase,locals,managed,marshall,%
634   maxstack,mresource,method,module,namespace,publickey,%
635   stdcall,subsystem,thiscall,unmanaged,vararg,ver,vtfixup,%
636   % types
637   bool,char,float32,float64,int,int8,int16,int32,%
638   int64,method,native,object,string,modopt,modreq,pinned,%
639   typedref,valuetype,unsigned,void,%
640   % defining types
641   abstract,ansi,auto,autochar,beforefieldinit,boxed,class,%
642   explicit,extends,implements,interface,famandassem,family,%
643   famorassem,inherits,nested,override,pack,private,property,%
644   public,rtspecialname,sealed,sequential,serializable,size,%
645   specialname,static,unicode,%
646   % postfix

```

```

647         algorithm,alignment,extern,init,from,nometadata,with},%
648     morekeywords=[2]{add,and,arglist,beq,bge,bgt,ble,blt,bne,br,break,brfalse,%
649         brtrue,call,calli,ceq,cgt,ckfinite,clt,conv,cpblk,div,%
650         dup,endfilter,endfinally,initblk,jmp,ldarg,ldarga,ldc,%
651         ldftn,ldind,ldloc,ldloca,ldnull,leave,localloc,mul,neg,%
652         nop,not,or,pop,rem,ret,shl,shr,starg,stind,stloc,sub,%
653         switch,xor,%
654         % prefix
655         tail,unaligned,volatile,%
656         % postfix
657         un,s,ovf,%
658         % object
659         box,callvirt,castclass,cpobj,cctor,ctor,initobj,isinst,%
660         ldelem,ldelema,ldfld,ldflda,ldlen,ldobj,ldsfld,ldsfla,%
661         ldstr,ldtoken,ldvirtftn,mkrefany,newarr,newobj,refanytype,%
662         refanyval,throw,typeof,typeof,typeof,typeof,typeof,%
663         unbox},%
664     sensitive=true,%
665     morecomment=[1]{/*},%
666     morestring=[b]"%
667 }[keywords,comments,strings]%
668 </lang3>

```

## 2.14 Cobol

Keywords are not marked if their names are broken by EOL, for example DEBUG-CONTENTS. Sometimes portions of a string are not printed as a string. This happens if the double quote is not doubled to insert a quote, e.g. `"bad" cobol` won't be printed correctly.

```

669 <*lang2>
670 \lst@definlanguage[ibm]{Cobol}[1985]{Cobol}%
671 {morekeywords={ADDRESS,BEGINNING,COMP-3,COMP-4,COMPUTATIONAL,%
672     COMPUTATIONAL-3,COMPUTATIONAL-4,DISPLAY-1,EGCS,EJECT,ENDING,%
673     ENTRY,GOBACK,ID,MORE-LABELS,NULL,NULLS,PASSWORD,RECORDING,%
674     RETURN-CODE,SERVICE,SKIP1,SKIP2,SKIP3,SORT-CONTROL,SORT-RETURN,%
675     SUPPRESS,TITLE,WHEN-COMPILED},%
676 }%
677 \lst@definlanguage[1985]{Cobol}[1974]{Cobol}%
678 {morekeywords={ALPHABET,ALPHABETIC-LOWER,ALPHABETIC-UPPER,%
679     ALPHANUMERIC,ALPHANUMERIC-EDITED,ANY,CLASS,COMMON,CONTENT,%
680     CONTINUE,DAY-OF-WEEK,END-ADD,END-CALL,END-COMPUTE,END-DELETE,%
681     END-DIVIDE,END-EVALUATE,END-IF,END-MULTIPLY,END-PERFORM,END-READ,%
682     END-RECEIVE,END-RETURN,END-REWRITE,END-SEARCH,END-START,%
683     END-STRING,END-SUBTRACT,END-UNSTRING,END-WRITE,EVALUATE,EXTERNAL,%
684     FALSE,GLOBAL,INITIALIZE,NUMERIC-EDITED,ORDER,OTHER,%
685     PACKED-DECIMAL,PADDING,PURGE,REFERENCE,RELOAD,REPLACE,STANDARD-1,%
686     STANDARD-2,TEST,THEN,TRUE},%
687 }%

```

```

688 \lst@definlanguage[1974]{Cobol}%
689   {morekeywords={ACCEPT,ACCESS,ADD,ADVANCING,AFTER,ALL,ALPHABETIC,ALSO,%
690     ALTER,ALTERNATE,AND,ARE,AREA,AREAS,ASCENDING,ASSIGN,AT,AUTHOR,%
691     BEFORE,BINARY,BLANK,BLOCK,BOTTOM,BY,CALL,CANCEL,CD,CF,CH,%
692     CHARACTER,CHARACTERS,CLOCK-UNITS,CLOSE,COBOL,CODE,CODE-SET,%
693     COLLATING,COLUMN,COMMA,COMMUNICATION,COMP,COMPUTE,CONFIGURATION,%
694     CONTAINS,CONTROL,CONTROLS,CONVERTING,COPY,CORR,CORRESPONDING,%
695     COUNT,CURRENCY,DATA,DATE,DATE-COMPILED,DATE-WRITTEN,DAY,DE,%
696     DEBUG-CONTENTS,DEGUB-ITEM,DEBUG-LINE,DEBUG-NAME,DEBUG-SUB1,%
697     DEBUG-SUB2,DEBUG-SUB3,DEBUGGING,DECIMAL-POINT,DECLARATIVES,%
698     DELETE,DELIMITED,DELIMITER,DEPENDING,DESCENDING,DESTINATION,%
699     DETAIL,DISABLE,DISPLAY,DIVIDE,DIVISION,DOWN,DUPLICATES,DYNAMIC,%
700     EGI,ELSE,EMI,ENABLE,END,END-OF-PAGE,ENTER,ENVIRONMENT,EOP,EQUAL,%
701     ERROR,ESI,EVERY,EXCEPTION,EXIT,EXTEND,FD,FILE,FILE-CONTROL,%
702     FILLER,FINAL,FIRST,FOOTING,FOR,FROM,GENERATE,GIVING,GO,GREATER,%
703     GROUP,HEADING,HIGH-VALUE,HIGH-VALUES,I-O,I-O-CONTROL,%
704     IDENTIFICATION,IF,IN,INDEX,INDEXED,INDICATE,INITIAL,INITIATE,%
705     INPUT,INPUT-OUTPUT,INSPECT,INSTALLATION,INTO,INVALID,IS,JUST,%
706     JUSTIFIED,KEY,LABEL,LAST,LEADING,LEFT,LENGTH,LESS,LIMIT,LIMITS,%
707     LINAGE,LINAGE-COUNTER,LINE,LINE-COUNTER,LINES,LINKAGE,LOCK,%
708     LOW-VALUE,LOW-VALUES,MEMORY,MERGE,MESSAGE,MODE,MODULES,MOVE,%
709     MULTIPLE,MULTIPLY,NATIVE,NEGATIVE,NEXT,NO,NOT,NUMBER,NUMERIC,%
710     OBJECT-COMPUTER,OCCURS,OF,OFF,OMITTED,ON,OPEN,OPTIONAL,OR,%
711     ORGANIZATION,OUTPUT,OVERFLOW,PAGE,PAGE-COUNTER,PERFORM,PF,PH,PIC,%
712     PICTURE,PLUS,POINTER,POSITION,PRINTING,POSITIVE,PRINTING,%
713     PROCEDURE,PROCEDURES,PROCEED,PROGRAM,PROGRAM-ID,QUEUE,QUOTE,%
714     QUOTES,RANDOM,RD,READ,RECEIVE,RECORD,RECORDING,RECORDS,REDEFINES,%
715     REEL,REFERENCES,RELATIVE,RELEASE,REMAINDER,REMOVAL,RENAMES,%
716     REPLACING,REPORT,REPORTING,REPORTS,RERUN,RESERVE,RESET,RETURN,%
717     REVERSED,REWIND,REWRITE,RF,RH,RIGHT,ROUNDED,RUN,SAME,SD,SEARCH,%
718     SECTION,SECURITY,SEGMENT,SEGMENT-LIMIT,SELECT,SEND,SENTENCE,%
719     SEPARATE,SEQUENCE,SEQUENTIAL,SET,SIGN,SIZE,SORT,SORT-MERGE,%
720     SOURCE,SOURCE-COMPUTER,SPACE,SPACES,SPECIAL-NAMES,STANDARD,START,%
721     STATUS,STOP,STRING,SUB-QUEUE-1,SUB-QUEUE-2,SUB-QUEUE-3,SUBTRACT,%
722     SUM,SYMBOLIC,SYNC,SYNCHRONIZED,TABLE,TALLYING,TAPE,TERMINAL,%
723     TERMINATE,TEXT,THAN,THROUGH,THRU,TIME,TIMES,TO,TOP,TRAILING,TYPE,%
724     UNIT,UNSTRING,UNTIL,UP,UPON,USAGE,USE,USING,VALUE,VALUES,VARYING,%
725     WHEN,WITH,WORDS,WORKING-STORAGE,WRITE,ZERO,ZEROES,ZEROS},%
726   alsodigit=-,%
727   sensitive=f,% ???
728   morecomment=[f][commentstyle][6]*,%
729   morestring=[d]"% ??? doubled
730 }[keywords,comments,strings]%

```

commentstyle (not the surrounding brackets) have been added after a bug report by Stephen Reindl.

731 </lang2>

## 2.15 Comal 80

The data is from

- BORGE R. CHRISTENSEN: **Strukturierte Programmierung mit COMAL 80** [aus dem Dänischen übertragen und bearbeitet von Margarete Kragh]; 2., verb. Auflage – München; Wien: Oldenburg, 1985; ISBN 3-486-26902-X.

```
732 <*lang3>
733 \lst@definlanguage{Comal 80}%
734 {morekeywords={AND,AUTO,CASE,DATA,DEL,DIM,DIV,DO,ELSE,ENDCASE,ENDIF,%
735             ENDPROC,ENDWHILE,EOD,EXEC,FALSE,FOR,GOTO,IF,INPUT,INT,LIST,LOAD,%
736             MOD,NEW,NEXT,NOT,OF,OR,PRINT,PROC,RANDOM,RENUM,REPEAT,RND,RUN,%
737             SAVE,SELECT,STOP,TAB,THEN,TRUE,UNTIL,WHILE,ZONE},%
738     sensitive=f,% ???
739     morecomment=[l]//,%
740     morestring=[d]"%
741 }[keywords,comments,strings]%
742 </lang3>
```

## 2.16 COMMAND.COM Batch Files

This definition for DOS and Windows batch files is from Stephan Hennig.

```
743 <*lang3>
744 \lst@definlanguage[WinXP]{command.com}%
745 {morekeywords={assoc,at,attrib,bootcfg,break,cacls,call,cd,chcp,chdir,%
746             chkdsk,chkntfs,cls,cmd,cmdextversion,color,comp,compact,convert,copy,%
747             date,defined,del,dir,diskcomp,diskcopy,do,doskey,echo,else,endlocal,%
748             erase,errorlevel,exist,exit,fc,find,findstr,for,format,ftype,goto,%
749             graftabl,help,if,in,label,md,mkdir,mode,more,move,not,off,path,%
750             pause,popd,print,prompt,pushd,rd,recover,ren,rename,replace,rmdir,%
751             set,setlocal,shift,sort,start,subst,time,title,tree,type,ver,%
752             verify,vol,xcopy},%
753     sensitive=false,%
754     alsoother={@},%
755     alsoletter={\%~:-/},%
756     morecomment=[l]{rem},%
757     morecomment=[l]{reM},%
758     morecomment=[l]{rEm},%
759     morecomment=[l]{rEM},%
760     morecomment=[l]{Rem},%
761     morecomment=[l]{ReM},%
762     morecomment=[l]{REm},%
763     morecomment=[l]{REM},%
764     morestring=[d]"%
765 }[keywords,comments,strings]%
766 </lang3>
```

## 2.17 Comsol Multiphysics

Comsol Multiphysics (Prior to version 3.2 known as Femlab) can be used standalone or as an extension to MatLab. This definition is due to Martin Heller.

Unfortunately, there is a conflict in that Comsol is case-insensitive, whereas Matlab is case-sensitive; listings does not currently support different case-sensitivities in the same listing.

```
767 (*lang3)
768 \lst@definlanguage{Comsol}%
769 {morekeywords={%
770     adaption,arc1,arc2,arrayr,assemble,assemnit,beziercurve2,block2,%
771     block3,bsplinecurve2,bsplinecurve3,bsplinesurf3,bypassplot,cardg,%
772     ccoeffgroup,chamfer,checkgeom,circ1,circ2,coeff2cell,comsol,%
773     cone2,cone3,Contents,createhexes,createprisms,createquads,csgbl2,%
774     csgbl3,csgcmpbz,csgimplbz,csginitaux,csginitnr,csgproputil,%
775     csgrbconv,csgunique3,csguniquep,csgversion,csgvvovl,curve2,%
776     curve3,cylinder2,cylinder3,dat2str,defastget,display,drawgetobj,%
777     drawreobj,drawsetobj,dst,duplicate,dxflayers,dxfread,dxfwrite,%
778     econe2,econe3,eigloop,elcconstr,elcplbnd,elcplextr,elcplproj,%
779     elcplscalar,elempty,elemreobj,eleqc,eleqw,elevate,elgeom,ellip1,%
780     ellip2,ellipsoid2,ellipsoid3,ellipsoidgen_fl23,elmat,elovar,%
781     elpconstr,elshape,elvar,elvarm,embed,extrude,face3,faceprim3,%
782     fastsetop,fem2jxfem,femblocksu,femdiff,femeig,femexport,femgui,%
783     femimport,femiter,femlab,femlin,femmesh,femmeshexp,femnlin,%
784     femplot,femsfun,femsim,femsimlowlevel,femsimserver,femsol,%
785     femsolver,femstate,femstruct,femtime,femwave,festyle,fieldnames,%
786     fillet,fl1d,fl2d,fl3d,flaction,flafun,flappconvert,flappobj,%
787     flaxisequal,flbase,flbinary,flc1hs,flc2hs,flcanpnt,flcell2draw,%
788     flclear,flcolorbar,flcompact,flconeplot,flcontour2mesh,%
789     flcontour2meshaux,flconvreact,flconvreact1d,flconvreact2d,%
790     flconvreact3d,flcyl,fldc1hs,fldc2hs,fldegree,fldegreer3,%
791     fldegreet3,fldimvarsgt,fldisp,fldraw2cell,fldrawnow,fldsmhs,%
792     fldsmstgn,flvalmat,flexch,flexchprop,flfastgeom,flform,flgc,%
793     flgcbo,flgdconv,flgeom2cellstr,flgeomadj,flgeomarcize,flgeomec,%
794     flgeomed,flgeomepol,flgeomes,flgeomfc,flgeomfd,flgeomfdp,%
795     flgeomff1,flgeomff2,flgeomfn,flgeomfs,flgeomgetlocalsys,%
796     flgeominit,flgeominitprop,flgeomitransform,flgeomloft,flgeommesh,%
797     flgeomnbs,flgeomnes,flgeomnmr,flgeomnv,flgeompsinv,flgeomrmsing,%
798     flgeomrotp,flgeomsd,flgeomdim,flgeomse,flgeomsf2,flgeomspm,%
799     flgeomtransform,flgeomud,flgeomvtx,flgetdraw,flheat,flheat1d,%
800     flheat2d,flheat3d,flhelmholtz,flhelmholtz1d,flhelmholtz2d,%
801     flhelmholtz3d,flim2curve,flinterp1,fliscont,flismember,%
802     flisnumeric,fljaction,flllaplace,flllaplace1d,flllaplace2d,%
803     flllaplace3d,flload,flloadfl,flloadmatfile,flloadmfile,%
804     fllobj2cellstr,flmakeevalstr,flmapsoljac,flmat2str,flmatch,%
805     flmesh2spline,flmesh2splineaux,flml65setup,flngdof,flnull,%
806     flnullorth,flpde,flpdeac,flpdec,flpdec1d,flpdec2d,flpdec3d,%
807     flpdedc,flpdedc2d,flpdedc3d,flpdedf,flpdedf1d,flpdedf2d,%
808     flpdedf3d,flpdees,flpdees2d,flpdees3d,flpdeg,flpdeg1d,flpdeg2d,%
```

```

809 flpdeg3d, flpdeht, flpdeht1d, flpdeht2d, flpdeht3d, flpdems, flpdems2d, %
810 flpdems3d, flpdens, flpdens2d, flpdens3d, flpdepn, flpdeps, flpdesm3d, %
811 flpdew, flpdew1d, flpdew2d, flpdew3d, flpdewb, flpdewb1d, flpdewb2d, %
812 flpdewb3d, flpdewc, flpdewc1d, flpdewc2d, flpdewc3d, flpdewe, %
813 flpdewe3d, flpdewp, flpdewp2d, flpdewp3d, flplot, flpoisson, %
814 flpoisson1d, flpoisson2d, flpoisson3d, flpric2, flpric3, flreobj, %
815 flreport, flresolvepath, flsave, flschrodinger, flschrodinger1d, %
816 flschrodinger2d, flschrodinger3d, flsde, flsdp, flsdt, flsetalpha, %
817 flsetdraw, flsmhs, flsmsign, flspnull, fltherm_cond1, fltrg, flversion, %
818 flversions, flverver, flwave, flwave1d, flwave2d, flwave3d, %
819 flwriteghist, formstr, gdsread, gencyl2, gencyl3, genextrude, %
820 genextrudeaux, geom, geom0, geom0get, geom1, geom1get, geom2, geom2get, %
821 geom3, geom3get, geom3j2m, geom3m2j, geomaddlblmargin, geomanalyze, %
822 geomarrayr, geomassign, geomcoerce, geomcomp, geomconnect, geomcopy, %
823 geomcsg, geomdel, geomedit, geomexport, geomfile, geomget, %
824 geomgetlabels, geomgetwrkpln, geomimport, geominfo, geominfoaux, %
825 geomlblplot, geomload, geomnumparse, geomobject, geomparse, geomplot, %
826 geomplot1, geomplot2, geomplot3, geomposition, geomproputil, %
827 geomreconstruct, geomreobj, geomserver, geomspline, geomsurf, %
828 geomupdate, get, getfemgeom, getisocurve, getjptr, getmesh, getsdim, %
829 getvmatrixexch, handlesolnumstr, helix1, helix2, helix3, hexahedron2, %
830 hexahedron3, histfrommat, idst, igesread, importplotdata, isempty, %
831 isfield, isfunc, isscript, javaclass, jproputil, jptr2geom, jptrgeom1, %
832 jptrgeom1_fl23, jptrgeom2, jptrgeom2_fl23, jptrgeom3, jptrgeom3_fl23, %
833 keiter, line1, line2, loadobj, loft, matlabinterpdata, mesh2geom, %
834 meshassign, meshcaseadd, meshcasedel, meshcaseutil, meshcheck, %
835 meshembed, meshenrich, meshenrich1, meshenrich2, meshenrich3, %
836 meshexport, meshextend, meshextrude, meshget, meshimport, meshinit, %
837 meshintegrate, meshmap, meshoptim, meshparse, meshplot, meshplot1, %
838 meshplot2, meshplot3, meshplotproputil, meshpoi, meshproputil, %
839 meshptplot, meshqual, meshrefine, meshrevolve, meshsmooth, %
840 meshsmooth2, meshsweep, meshvolume, minus, mirror, mkreflparams, %
841 mmsolve, modetype, move, moveglobalfields, mphproputil, mtimes, %
842 multiphysics, mypostinterp, notscript, onlyelsconstr, outassign, %
843 paramgeom, pde2draw, pde2equ, pde2fem, pde2geom, pdeblxpd, plus, point1, %
844 point2, point3, poisson, poly1, poly2, postanim, postapplysettings, %
845 postarrow, postarrowbnd, postcolorbar, postcont, postcontdomind, %
846 postcoord, postcopyprop, postcrossplot, postdistrprops, posteval, %
847 postflow, postfnd, postgeomplot, postgetfem, postgetstylecolor, %
848 postglobaleval, postglobalplot, postgp, postinit, postint, postinterp, %
849 postiso, postlin, postmakecontcol, postmax, postmaxmin, postmin, %
850 postmkcontbar, postmknormexpr, postmovie, postnewplot, %
851 postoldmaxminprops, postpd2pm, postplot, postplotconstants, %
852 postpm2pd, postprinc, postprincbnd, postprocgui, postproputil, %
853 postslice, postsurf, posttet, posttitle, print2file, pyramid2, %
854 pyramid3, rect1, rect2, restorefields, revolve, rmfield, rotate, %
855 rotmatrix, scale, serialize, set, setmesh, sh2str, sharg_2_5, shbub, %
856 shdisc, shdiv, shherm, shlag, shvec, simplecoerce, simreobj, slblocks, %
857 solassign, solid0, solid1, solid2, solid3, solidprim3, solproputil, %
858 solsize, solveraddcases, sphere2, sphere3, spiceimport, splineaux, %

```

```

859     split, splittoprim, square1, square2, stlread, submode, submodes, %
860     subsasgn, subsref, tangent, taucs, tetrahedron2, tetrahedron3, %
861     tobsplines, torus2, torus3, transform, update, updateassoc, %
862     updateassocinfo, updatefem, updateguistruct, updateobj, vmlread, %
863     xmeshinfo, xmeshinit}, %
864     sensitive=false, %
865     morecomment=[l]\%, %
866     morestring=[m]'%
867 }[keywords, comments, strings]%
868 </lang3>

```

## 2.18 bash, csh, and sh

csh is from Kai Below, but he pointed out that some keywords are probably missing.

```

869 <*lang1>
870 %%
871 %% csh definition (c) 1998 Kai Below
872 %%
873 \lst@definlanguage{csh}
874 {morekeywords={alias,awk,cat,echo,else,end,endif,endsw,exec,exit,%
875     foreach,glob,goto,history,if,logout,nice,nohup,onintr,repeat,sed,%
876     set,setenv,shift,source,switch,then,time,while,umask,unalias,%
877     unset,wait,while,@,env,argv,child,home,ignoreeof,noclobber,%
878     noglob,nomatch,path,prompt,shell,status,verbose,print,printf,%
879     sqrt,BEGIN,END},%
880     morecomment=[l]\#,%
881     morestring=[d]"%
882 }[keywords, comments, strings]%

```

Thanks to Riccardo Murri for the following two definitions.

```

883 %%
884 %% bash, sh definition (c) 2003 Riccardo Murri <riccardo.murri@gmx.it>
885 %%
886 \lst@definlanguage{bash}[] {sh}%
887 {morekeywords={alias,bg,bind,builtin,command,compgen,complete,%
888     declare,disown,enable,fc,fg,history,jobs,et,local,logout,printf,%
889     pushd,popd,select,set,suspend,shopt,source,times,type,typeset,%
890     ulimit,unalias,wait},%
891 }%
892 \lst@definlanguage{sh}%
893 {morekeywords={awk,break,case,cat,cd,continue,do,done,echo,else,%
894     env,eval,exec,expr,exit,export,false,fi,for,function,getopts,%
895     hash,history,if,kill,nice,nohup,ps,pwd,read,readonly,return,%
896     sed,shift,test,then,times,trap,true,umask,unset,until,while},%
897     morecomment=[l]\#,%
898     morestring=[d]"%
899 }[keywords, comments, strings]%
900 </lang1>

```



## 2.19 Delphi

I took the data from Delphi 1.0 (?) online help. Christian Gudrian provided the ‘double slash’ comment.

```
901 (*lang2)
902 \lst@definlanguage{Delphi}%
903 {morekeywords={and,as,asm,array,begin,case,class,const,constructor,%
904     destructor,div,do,downto,else,end,except,exports,file,finally,%
905     for,function,goto,if,implementation,in,inherited,inline,%
906     initialization,interface,is,label,library,mod,nil,not,object,of,%
907     or,packed,procedure,program,property,raise,record,repeat,set,%
908     shl,shr,string,then,to,try,type,unit,until,uses,var,while,with,%
909     xor,%
910     absolute,abstract,assembler,at,cdecl,default,dynamic,export,%
911     external,far,forward,index,name,near,nodefault,on,override,%
912     private,protected,public,published,read,resident,storedir,%
913     virtual,write},%
914 moreendkeywords={Abs,AddExitProc,Addr,AllocMem,AnsiCompareStr,%
915     AnsiCompareText,AnsiLowerCase,AnsiUpperCase,Append,AppendStr,%
916     ArcTan,AssignCrt,Assigned,AssignFile,BlockRead,BlockWrite,Break,%
917     ChangeFileExt,ChDir,Chr,CloseFile,ClrEol,ClrScr,Concat,Continue,%
918     Copy,Cos,CSeg,CursorTo,Date,DateTimeToFileDate,DateTimeToStr,%
919     DateTimeToString,DateToStr,DayOfWeek,Dec,DecodeDate,DecodeTime,%
920     Delete,DeleteFile,DiskFree,DiskSize,Dispose,DisposeStr,%
921     DoneWinCrt,DSeg,EncodeDate,EncodeTime,Eof,Eoln,Erase,Exclude,%
922     Exit,Exp,ExpandFileName,ExtractFileExt,ExtractFileName,%
923     ExtractFilePath,FileAge,FileClose,FileDateToDateTime,FileExists,%
924     FileGetAttr,FileGetDate,FileOpen,FilePos,FileRead,FileSearch,%
925     FileSeek,FileSetAttr,FileSetDate,FileSize,FillChar,FindClose,%
926     FindFirst,FindNext,FloatToDecimal,FloatToStrF,FloatToStr,%
927     FloatToText,FloatToTextFmt,Flush,FmtLoadStr,FmtStr,Format,%
928     FormatBuf,FormatDateTime,FormatFloat,Frac,Free,FreeMem,GetDir,%
929     GetMem,GotoXY,Halt,Hi,High,Inc,Include,InitWinCrt,Insert,Int,%
930     IntToHex,IntToStr,IOResult,IsValidIdent,KeyPressed,Length,Ln,Lo,%
931     LoadStr,Low,LowerCase,MaxAvail,MemAvail,MkDir,Move,New,NewStr,%
932     Now,Odd,Ofs,Ord,ParamCount,ParamStr,Pi,Pos,Pred,Ptr,Random,%
933     Randomize,Read,ReadBuf,ReadKey,ReadLn,ReAllocMem,Rename,%
934     RenameFile,Reset,Rewrite,RmDir,Round,RunError,ScrollTo,Seek,%
935     SeekEof,SeekEoln,Seg,SetTextBuf,Sin,SizeOf,SPtr,Sqr,Sqrt,SSeg,%
936     Str,StrCat,StrComp,StrCopy,StrDispose,StrECopy,StrEnd,StrFmt,%
937     StrLCat,StrLComp,StrLComp,StrLCopy,StrLen,StrLFmt,StrLComp,%
938     StrLower,StrMove,StrNew,StrPas,StrPCopy,StrPos,StrScan,StrRScan,%
939     StrToDate,StrToDateTime,StrToFloat,StrToInt,StrToIntDef,%
940     StrToTime,StrUpper,Succ,Swap,TextToFloat,Time,TimeToStr,%
941     TrackCursor,Trunc,Truncate,TypeOf,UpCase,UpperCase,Val,WhereX,%
942     WhereY,Write,WriteBuf,WriteChar,Writeln},%
943 sensitive=f,%
944 morecomment=[s]{(*){(*)}},%
945 morecomment=[s]{\{\}\{\}\},%
```

```

946   morecomment=[1]{//},% 2001 Christian Gudrian
947   morestring=[d]'%
948   }[keywords,comments,strings]%
949 </lang2>

```

## 2.20 Eiffel

Data is from

- BERTRAND MEYER: **Eiffel: the language**; Prentice Hall International (UK) Ltd, 1992; ISBN 0-13-247925-7.

```

950 <*lang2>
951 \lst@definlanguage{Eiffel}%
952 {morekeywords={alias,all,and,as,BIT,BOOLEAN,CHARACTER,check,class,%
953   creation,Current,debug,deferred,do,DOUBLE,else,elseif,end,%
954   ensure,expanded,export,external,false,feature,from,frozen,if,%
955   implies,indexing,infix,inherit,inspect,INTEGER,invariant,is,%
956   like,local,loop,NONE,not,obsolete,old,once,or,POINTER,prefix,%
957   REAL,redefine,rename,require,rescue,Result,retry,select,%
958   separate,STRING,strip,then,true,undefine,unique,until,variant,%
959   when,xor},%
960   sensitive,%
961   morecomment=[1]--,%
962   morestring=[d]",%
963   }[keywords,comments,strings]%

```

The key=value stringtest=false has been removed after a bug report from Xavier Crégut.

```

964 </lang2>

```

## 2.21 Elan

The data come from

- LEO H. KLINGEN, JOCHEN LIEDTKE: **Programmieren mit ELAN**; B.G. Teubner, Stuttgart 1983; ISBN 3-519-02507-8.

```

965 <*lang3>
966 \lst@definlanguage{Elan}%
967 {morekeywords={ABS,AND,BOOL,CAND,CASE,CAT,COLUMNS,CONCR,CONJ,CONST,%
968   COR,DECR,DEFINES,DET,DIV,DOWNT,ELIF,ELSE,END,ENDIF,ENDOP,%
969   ENDPACKET,ENDPROC,ENDREP,ENDSELECT,FALSE,FI,FILE,FOR,FROM,IF,%
970   INCR,INT,INV,LEAVE,LENGTH,LET,MOD,NOT,OF,OP,OR,OTHERWISE,PACKET,%
971   PROC,REAL,REP,REPEAT,ROW,ROWS,SELECT,SIGN,STRUCT,SUB,TEXT,THEN,%
972   TRANSP,TRUE,TYPE,UNTIL,UPTO,VAR,WHILE,WITH,XOR,%
973   maxint,sign,abs,min,max,random,initializerandom,subtext,code,%
974   replace,text,laenge,pos,compress,change,maxreal,smallreal,floor,%
975   pi,e,ln,log2,log10,sqrt,exp,tan,tand,sin,sind,cos,cosd,arctan,%

```

```

976     arctand,int,real,lastconversionok,put,putline,line,page,get,%
977     getline,input,output,sequentialfile,maxlinelaenge,reset,eof,%
978     close,complexzero,complexone,complexi,complex,realpart,imagpart,%
979     dphi,phi,vector,norm,replace,matrix,idn,row,column,sub,%
980     replacerow,replacecolumn,replaceelement,transp,errorstop,stop},%
981     sensitive,%
982     morestring=[d]"%
983 }[keywords,strings]%
984 </lang3>

```

## 2.22 Erlang

Thanks to Daniel Gazard.

```

985 <*lang3>

986 %%
987 %% Erlang definition (c) 2003 Daniel Gazard
988 %%
989 \lst@definlanguage{erlang}%
990 {morekeywords={abs,after,and,apply,atom,atom_to_list,band,binary,%
991     binary_to_list,binary_to_term,bor,bsl,bsr,bxor,case,catch,%
992     date,div,element,erase,end,exit,export,float,float_to_list,%
993     get,halt,hash,hd,if,info,import,integer,integer_to_list,%
994     length,link,list,list_to_atom,list_to_float,list_to_integer,%
995     list_to_tuple,module,node,nodes,now,of,or,pid,port,ports,%
996     processes,put,receive,reference,register,registered,rem,%
997     round,self,setelement,size,spawn,throw,time,tl,trace,trunc,%
998     tuple,tuple_to_list,unlink,unregister,whereis,error,false,%
999     infinity,nil,ok,true,undefined,when},%
1000 otherkeywords={->,!,[,],\{,\}},%
1001 morecomment=[l]\%,%
1002 morestring=[b]"%,%
1003 morestring=[b]'%
1004 }[keywords,comments,strings]%
1005 </lang3>

```

## 2.23 Euphoria

Detlef Reimers sent me the language definition.

```

1006 <*lang2>

1007 %%
1008 %% Euphoria definition (c) 1998 Detlef Reimers
1009 %%
1010 \lst@definlanguage{Euphoria}%
1011 % for Euphoria 2.0, Rapid Deployment Software, Kanada
1012 {morekeywords={abort,and,and_bits,append,arctan,atom,by,call,%
1013     call_proc,call_func,c_proc,c_func,clear_screen,close,%
1014     command_line,compare,constant,cos,do,date,else,elsif,end,exit,%

```

```

1015     find,floor,for,function,getc,getenv,get_key,gets,global,%
1016     get_pixel,if,include,integer,length,log,match,machine_func,%
1017     machine_proc,mem_copy,mem_set,not,not_bits,or,object,open,%
1018     or_bits,procedure,puts,position,prepend,print,printf,power,peek,%
1019     poke,pixel,poke4,peek4s,peek4u,return,rand,repeat,remainder,%
1020     routine_id,sequence,sqrt,sin,system,sprintf,then,type,to,time,%
1021     trace,tan,while,with,without,xor,xor_bits},%
1022     sensitive,%
1023     morecomment=[l]--, %
1024     morestring=[d]', %
1025     morestring=[d]"%
1026 }[keywords,comments,strings]%
1027 </lang2>

```

## 2.24 Fortran

Took things from

- KARL HANS MÜLLER: **Fortran 77: Programmieranleitung**; 3., völlig neu bearb. Aufl. – Mannheim; Wien; Zürich: Bibliographisches Institut, 1984; ISBN 3-411-05804-8
- THOMAS MICHEL: **Fortran 90: Lehr- und Handbuch**; Mannheim; Leipzig; Wien; Zürich: BI-Wiss.-Verlag, 1994; ISBN 3-411-16861-7.

Another source for Fortran keywords is <http://fortranwiki.org/fortran/show/Keywords> where the keywords for Fortran 2003 and 2008 are taken from.

```

1028 <*lang1>

```

The current version of Fortran (Fortran 2008) is defined by ISO/IEC 1539-1:2010. It contains nine new keywords, four of them consisting of two words: ERROR STOP, SYNC ALL, SYNC IMAGES, SYNC MEMORY, so the list of keywords contains the single parts ALL, ERROR, IMAGES, MEMORY, and SYNC.

```

1029 \lst@definlanguage[08]{Fortran}[03]{Fortran}{%
1030     morekeywords={ALL, BLOCK, CODIMENSION, CONCURRENT, CONTIGUOUS, CRITICAL,%
1031         ERROR, LOCK, SUBMODULE, SYNC, UNLOCK},%

```

New procedures in Fortran 2008:

```

1032     morekeywords=[3]{ACOSH, ASINH, ATANH, ATOMIC_DEFINE, ATOMIC_REF, BESSEL_J0,%
1033         BESSEL_J1, BESSEL_JN, BESSEL_Y0, BESSEL_Y1, BESSEL_YN, BGE, BGT, BLE, BLT,%
1034         C_SIZEOF, COMPILER_OPTIONS, COMPILER_VERSION, DSHIFTL, DSHIFTR, ERF, ERFC,%
1035         ERFC_SCALED, EXECUTE_COMMAND_LINE, GAMMA, HYPOT, IALL, IANY, IMAGE_INDEX,%
1036         IPARITY, LCOBOUND, LEADZ, LOG_GAMMA, MASKL, MASKR, MERGE_BITS, NORM2,%
1037         NUM_IMAGES, PARITY, POPCNT, POPPAR, SHIFTA, SHIFTL, SHIFTR, STORAGE_SIZE,%
1038         THIS_IMAGE, TRAILZ, UCOBOUND}%
1039 }%

```

Fortran 2003 introduces the following keywords:

```

1040 \lst@definlanguage[03]{Fortran}[95]{Fortran}{%
1041     morekeywords={ABSTRACT, ASSOCIATE, ASYNCHRONOUS, BIND, CLASS, DEFERRED,%

```

```

1042     ENUM, ENUMERATOR, EXTENDS, FINAL, FLUSH, GENERIC, IMPORT,%
1043     NON_OVERRIDABLE, NOPASS, PASS, PROTECTED, VALUE, VOLATILE, WAIT},%

```

These are new options/specifiers:

```

1044     morekeywords=[2]{DECIMAL,ENCODING,IOMSG,ROUND},% corrected NML from NMT

```

And also some new procedures:

```

1045     morekeywords=[3]{C_ASSOCIATED,C_F_POINTER,C_F_PROCPONTER,C_FUNLOC,%
1046     C_LOC,COMMAND_ARGUMENT_COUNT,EXTENDS_TYPE_OF,GET_COMMAND,GET_COMMAND_ARGUMENT,%
1047     GET_ENVIRONMENT_VARIABLE,IS_IOSTAT_END,MOVE_ALLOC,NEW_LINE,SAME_TYPE_AS,%
1048     SELECTED_CHAR_KIND}%
1049 }%

```

Denis Girou proposed to have Fortran 95 and Fortran 90 to be equivalent.

```

1050 \lst@definlanguage[90]{Fortran}[95]{Fortran}{-}

```

There is no `morecomment=[f]` in Fortran 90 since otherwise `CONTAINS` could start a comment. This problem was reported by Magne Rudshaug. Moreover the keyword `INCLUDE` is due to him.

```

1051 \lst@definlanguage[95]{Fortran}[77]{Fortran}%
1052 {deletekeywords=SAVE,%
1053     morekeywords={ALLOCATABLE,ALLOCATE,ASSIGNMENT,CASE,%
1054     CONTAINS,CYCLE,DEALLOCATE,DEFAULT,EXIT,INCLUDE,IN,NONE,%
1055     OUT,INTENT,INTERFACE,MODULE,NAMELIST,%
1056     NULLIFY,ONLY,OPERATOR,OPTIONAL,OUT,POINTER,PRIVATE,%
1057     PUBLIC,RECURSIVE,RESULT,SELECT,SEQUENCE,%
1058     TARGET,USE,WHERE,WHILE,BLOCKDATA,DOUBLEPRECISION,%
1059     ENDBLOCKDATA,ENDFILE,ENDFUNCTION,ENDINTERFACE,%
1060     ENDMODULE,ENDPROGRAM,ENDSELECT,ENDSUBROUTINE,ENDTYPE,ENDWHERE,%
1061     INOUT,SELECTCASE,%

```

Theses keys were missing from the 1.4 version of listings:

```

1062     ELEMENTAL, ELSEWHERE, FORALL, PURE},%

```

The list of option keywords/specifiers new in Fortran 90 and 95:

```

1063     morekeywords=[2]{ACTION,ADVANCE,DELIM,IOLength,LEN,NAME,%
1064     NML,PAD,POSITION,READWRITE,SIZE,STAT},% corrected NML from NMT

```

and the list of intrinsic procedures new in Fortran 90 and 95:

```

1065     morekeywords=[3]{ADJUSTL,ADJUSTR,ALL,ALLOCATED,ANY,ASSOCIATED,BIT_SIZE,%
1066     BTEST,CEILING,COUNT,CPU_TIME,CSHIFT,DATE_AND_TIME,DIGITS,DOT_PRODUCT,%
1067     EOSHIFT,EPSILON,EXPONENT,FLOOR,FRACTION,HUGE,IACHAR,IAND,IBCLR,
1068     IBITS,IBSET,ICHAR,IEOR,IOR,ISHFT,ISHFTC,KIND,LBOUND,LEN_TRIM,% left out LOGICAL
1069     MATMUL,MAXEXPONENT,MAXLOC,MAXVAL,MERGE,MINEXPONENT,MINLOC,MINVAL,%
1070     MODULO,MVBITS,NEAREST,NOT,NULL,PACK,PRECISION,PRESENT,PRODUCT,%
1071     RADIX,RANDOM_NUMBER,RANDOM_SEED,RANGE,RANK,REPEAT,RESHAPE,RRSPACING,%
1072     SCALE,SCAN,SELECTED_INT_KIND,SELECTED_REAL_KIND,SET_EXPONENT,SHAPE,%
1073     SINH,SIZE,SPACING,SPREAD,SUM,SYSTEM_CLOCK,TINY,TRANSFER,TRANSPOSE,%
1074     TRIM,UBOUND,UNPACK,VERIFY},%
1075     deletacomment=[f],% no fixed comment line: 1998 Magne Rudshaug
1076     morecomment=[1]!%
1077 }%

```

As proposed by Jörn Wilms keywords are *not* case sensitive. Also, note that Fortran 77 (and fixed-format source in later versions) allows space in keywords; thus, this list contains some of the more common variants (e.g., ‘GO TO’ and ‘GOTO’).

```
1078 \lst@definelanguage[77]{Fortran}%
```

Jobst Hoffmann divided the list of keywords into two lists. The first list contains the statement keywords, the second list contains the option keywords/specifiers and values. This makes the different meanings of the keywords distinguishable.

```
1079 {morekeywords={ASSIGN, BACKSPACE, CALL, CHARACTER, %
1080     CLOSE, COMMON, COMPLEX, CONTINUE, DATA, DIMENSION, DO, DOUBLE, %
1081     ELSE, ELSEIF, END, ENDIF, ENDDO, ENTRY, EQUIVALENCE, EXTERNAL, %
1082     FILE, FORMAT, FUNCTION, GO, TO, GOTO, IF, IMPLICIT, %
1083     INQUIRE, INTEGER, INTRINSIC, LOGICAL, %
1084     OPEN, PARAMETER, PAUSE, PRECISION, PRINT, PROGRAM, READ, REAL, %
1085     RETURN, REWIND, STOP, SUBROUTINE, THEN, %
1086     WRITE, SAVE}, %
1087 morekeywords=[2]{ACCESS, BLANK, BLOCK, DIRECT, EOF, ERR, EXIST, %
1088     FMT, FORM, FORMATTED, IOSTAT, NAMED, NEXTREC, NUMBER, OPENED, %
1089     REC, RECL, SEQUENTIAL, STATUS, TYPE, UNFORMATTED, UNIT}, %
```

And here is another list: the list of intrinsic procedures (remember: all functions belong to the Fortran language specification!)

```
1090 morekeywords=[3]{INT, DBLE, CMPLX, ICHAR, CHAR, AINT, ANINT, % left out real
1091     NINT, ABS, MOD, SIGN, DIM, DPROD, MAX, MIN, AIMAG, CONJG, SQRT, EXP, LOG, %
1092     LOG10, SIN, COS, TAN, ASIN, ACOS, ATAN, ATAN2, SINH, COSH, TANH, LGE, LLE, LLT, %
1093     LEN, INDEX}, %
```

And here is the last list: fortran operators:

```
1094 morekeywords=[4]{AND, EQ, EQV, FALSE, GE, GT, OR, LE, LT, NE, NEQV, NOT, TRUE}, %
1095 sensitive=f, %% not Fortran-77 standard, but allowed in Fortran-95 %%
1096 morecomment=[f]*, %
1097 morecomment=[f]C, %
1098 morecomment=[f]c, %
1099 morestring=[d]", %% not Fortran-77 standard, but allowed in Fortran-95 %%
1100 morestring=[d]' %
1101 }[keywords, comments, strings]%
1102 </lang1>
```

Jobst Hoffmann supplied a definition of a style for printing Fortran code:

```
1103 <*fortran-prf>
1104 \usepackage[rgb, x11names]{xcolor}
1105
1106 % common settings
1107 \lstset{%
1108     frame=tlb, % the frame is open on the right side
1109     resetmargins=false, %
1110     rulesepcolor=\color{black}, %
1111     numbers=left, % % left
1112     numberstyle=\tiny, %
```

```

1113 numbersep=5pt,%
1114 firstnumber=1,%
1115 stepnumber=5,%
1116 columns=fixed,%           % to prevent inserting spaces
1117 fontadjust=true,%
1118 keepspaces=true,%
1119 basewidth=0.5em,%
1120 captionpos=t,%
1121 abovecaptionskip=\smallskipamount,% same amount as default
1122 belowcaptionskip=\smallskipamount,% in caption package
1123 }
1124 % settings for colored printing
1125 \lstdefinestyle{fortran}{%
1126   backgroundcolor=\color{yellow!10},%
1127   basicstyle=\small\ttfamily,%
1128   identifierstyle=\color{black},%
1129   keywordstyle=\color{blue},%
1130   keywordstyle={[2]\color{cyan}},%
1131   keywordstyle={[3]\color{olive}},%
1132   stringstyle=\color{teal},%
1133   commentstyle=\itshape\color{orange},%
1134 }%
1135 % settings for back and white printing
1136 \lstdefinestyle{fortranbw}{%
1137   backgroundcolor={},%
1138   basicstyle=\small\ttfamily,%
1139   identifierstyle={},%
1140   keywordstyle=\bfseries,%
1141   stringstyle=\itshape,%
1142   commentstyle=\slshape,%
1143   rulesepcolor=\color{black},%
1144 }%

```

This code is provided in the file `listings-fortran.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```

1145 </fortran-prf>

```

## 2.25 GAP—Groups, Algorithms, Programming

GAP is a System for Computational Discrete Algebra, a description can be found at <http://www.gap-system.org/>. Heiko Oberdiek provided a language definition without knowing this language, so any error should be announced to the current maintainer of the listings package.

```

1146 <*lang2>
1147 %%
1148 %% GAP definition
1149 %% (c) 2013 Heiko Oberdiek
1150 %%
1151 \lst@definlanguage{GAP}{%

```

```

1152 morekeywords={%
1153     Assert, Info, IsBound, QUIT,%
1154     TryNextMethod, Unbind, and, break,%
1155     continue, do, elif,%
1156     else, end, false, fi, for,%
1157     function, if, in, local,%
1158     mod, not, od, or,%
1159     quit, rec, repeat, return,%
1160     then, true, until, while%
1161 },%
1162 sensitive,%
1163 morecomment=[l]\#,%
1164 morestring=[b]" ,%
1165 morestring=[b]' ,%
1166 }[keywords, comments, strings]
1167 </lang2>

```

## 2.26 Guarded Command Language (GCL)

As you can read below, Mark van Eijk provided this language definition.

```

1168 <*lang2>
1169 %%
1170 %% Guarded Command Language (GCL) definition
1171 %% (c) 2002 Mark van Eijk
1172 %%
1173 \lstdefinlanguage{GCL}%
1174 {morekeywords={const, con, var, array, of, skip, if, fi, do, od, div, mod},%
1175   literate={| [|]{\ensuremath{\hspace{-0.1em}}}}2%
1176             {| |}{\ensuremath{\hspace{-0.1em}}}}2%
1177   {[ ]}{\ensuremath{[\hspace{-0.1em}]}}2%
1178   {->}{\ensuremath{\rightarrow}}2%
1179   {==}{\ensuremath{\equiv}}2%
1180   {>=}{\ensuremath{\geq}}2%
1181   {<=}{\ensuremath{\leq}}2%
1182   {/\!/}{\ensuremath{\land}}2%
1183   {\!/}{\ensuremath{\lor}}2%
1184   {!}{\ensuremath{\lnot}}1%
1185   {!=}{\ensuremath{\neq}}2%
1186   {max}{\ensuremath{\uparrow}}1%
1187   {min}{\ensuremath{\downarrow}}1,%
1188   sensitive=f,%
1189   morecomment=[s]{\{\}\},%
1190   morestring=[d] '%
1191 }[keywords, comments, strings]%
1192 </lang2>

```



## 2.27 Gnuplot

Thanks to Dr. Christoph Giess for providing this definition.

```
1193 (*lang2)
1194 %%
1195 %% gnuplot definition (c) Christoph Giess
1196 %%
1197 \lst@definlanguage{Gnuplot}%
1198 {keywords={abs,acos,acosh,arg,asin,asinh,atan,atan2,atanh,besj0,%
1199 besj1,besy0,besy1,ceil,cos,cosh,erf,erfc,exp,floor,gamma,ibeta,%
1200 inverf,igamma,imag,invnorm,int,lgamma,log,log10,norm,rand,real,%
1201 sgn,sin,sinh,sqrt,tan,tanh,column,tm_hour,tm_mday,tm_min,tm_mon,%
1202 tm_sec,tm_wday,tm_yday,tm_year,valid,cd,call,clear,exit,fit,%
1203 help,if,load,pause,plot,print,pwd,quit,replot,reread,reset,save,%
1204 set,show,shell,spplot,test,update,angles,arrow,autoscale,border,%
1205 boxwidth,clabel,clip,cntrparam,contour,data,dgrid3d,dummy,%
1206 format,function,functions,grid,hidden3d,isosamples,key,keytitle,%
1207 label,logscale,mapping,offsets,output,parametric,pointsiz,%
1208 polar,rrange,samples,size,style,surface,terminal,tics,time,%
1209 timefmt,title,trange,urange,variables,view,vrange,xdata,xlabel,%
1210 xmargin,xrange,xtics,mxtics,mytics,xdtics,xmtics,xzeroaxis,%
1211 ydata,ylabel,yrange,ytics,ydtics,ymtics,yzeroaxis,zdata,zero,%
1212 zeroaxis,zlabel,zrange,ztics,zdtics,zmtics,timefmt,using,title,%
1213 with,index,every,thru,smooth},%
1214 sensitive,%
1215 comment=[l]\#,%
1216 morestring=[b]" ,%
1217 morestring=[b]' ,%
1218 }[keywords,comments,strings]%
1219 /lang2)
```

## 2.28 Hansl/Gretl

Thanks to Ignacio Díaz-Emparanza for providing the definition of hansl. Hansl is the gretl scripting language (see <http://gretl.sourceforge.net>).

```
1220 (*lang2)
1221 %%
1222 %% http://gretl.sourceforge.net/gretl-help/cmdref.html
1223 %% (c) 2013 Ignacio D\'iaz-Emparanza
1224 %%
1225 \lst@definlanguage{hansl}{%
1226 % $-variables are internal functions in hansl
1227 keywordsprefix ={\$},
1228 morekeywords={ % hansl commands:
1229 add,adf,anova,append,ar,ar1,%
1230 arbond,arch,arima,biprobit,boxplot,break,%
1231 catch,chow,clear,coeffsum,coint,coint2,%
1232 corr,corrgm,cusum,data,dataset,debug,%
1233 delete,diff,difftest,discrete,dpanel,dummify,%
```

```

1234     duration,elif,else,end,endif,endloop,%
1235     eqnprint,equation,estimate,fcast,foreign,fractint,%
1236     freq,function,garch,genr,gmm,gnuplot,%
1237     graphpg,hausman,heckit,help,hsk,hurst,%
1238     if,include,info,intreg,join,kalman,%
1239     kpss,labels,lad,lags,ldiff,leverage,%
1240     levinlin,logistic,logit,logs,loop,mahal,%
1241     makepkg,markers,meantest,mle,modeltab,modprint,%
1242     modtest,mpols,negbin,nls,normtest,nulldata,%
1243     ols,omit,open,orthdev,outfile,panel,%
1244     pca,pergm,poisson,print,printf,probit,%
1245     pvalue,qlrtest,qqplot,quantreg,quit,rename,%
1246     reset,restrict,rmpplot,run,runs,scatters,%
1247     sdiff,set,setinfo,setobs,setmiss,shell,%
1248     smpl,spearman,sprintf,square,sscanf,store,%
1249     summary,system,tabprint,textplot,tobit,tsls,%
1250     var,varlist,vartest,vecm,vif,wls,%
1251     xcorrgm,xtab,scalar,series,matrix,string},%
1252     morekeywords=[2]{ % Functions
1253         abs,acos,acosh,aggregate,argname,%
1254         asin,asinh,atan,atanh,atof,%
1255         bessell,BFGSmax,bkfilt,boxcox,bwfilt,%
1256         cdemean,cdf,cdiv,ceil,cholesky,%
1257         chowlin,cmult,cnorm,colname,colnames,%
1258         cols,corr,corrgm,cos,cosh,%
1259         cov,critical,cum,deseas,det,%
1260         diag,diagcat,diff,digamma,dnorm,%
1261         dsort,dummify,eigengen,eigensym,eigsolve,%
1262         epochday,errmsg,exp,fcstats,fdjac,%
1263         fft,ffti,filter,firstobs,fixname,%
1264         floor,fracdiff,gammafun,getenv,getline,%
1265         ghk,gini,ginv,halton,hdprod,%
1266         hpfilt,I,imaxc,imaxr,imhof,%
1267         iminc,iminr,inbundle,infnorm,inlist,%
1268         int,inv,invcdf,invmls,invpd,%
1269         irf,irr,isconst,isnan,isnull,%
1270         isodate,iwishart,kdensity,kfilter,ksimul,%
1271         ksmooth,kurtosis,lags,lastobs,ldet,%
1272         ldiffl,lincomb,ljungbox,lngamma,log,%
1273         log10,log2,loess,logistic,lower,%
1274         lrvar,max,maxc,maxr,mcorr,%
1275         mcov,mcovg,mean,meanc,meanr,%
1276         median,mexp,min,minc,minr,%
1277         missing,misszero,mlag,mnormal,mols,%
1278         monthlen,movavg,mpols,mrandgen,mread,%
1279         mreverse,mrls,mshape,msortby,muniform,%
1280         mwrite,mxtab,nadarwat,nelem,ngetenv,%
1281         nobs,normal,npv,NRmax,nullspace,%
1282         obs,obslabel,obsnum,ok,onenorm,%
1283         ones,orthdev,pdf,pergm,pmax,%

```

```

1284 pmean,pmin,pnobs,polroots,polyfit,%
1285 princomp,prodc,prodr,psd,psdroot,%
1286 pshrink,psum,pvalue,pxsum,qform,%
1287 qnorm,qrdecomp,quadtable,quantile,randgen,%
1288 randgen1,randint,rang,ranging,rcond,%
1289 readfile,regsub,remove,replace,resample,%
1290 round,rownames,rows,sd,sdc,%
1291 sdifff,selifc,selifr,seq,setnote,%
1292 simann,sin,sinh,skewness,sort,%
1293 sortby,sqrt,sscanf,sst,strlen,%
1294 strncmp,strsplit,strstr,strip,sub,%
1295 sum,sumall,sumc,sumr,svd,%
1296 tan,tanh,toepsolv,tolower,toupper,%
1297 tr,transp,trimr,typestr,uniform,%
1298 uniq,unvech,upper,urcpval,values,%
1299 var,varname,varnum,varsimul,vec,%
1300 vech,weekday,wmean,wsd,wvar,%
1301 xmax,xmin,xpx,zeromiss,zeros,%
1302 },%
1303 sensitive=t,%
1304 morecomment=[l]{\#},%
1305 morecomment=[s]{/*}{*/},%
1306 morestring=[b]{"}%
1307 \lstalias{gretl}{hansl}
1308 </lang2>

```

## 2.29 Haskell

Thanks to Peter Bartke for providing the new definition.

```

1309 <*lang2>
1310 %%
1311 %% Haskell98 as implemented in Hugs98. See http://www.haskell.org
1312 %% All keywords from Prelude and Standard Libraries
1313 %% (c) 1999 Peter Bartke
1314 %%
1315 \lst@definlanguage{Haskell}%
1316 {otherkeywords={=>},%
1317   morekeywords={abstype,if,then,else,case,class,data,default,deriving,%
1318     hiding,if,in,infix,infixl,infixr,import,instance,let,module,%
1319     newtype,of,qualified,type,where,do,AbsoluteSeek,AppendMode,%
1320     Array,BlockBuffering,Bool,BufferMode,Char,Complex,Double,Either,%
1321     FilePath,Float,Int,Integer,IO,IOError,Ix,LineBuffering,Maybe,%
1322     Ordering,NoBuffering,ReadMode,ReadWriteMode,ReadS,RelativeSeek,%
1323     SeekFromEnd,SeekMode,ShowS,StdGen,String,Void,Bounded,Enum,Eq,%
1324     Eval,ExitCode,exitFailure,exitSuccess,Floating,Fractional,%
1325     Functor,Handle,HandlePosn,IOMode,Integral,List,Monad,MonadPlus,%
1326     MonadZero,Num,Numeric,Ord,Random,RandomGen,Ratio,Rational,Read,%
1327     Real,RealFloat,RealFrac,Show,System,Prelude,EQ,False,GT,Just,%

```

```

1328 Left,LT,Nothing,Right,WriteMode,True,abs,accum,accumArray,%
1329 accumulate,acos,acosh,all,and,any,ap,appendFile,applyM,%
1330 approxRational,array,asTypeOf,asin,asinh,assocs,atan,atan2,atanh,%
1331 bounds,bracket,bracket_,break,catch,catMaybes,ceiling,chr,cis,%
1332 compare,concat,concatMap,conjugate,const,cos,cosh,curry,cycle,%
1333 decodeFloat,delete,deleteBy,deleteFirstBy,denominator,%
1334 digitToInt,div,divMod,drop,dropWhile,either,elem,elems,elemIndex,%
1335 elemIndices,encodeFloat,enumFrom,enumFromThen,enumFromThenTo,%
1336 enumFromTo,error,even,exitFailure,exitWith,exp,exponent,fail,%
1337 filter,filterM,find,findIndex,findIndices,flip,floatDigits,%
1338 floatRadix,floatRange,floatToDigits,floor,foldl,foldM,foldl1,%
1339 foldr,foldr1,fromDouble,fromEnum,fromInt,fromInteger,%
1340 fromIntegral,fromJust,fromMaybe,fromRat,fromRational,%
1341 fromRealFrac,fst,gcd,genericLength,genericTake,genericDrop,%
1342 genericSplitAt,genericIndex,genericReplicate,getArgs,getChar,%
1343 getContents,getEnv,getline,getProgName,getStdGen,getStdRandom,%
1344 group,groupBy,guard,hClose,hFileSize,hFlush,hGetBuffering,%
1345 hGetChar,hGetContents,hGetLine,hGetPosn,hIsClosed,hIsEOF,hIsOpen,%
1346 hIsReadable,hIsSeekable,hIsWritable,hLookAhead,hPutChar,hPutStr,%
1347 hPutStrLn,hPrint,hReady,hSeek,hSetBuffering,hSetPosn,head,%
1348 hugsIsEOF,hugsHIsEOF,hugsIsSearchErr,hugsIsNameErr,%
1349 hugsIsWriteErr,id,iOError,imagPart,index,indices,init,inits,%
1350 inRange,insert,insertBy,interact,intersect,intersectBy,%
1351 intersperse,intToDigit,iOGetErrorString,iOGetFileName,%
1352 iOGetHandle,isAlreadyExistsError,isAlreadyInUseError,isAlpha,%
1353 isAlphaNum,isAscii,isControl,isDenormalized,isDoesNotExistError,%
1354 isDigit,isEOF,isEOFError,isFullError,isHexDigit,isIEEE,%
1355 isIllegalOperation,isInfinite,isJust,isLower,isNaN,%
1356 isNegativeZero,isNothing,isOctDigit,isPermissionError,isPrefixOf,%
1357 isPrint,isSpace,isSuffixOf,isUpper,isUserError,iterate,ixmap,%
1358 join,last,lcm,length,lex,lexDigits,lexLitChar,liftM,liftM2,%
1359 liftM3,liftM4,liftM5,lines,listArray,listToMaybe,log,logBase,%
1360 lookup,magnitude,makePolar,map,mapAccumL,mapAccumR,mapAndUnzipM,%
1361 mapM,mapM_,mapMaybe,max,maxBound,maximum,maximumBy,maybe,%
1362 maybeToList,min,minBound,minimum,minimumBy,mkPolar,mkStdGen,%
1363 mplus,mod,msum,mzero,negate,next,newStdGen,not,notElem,nub,nubBy,%
1364 null,numerator,odd,openFile,or,ord,otherwise,partition,phase,pi,%
1365 polar,pred,print,product,properFraction,putChar,putStr,putStrLn,%
1366 quot,quotRem,random,randomIO,randomR,randomRIO,randomRs,randoms,%
1367 rangeSize,read,readDec,readFile,readFloat,readHex,readInt,readIO,%
1368 readList,readLitChar,readLn,readParen,readOct,readSigned,reads,%
1369 readsPrec,realPart,realToFrac,recip,rem,repeat,replicate,return,%
1370 reverse,round,scaleFloat,scanl,scanl1,scanr,scanr1,seq,sequence,%
1371 sequence_,setStdGen,show,showChar,showEFloat,showFFloat,%
1372 showFloat,showGFloat,showInt,showList,showLitChar,showParen,%
1373 showSigned,showString,shows,showsPrec,significand,signum,sin,%
1374 sinh,snd,sort,sortBy,span,split,splitAt,sqrt,stderr,stdin,stdout,%
1375 strict,subtract,succ,sum,system,tail,tails,take,takeWhile,tan,%
1376 tanh,toEnum,toInt,toInteger,toLower,toRational,toUpper,transpose,%
1377 truncate,try,uncurry,undefined,unfoldr,union,unionBy,unless,%

```

```

1378      unlines,until,unwords,unzip,unzip3,unzip4,unzip5,unzip6,unzip7,%
1379      userError,when,words,writeFile,zero,zip,zip3,zip4,zip5,zip6,zip7,%
1380      zipWith,zipWithM,zipWithM_,zipWith3,zipWith4,zipWith5,zipWith6,%
1381      zipWith7},%
1382      sensitive,%
1383      morecomment=[1]--, %
1384      morecomment=[n]{\{-}\{-\}},%
1385      morestring=[b]"%
1386    }[keywords,comments,strings]%
1387 </lang2>

```

## 2.30 HTML

I'm quite the opposite of a HTML wizard. In particular this is true for the defined keywords. Matthias Bethke helped me out and extended the list.

```

1388 <*lang1>
1389 \lst@definlanguage{HTML}%
1390 {morekeywords={A,ABBR,ACRONYM,ADDRESS,APPLET,AREA,B,BASE,BASEFONT,%
1391      BDO,BIG,BLOCKQUOTE,BODY,BR,BUTTON,CAPTION,CENTER,CITE,CODE,COL,%
1392      COLGROUP,DD,DEL,DFN,DIR,DIV,DL,DOCTYPE,DT,EM,FIELDSET,FONT,FORM,%
1393      FRAME,FRAMESET,HEAD,HR,H1,H2,H3,H4,H5,H6,HTML,I,IFRAME,IMG,INPUT,%
1394      INS,ISINDEX,KBD,LABEL,LEGEND,LH,LI,LINK,LISTING,MAP,META,MENU,%
1395      NOFRAMES,NOSCRIPT,OBJECT,OPTGROUP,OPTION,P,PARAM,PLAINTEXT,PRE,%
1396      OL,Q,S,SAMP,SCRIPT,SELECT,SMALL,SPAN,STRIKE,STRING,STRONG,STYLE,%
1397      SUB,SUP,TABLE,TBODY,TD,TEXTAREA,TFOOT,TH,THEAD,TITLE,TR,TT,U,UL,%
1398      VAR,XMP,%
1399      accesskey,action,align,alink,alt,archive,axis,background,bgcolor,%
1400      border,cellpadding,cellspacing,charset,checked,cite,class,classid,%
1401      code,codebase,codetype,color,cols,colspan,content,coords,data,%
1402      datetime,defer,disabled,dir,event,error,for,frameborder,headers,%
1403      height,href,hreflang,hspace,http-equiv,id,ismap,label,lang,link,%
1404      longdesc,marginwidth,marginheight,maxlength,media,method,multiple,%
1405      name,nohref,noresize,noshade,nowrap,onblur,onchange,onclick,%
1406      ondblclick,onfocus,onkeydown,onkeypress,onkeyup,onload,onmousedown,%
1407      profile,readonly,onmousemove,onmouseout,onmouseover,onmouseup,%
1408      onselect,onunload,rel,rev,rows,rowspan,scheme,scope,scrolling,%
1409      selected,shape,size,src,standby,style,tabindex,text,title,type,%
1410      units,usemap,valign,value,valuetype,vlink,vspace,width,xmllns},%
1411      tag=**[s]<>,%
1412      sensitive=f,%
1413      morestring=[d]" ,% ??? doubled

```

Now we take care of comments. We don't enter comment mode if we aren't inside <>.

```

1414      MoreSelectCharTable=%
1415      \lst@CArgX--\relax\lst@DefDelimB{}{}%
1416      {\ifnum\lst@mode=\lst@tagmode\else
1417      \expandafter\@gobblethree

```

```

1418         \fi}%
1419         \lst@BeginComment\lst@commentmode{{\lst@commentstyle}}%
1420         \lst@CArgX--\relax\lst@DefDelimE{}{}{}%
1421         \lst@EndComment\lst@commentmode
1422     }[keywords,comments,strings,html]%

```

Peter Biechele reported a problem which was due to missing `\empty` in value of `SelectCharTable`. And after receiving a bug report from Jochen Schneider I converted the version 0.21 contents of `MoreSelectCharTable` to version 1.0.

```

1423 </lang1>

```

## 2.31 IDL

The definition is from Jürgen Heim.

```

1424 <*lang2>
1425 %%
1426 %% IDL definition (c) 1998 Juergen Heim
1427 %%
1428 \lst@definlanguage{IDL}%
1429 {morekeywords={and,begin,case,common,do,else,end,endcase,endelse,%
1430             endfor,endif,endrep,endwhile,eq,for,function,ge,goto,gt,if,le,lt,%
1431             mod,ne,not,of,on_ioerror,or,pro,repeat,return,then,until,while,%
1432             xor,on_error,openw,openr,openu,print,printf,printu,plot,read,%
1433             readf,readu,writu,stop},%
1434     sensitive=f,%
1435     morecomment=[l];,%
1436     morestring=[d]’%
1437 }[keywords,comments,strings]%
1438 </lang2>

```

## 2.32 Inform

Thanks to Jonathan Sauer for this language definition. Ulrike Fischer pointed out that `\lstdefinlanguage` should be `\lst@definlanguage`.

```

1439 <*lang2>
1440 %%
1441 %% Inform definition (c) 2003 Jonathan Sauer
1442 %%
1443 \lst@definlanguage{inform}{%
1444     % Language keywords
1445     morekeywords={breakdo,else,false,for,has,hasnt,if,%
1446                 in,indirect,jump,notin,nothing,NULL,objectloop,ofclass,%
1447                 private,property,provides,return,rfalse,rtrue,self,string,%
1448                 switch,to,true,until,while,with,%
1449                 creature,held,multiexcept,multiheld,multiinside,noun,number,%
1450                 scope,topic},%
1451     %
1452     % Inform functions

```

```

1453     morekeywords=[2]{box,child,children,font,give,inversion,metaclass,move,%
1454                     new_line,parent,print,print_ret,read,remove,restore,sibling,%
1455                     save,spaces,quit,style,bold,underline,reverse,roman remaining,%
1456                     create,destroy,recreate,copy},%
1457     %
1458     % Inform definitions
1459     morekeywords=[3]{Attribute,Array,Class,Constant,Default,End,Endif,Extend,%
1460                     Global,Ifdef,Iffalse,Ifndef,Ifnot,Iftrue,Include,Object,%
1461                     Property,Verb,Release,Serial,Statusline},%
1462     %
1463     % Library attributes
1464     morekeywords=[4]{absent,animate,clothing,concealed,container,door,edible,%
1465                     enterable,female,general,light,lockable locked,male,moved,%
1466                     neuter,on,open,openable,pluralname,proper,scenery,scored,%
1467                     static,supporter,switchable,talkable,transparent,visited,%
1468                     workflag,worn},%
1469     %
1470     % Library properties
1471     morekeywords=[5]{n_to,s_to,e_to,w_to,ne_to,nw_to,se_to,sw_to,in_to,%
1472                     out_to,u_to,d_to,add_to_scope,after,article,articles,before,%
1473                     cant_go,capacity,daemon,describe,description,door_dir,door_to,%
1474                     each_turn,found_in,grammar,initial,inside_description,invent,%
1475                     life,list_together,name number,orders,parse_name,plural,%
1476                     react_after,react_before,short_name,short_name_indef,time_left,%
1477                     time_out,when_closed,when_open,when_on,when_off,%
1478                     with_key},%
1479     %
1480     % Library routines
1481     morekeywords=[6]{Achieved,AfterRoutines,AllowPushDir,Banner,ChangePlayer,%
1482                     CommonAncestor,DictionaryLookup,GetGNAOfObject,HasLightSource,%
1483                     IndirectlyContains,IsSeeThrough,Locale,LoopOverScope,LTInsert,%
1484                     MoveFloatingObjects,NextWord,NextWordStopped,NounDomain,%
1485                     ObjectIsUntouchable OffersLight,ParseToken,PlaceInScope,PlayerTo,%
1486                     PronounNotice,PronounValue,ScopeWithin,SetPronoun,SetTime,%
1487                     StartDaemon,StartTimer,StopDaemon,StopTimer,TestScope,TryNumber,%
1488                     UnsignedCompare,WordAddress,WordInProperty,WordLength,%
1489                     WriteListFrom,YesOrNo},%
1490     %
1491     % Library entry points
1492     morekeywords=[7]{AfterLife,AfterPrompt,Amusing,BeforeParsing,ChooseObjects,%
1493                     DarkToDark,DeathMessage,GamePostRoutine GamePreRoutine,%
1494                     Initialise,InScope,LookRoutine,NewRoom,ParseNoun,ParseNumber,%
1495                     ParserError,PrintRank,PrintTaskName,PrintVerb,TimePasses,%
1496                     UnknownVerb},%
1497     %
1498     % Library constants
1499     morekeywords=[8]{NEWLINE_BIT,INDENT_BIT,FULLINV_BIT,ENGLISH_BIT,RECURSE_BIT,%
1500                     ALWAYS_BIT,TERSE_BIT,PARTINV_BIT,DEFART_BIT,WORKFLAG_BIT,%
1501                     ISARE_BIT,CONCEAL_BIT},%
1502     %

```

```

1503 % Library,meta actions
1504 morekeywords=[9]{Pronouns,Quit,Restart,Restore,Save,Verify,ScriptOn,ScriptOff,%
1505             NotifyOn,NotifyOff,Places,Objects,Score,FullScore,Version,LMode1,%
1506             LMode2,Lmode3},%
1507 %
1508 % Library,main actions
1509 morekeywords=[10]{Close,Disrobe,Drop,Eat,Empty,EmptyT,Enter,Examine,Exit,GetOff,%
1510             Give,Go,GoIn,Insert,Inv,InvTall,InvWide,Lock,Look,Open,PutOn,Remove,%
1511             Search,Show,SwitchOff,SwitchOn,Take,Transfer,Unlock VagueGo,%
1512             Wear},%
1513 %
1514 % Library,stub actions
1515 morekeywords=[11]{Answer,Ask,AskFor,Attack,Blow,Burn,Buy,Climb,Consult,Cut,Dig,%
1516             Drink,Fill,Jump,JumpOver,Kiss,Listen,LookUnder,Mild,No,Pray,Pull,%
1517             Push,PushDir,Rub,Set,SetTo,Sing,Sleep,Smell,,Sleep,Smell,Sorry,%
1518             Squeeze,Strong,Swim,Swing,Taste,Tell,Think,ThrowAt,Tie,Touch,Turn,%
1519             Wait,Wake,WakeOther,Wave,WaveHands,Yes},%
1520 %
1521 otherkeywords={->,<-->},%
1522 sensitive=false,%
1523 morestring=[d]{"},%
1524 morecomment=[l]{!}%
1525 }[keywords,comments,strings]%
1526 </lang2>

```

## 2.33 Java

Robert Wenner sent in the first of the following two definitions.

```

1527 <*lang1>
1528 %%
1529 %% AspectJ definition (c) Robert Wenner
1530 %%
1531 \lst@definlanguage[AspectJ]{Java}[]{}{Java}%
1532 {morekeywords={%
1533     adviceexecution,after,args,around,aspect,aspectOf,before,%
1534     call,cflow,cflowbelow,%
1535 % declare error,declare parents,declare precedence,
1536 % declare soft,declare warning,
1537     execution,get,handler,if,initialization,issingleton,pointcut,%
1538     percflow,percflowbelow,perthis,pertarget,preinitialization,%
1539     privileged,proceed,returning,set,staticinitialization,strictfp,%
1540     target,this,thisEnclosingJoinPoint,thisJoinPoint,throwing,%
1541     within,withincode},%
1542 MoreSelectCharTable=%
1543     \lst@DefSaveDef{'.'}\lst@umdot{\lst@umdot\global\let\lst@derefop\@empty}%
1544     \ifx\lst@derefinstalled\@empty\else
1545         \global\let\lst@derefinstalled\@empty
1546 \lst@AddToHook{Output}%

```



```

1547 {\lst@ifkeywords
1548     \ifx\lst@derefop\@empty
1549         \global\let\lst@derefop\relax
1550     \ifx\lst@thestyle\lst@gkeywords@sty
1551         \ifx\lst@currstyle\relax
1552             \let\lst@thestyle\lst@identifierstyle
1553         \else
1554             \let\lst@thestyle\lst@currstyle
1555         \fi
1556     \fi
1557 \fi
1558 \fi}
1559 \lst@AddToHook{BOL}{\global\let\lst@derefop\relax}%
1560 \lst@AddTo\lst@ProcessSpace{\global\let\lst@derefop\relax}%
1561     \fi
1562 }%
1563 </lang1>

    Got data from http://java.sun.com.
1564 <*lang1>

1565 \lst@definelanguage{Java}%
1566 {morekeywords={abstract,boolean,break,byte,case,catch,char,class,%
1567     const,continue,default,do,double,else,extends,false,final,%
1568     finally,float,for,goto,if,implements,import,instanceof,int,%
1569     interface,label,long,native,new,null,package,private,protected,%
1570     public,return,short,static,super,switch,synchronized,this,throw,%
1571     throws,transient,true,try,void,volatile,while},%
1572     sensitive,%
1573     morecomment=[l]//,%
1574     morecomment=[s]{/*}{*/},%
1575     morestring=[b]",%
1576     morestring=[b]',%
1577 }[keywords,comments,strings]%

    Herbert Voss added the keyword label.
1578 </lang1>

    Martine Gautier made the following contribution.
1579 <*lang1>

1580 %%
1581 %% ByteCodeJava definition (c) 2004 Martine Gautier
1582 %%
1583 \lst@definelanguage{JVMIS}%
1584 {morekeywords={aaload,astore,acnst_null,aload,aload_0,aload_1,%
1585     aload_2,aload_3,anewarray,areturn,arraylength,astore,astore_0,%
1586     astore_1,astore_2,astore_3,athrow,baload,bastore,bipush,caload,%
1587     castore,checkcast,d2f,d2i,d2l,dadd,daload,dastore,dcmpl,dcmpl,%
1588     dconst_0,dconst_1,ddiv,dload,dload_0,dload_1,dload_2,dload_3,%
1589     dmul,dneg,drem,dreturn,dstore,dstore_0,dstore_1,dstore_2,%

```

```

1590     dstore_3,dsub,dup,dup_x1,dup_x2,dup2,dup2_x1,dup2_x2,f2d,%
1591     f2i,f2l,fadd,faload,fastore,fcmpr,fcmpl,fconst_0,fconst_1,%
1592     fconst_2,fdiv,fload,fload_0,fload_1,fload_2,fload_3,fmul,%
1593     fneg,frem,freturn,fstore,fstore_0,fstore_1,fstore_2,fstore_3,%
1594     fsub,getfield,getstatic,goto,goto_w,i2b,i2c,i2d,i2f,i2l,i2s,%
1595     iadd,iaload,iand,iastore,iconst_0,iconst_1,iconst_2,iconst_3,%
1596     iconst_4,iconst_5,idiv,if_acmpeq,if_acmpne,if_icmpeq,if_icmpne,%
1597     if_icmplt,if_cmpge,if_cmpgt,if_cmple,ifeq,ifne,iflt,ifge,ifgt,%
1598     ifle,ifnonnull,ifnull,iinc,iload,iload_0,iload_1,iload_2,%
1599     iload_3,imul,ineg,instanceof,invokeinterface,invokespecial,%
1600     invokestatic,invokevirtual,ior,irem,ireturn,ishl,ishr,istore,%
1601     istore_0,istore_1,istore_2,istore_3,isub,iushr,ixor,jsr,jsr_w,%
1602     l2d,l2f,l2i,ladd,laload,land,lastore,lcmp,lconst_0,lconst_1,%
1603     ldc,ldc_w,ldc2_w,ldiv,lload,lload_0,lload_1,lload_2,lload_3,%
1604     lmul,lneg,lookupswitch,lor,lrem,lreturn,lshl,lshr,lstore,%
1605     lstore_0,lstore_1,lstore_2,lstore_3,lsb,lsr,lxor,%
1606     monitorenter,monitorexit,multianewarray,new,newarray,nop,pop,%
1607     pop2,putfield,putstatic,ret,return,saload,sastore,sipush,swap,%
1608     tableswitch,wide,limit,locals,stack},%
1609 }[keywords]%
1610 </lang1>

```

## 2.34 ksh

Thanks to Jeffrey Ratchliffe for this language definition.

```

1611 <*lang3>
1612 \lst@definlanguage{ksh}
1613 {morekeywords={alias,awk,cat,echo,else,elif,fi,exec,exit,%
1614     for,in,do,done,select,case,esac,while,until,function,%
1615     time,export,cd,eval,fc,fg,kill,let,pwd,read,return,rm,%
1616     glob,goto,history,if,logout,nice,nohup,onintr,repeat,sed,%
1617     set,setenv,shift,source,switch,then,umask,unalias,%
1618     unset,wait,@,env,argv,child,home,ignoreeof,noclobber,%
1619     noglob,nomatch,path,prompt,shell,status,verbose,print,printf,%
1620     sqrt,BEGIN,END},%
1621     morecomment=[l]\#,%
1622     morestring=[d]" ,%
1623     morestring=[d]' ,%
1624     morestring=[d]'%
1625 }[keywords,comments,strings]%
1626 % \begin{macrocode}
1627 </lang3>

```

Herbert Voss suggested to add the string delimiter ‘.

## 2.35 Lingo

Thanks to Mark Schade for this language definition.

```

1628 <*lang3>

```

```

1629 \lst@definlanguage{Lingo}
1630 {morekeywords={abort,after,and,before,do,down,halt,me,new,not,of,%
1631     on,or,otherwise,pass,put,result,return,set,tell,the,then,to,with,%
1632     repeat,while,case,if,else,true,false,global,property,\_global,\_key,%
1633     \_mouse,\_movie,\_player,\_sound,\_system,abbr,abbrev,abbreviated,abs,%
1634     actionsenabled,activateapplication,activatewindow,active3drenderer,%
1635     activecastlib,activewindow,actorlist,add,addat,addbackdrop,addcamera,%
1636     addchild,addmodifier,addoverlay,addprop,addtoworld,addvertex,alert,%
1637     alerthook,alignment,allowcustomcaching,allowgraphicmenu,allowsavelocal,%
1638     allowtransportcontrol,allowvolumecontrol,allowzooming,alphathreshold,%
1639     ambient,ambientcolor,ancestor,angle,anglebetween,animationenabled,%
1640     antialias,antialiasthreshold,append,applicationname,applicationpath,%
1641     appminimize,atan,attenuation,attributevalue,auto,autoblend,automask,%
1642     autotab,axisangle,back,backcolor,backdrop,backgroundcolor,backspace,%
1643     beep,beep,beginrecording,beginsprite,beveldepth,beveltype,bgcolor,%
1644     bias,bitand,bitmap,bitmapsizes,bitnot,bitor,bitrate,bitspersample,%
1645     bitxor,blend,blendconstant,blendconstantlist,blendfactor,blendfunction,%
1646     blendfunctionlist,blendlevel,blendrange,blendsource,blendsourcelist,%
1647     blendtime,bone,bonesplayer,border,both,bottom,bottomcap,bottomradius,%
1648     bottomspacing,boundary,boundingsphere,box,boxdropshadow,boxtype,%
1649     breakconnection,breakloop,brightness,broadcastprops,browsername,%
1650     buffersize,build,buttonsenabled,buttonstyle,buttontype,bytesstreamed,%
1651     boolean,cachedocverify,cachesize,call,callancestor,camera,cameracount,%
1652     cameraposition,camerarotation,cancelidleload,castlib,castlibnum,%
1653     castmemberlist,center,centerregpoint,centerstage,changearea,channelcount,%
1654     char,characterset,charpostoloc,chars,charspacing,chartonum,%
1655     checkboxaccess,checkboxtype,checkmark,checknetmessages,child,chunksize,%
1656     clearatrender,clearcache,clearerror,clearframe,clearglobals,clearvalue,%
1657     clickloc,clickmode,clickon,clone,clonedeep,clonemodelfromcastmember,%
1658     clonemotionfromcastmember,close,closed,closewindow,closetext,collision,%
1659     collisiondata,collisionnormal,color,world,colorbuffer,colorbufferdepth,%
1660     colordepth,colorlist,colorrange,colors,colorsteps,commanddown,comments,%
1661     compressed,connecttonetserver,constrainh,constraint,constrainv,%,
1662     continue,controldown,controller,copypixels,copyrightinfo,copyto,%
1663     copytoclipboard,cos,count,cpuhogticks,creaseangle,creases,[contains],%
1664     createfolder,createmask,creatematte,creationdate,creator,crop,cross,%
1665     crossproduct,cuepassed,cuepointnames,cuepointtimes,currentloopstate,%
1666     currentspritenum,currenttime,cursor,cursorsize,curve,cylinder,ate,day,%
1667     deactivateapplication,deactivatewindow,debug,debugplaybackenabled,%
1668     decaymode,defaultrect,defaultrectmode,delay,delete,deleteall,deleteat,%
1669     deletecamera,deletefolder,deleteframe,deletegroup,deletelight,%
1670     deletemodel,deletemodelresource,deletemotion,deleteone,deleteprop,%
1671     deleteshader,deletetexture,deletevertex,density,depth,depthbufferdepth,%
1672     desktoprectlist,diffuse,diffusecolor,diffuselightmap,%
1673     digitalvideotimescale,digitalvideotype,direction,directionalcolor,%
1674     directionalpreset,directtostage,disableimagingtransformation,displayface,%
1675     displaymode,distanceto,distribution,dither,done,doneparsing,dot,%
1676     dotproduct,doubleclick,downloadnetthing,drag,draw,drawrect,dropshadow,%
1677     duplicate,duplicateframe,duration,editable,editshortcutsenabled,%
1678     elapsedtime,emissive,emitter,empty,emulatemultibuttonmouse,enabled,%

```

1679 enablehotspot,end,endangle,endcolor,endframe,endrecording,endsprite,%  
1680 endtime,enter,enterframe,environment,erase,error,eventpassmode,%  
1681 exchange,exists,exit,exitframe,exitlock,exp,externalevent,%  
1682 externalparamcount,externalparamname,externalparamvalue,extractalpha,%  
1683 extrude3d,face,fadein,fadeout,fadeto,far,field,fieldofview,filename,%  
1684 fill,fillcolor,fillcycles,filldirection,filled,fillmode,filloffset,%  
1685 fillscale,findempty,findlabel,findpos,findposnear,finishidleload,%  
1686 firstindent,fixedlinespace,fixedrate,fixstagesize,flashrect,flashtostage,%  
1687 flat,fliph,flipv,float,floatp,floatprecision,flush,flushinputevents,%  
1688 fog,folderchar,font,fontsize,fontstyle,forecolor,forget,frame,%  
1689 framecount,framelabel,framepalette,framerate,frameready,framescript,%  
1690 framesound1,framesound2,framestohms,frametempo,frametransition,freeblock,%  
1691 freebytes,fromcastmember,fromimageobject,front,frontwindow,%  
1692 generatenormals,getaprop,getat,getbehaviordescription,getbehaviortooltip,%  
1693 getboneid,geterror,geterrorstring,gethardwareinfo,gethotspotrect,getlast,%  
1694 getlatestnetid,getnetaddresscookie,getneterrorstring,getnetmessage,%  
1695 getnetoutgoingbytes,getnettext,getnormalized,getnthfilenameinfolder,%  
1696 getnumberwaitingnetmessages,getone,getpeerconnectionlist,getpixel,%  
1697 getplaylist,getpos,getpref,getprop,getpropat,getpropertydescriptionlist,%  
1698 getrendererservices,getstreamstatus,gettemppath,getworldtransform,globals,%  
1699 glossmap,go,gotoframe,gotonetmovie,gotonetpage,gradienttype,gravity,%  
1700 group,handler,handlers,height,heightvertices,high,highlightpercentage,%  
1701 highlightstrength,hilite,hither,hittest,hmstoframes,hold,hotspot,html,%  
1702 hyperlink,hyperlinkclicked,hyperlinkrange,hyperlinks,hyperlinkstate,%  
1703 id3tags,identity,idle,idlehandlerperiod,idleloaddone,idleloadmode,%  
1704 idleloadperiod,idleloadtag,idlereadchunksize,ilk,image,imagecompression,%  
1705 imageenabled,imagequality,immovable,importfileinto,inflate,ink,inker,%  
1706 inlineimeenabled,insertbackdrop,insertframe,insertoverlay,inside,%  
1707 installmenu,instance,integer,integerp,interface,interpolate,%  
1708 interpolateto,intersect,index,interval,inverse,invert,invertmask,%  
1709 isbusy,isinworld,isoktoattach,ispastcuepoint,item,itemdelimiter,kerning,%  
1710 kerningthreshold,key,keyboardfocussprite,keycode,keydown,keydownscript,%  
1711 keyframeplayer,keypressed,keyup,keyupscript,label,labellist,last,%  
1712 lastchannel,lastclick,lastevent,lastframe,lastkey,lastroll,left,%  
1713 leftindent,length,lengthvertices,level,lifetime,light,line,linearlist,%  
1714 linecolor,linecount,linedirection,lineheight,lineoffset,linepostolcvcv,%  
1715 linesize,linkas,linked,list,listp,loaded,loadfile,loc,loch,locked,%  
1716 locktranslation,loctocharpos,locv,locvtolinepos,locz,lod,log,long,%  
1717 loop,loopcount,loopendtime,loopsremaining,loopstarttime,machinetype,%  
1718 magnitude,map,mapImageToStage,mapmembertostage,mapstagetomember,margin,%  
1719 marker,markerlist,mask,max,maxinteger,maxspeed,mci,media,mediaready,%  
1720 member,membernum,members,memorysize,menu,mesh,meshdeform,milliseconds,%  
1721 min,minspped,modal,mode,model,modela,modelb,modelresource,%  
1722 modelsunderloc,modelsunderray,modelunderloc,modified,modifiedby,%  
1723 modifieddate,modifier,modifiers,month,mostrecentcuepoint,motion,%  
1724 mousechar,mousedown,mousedownscript,mouseenter,mouseh,mouseitem,%  
1725 mouseleave,mouselevel,mouseline,mouseloc,mousemember,mouseoverbutton,%  
1726 mouseup,mouseupoutside,mouseupscript,mousev,mousewithin,mouseword,move,%  
1727 moveablesprite,movetoback,movetofront,movetovortex,movetovortexhandle,%  
1728 movewindow,movie,movieaboutinfo,moviecopyrightinfo,moviefilefreysize,%

1729 moviefilesize,moviefileversion,movieimagecompression,movieimagequality,%  
1730 moviename,moviepath,movierate,movietime,moviextralist,mpegplayer,%  
1731 multiply,multisound,name,near,nearfiltering,neighbor,netabort,netdone,%  
1732 neterror,netlastmoddate,netmime,netpresent,netstatus,nettextresult,%  
1733 netthrottleticks,newcamera,newcurve,newgroup,newlight,newmesh,newmodel,%  
1734 newmodelresource,newmotion,newshader,newtexture,next,none,normalize,%  
1735 normallist,normals,nothing,notify,nudge,number,numchannels,%  
1736 numparticles,numsegments,numtochar,objectp,offset,open,openresfile,%  
1737 openwindow,openxlib,optiondown,organizationname,originalfont,originh,%  
1738 originmode,originpoint,originv,orthoheight,overlay,pageheight,palette,%  
1739 palettemapping,paletteref,paletteindex,pan,paragraph,param,paramcount,%  
1740 parent,parsestring,particle,pasteclipboardinto,path,pathname,%  
1741 pathstrength,pattern,pause,pausedatstart,pausedstate,percentplayed,%  
1742 percentstreamed,period,perpendicularto,persistent,pi,picture,picturep,%  
1743 plane,platform,play,playbackmode,playfile,playing,playlist,playnext,%  
1744 playrate,point,pointat,pointatorientation,pointinhyperlink,%  
1745 pointofcontact,pointtochar,pointtoitem,pointtoline,pointtoparagraph,%  
1746 pointtoword,position,positionreset,posterframe,postnettext,power,%  
1747 preferred3drenderer,preload,preloadbuffer,preloadeventabort,preloadmember,%  
1748 preloadmode,preloadmovie,preloadnetthing,preloadram,preloadtime,%  
1749 premultiply,prepareframe,preparemovie,prerotate,prescale,pretranslate,%  
1750 previous,primitives,printfrom,productversion,projection,projectionangle,%  
1751 propList,proxyserver,pttohotspotid,puppet,puppetpalette,puppetsound,%  
1752 puppetsprite,puppettempo,puppettransition,purgepriority,%  
1753 qtregisteraccesskey,qtunregisteraccesskey,quad,quality,queue,quit,quote,%  
1754 radius,ramneeded,random,randomseed,randomvector,rateshift,rawnew,read,%  
1755 readvalue,recordfont,rect,ref,reflectionmap,reflectivity,region,%  
1756 registerforevent,registerscript,regpoint,regpointvertex,removebackdrop,%  
1757 removefromworld,removelast,removemodifier,removeoverlay,rename,renderer,%  
1758 rendererdevicelist,renderformat,renderstyle,resetworld,resizewindow,%  
1759 resolution,resolve,resolvea,resolveb,resource,restart,resume,%  
1760 reverttoworlddefaults,rewind,rgb,rgba4444,rgba5550,rgba5551,rgba5650,%  
1761 rgba8880,rgba8888,right,rightindent,righmousedown,righmouseup,%  
1762 rollover,romanlingo,rootlock,rootnode,rotate,rotation,rotationreset,%  
1763 rtf,runmode,runpropertydialog,safeplayer,samplecount,samplerate,%  
1764 samplesize,save,savedlocal,savemovie,scale,scalemode,score,scorecolor,%  
1765 scoreselection,script,scriptexecutionstyle,scriptinstancetype,scriptlist,%  
1766 scriptnum,scriptsenabled,scripttext,scripttype,scrollbyline,scrollbypage,%  
1767 scrolltop,sds,searchcurrentfolder,searchpath,searchpaths,seconds,%  
1768 selectedtext,selection,selend,selstart,sendallsprites,sendevent,%  
1769 sendNetMessage,sendsprite,serialnumber,setalpha,setaprop,setat,%  
1770 setcollisioncallback,setflashproperty,setnetbufferlimits,%  
1771 setNetMessagehandler,setpixel,setplaylist,setpref,setprop,setscripList,%  
1772 settrackenabled,setvariable,shader,shaderlist,shadowpercentage,%  
1773 shadowstrength,shapetype,shiftdown,shininess,shockwave3d,short,%  
1774 showglobals,showlocals,showprops,showresfile,showxlib,shutdown,%  
1775 silhouettes,sin,size,sizerange,skew,sleep,smoothness,sort,sound,%  
1776 soundbusy,soundchannel,sounddevice,sounddevicelist,soundenabled,%  
1777 soundkeepdevice,soundlevel,soundmixmedia,source,sourcerect,space,%  
1778 specular,specularcolor,specularlightmap,sphere,spotangle,spotdecay,%

```

1779     sprite,spritenum,spritespacetoworldspace,sqrt,stage,stagebottom,%
1780     stagecolor,stageleft,stageright,stagetoflash,stagetop,standard,%
1781     startangle,startframe,startmovie,starttime,starttimer,state,static,%
1782     status,stepframe,stilldown,stop,stopevent,stopmovie,stoptime,stream,%
1783     streammode,streamname,streamsize,streamstatus,string,stringp,%
1784     strokecolor,strokewidth,style,subdivision,sweep,swing,switchcolordepth,%
1785     symbol,symbolp,systemdate,tab,tabcount,tabs,tan,target,%
1786     tellstreamstatus,tension,text,texture,texturecoordinatelist,%
1787     texturecoordinates,texturelayer,texturelist,texturemember,texturemode,%
1788     texturemodelist,texturerenderformat,texturerepeat,texturerepeatlist,%
1789     texturetransform,texturetransformlist,texturetype,thumbnail,ticks,tilt,%
1790     time,timeout,timeouthandler,timeoutkeydown,timeoutlapsed,timeoutlength,%
1791     timeoutlist,timeoutmouse,timeoutplay,timeoutscript,timer,timescale,%
1792     title,titlevisible,toon,top,topcap,topradius,topspacing,trace,%
1793     traceload,tracelogfile,trackcount,trackenabled,tracknextkeytime,%
1794     tracknextsampletime,trackpreviouskeytime,trackpreviousampletime,%
1795     trackstarttime,trackstoptime,tracktext,tracktype,trails,transform,%
1796     transitiontype,translate,triggercallback,trimwhitespace,tunneldepth,%
1797     tweened,tweenmode,type,[transparent],union,unload,unloadmember,%
1798     unloadmovie,unregisterallevents,update,updateframe,updatelock,%
1799     updatemovieenabled,updatestage,url,usealpha,usediffusewithtexture,%
1800     usefastquads,usehypertextstyles,uselineoffset,userdata,username,value,%
1801     vector,version,vertex,vertexlist,vertices,video,videoforwindowspresent,%
1802     viewh,viewpoint,viewscale,vieww,visibility,visible,void,voidp,volume,%
1803     volumeinfo,wait,waitfornetconnection,warmode,width,widthvertices,wind,%
1804     window>windowlist>windowpresent>windowtype,word,wordwrap,world,%
1805     worldposition,worldspacetospritespace,worldtransform,wraptransform,%
1806     wraptransformlist,write,writevalue,,xaxis,xtra,xtralist,xtras,,yaxis,%
1807     year,yon,zaxis,zoombox,zoomwindow,repeat,Conditional,Boolean,TypeDef,%
1808     Statement,Operator,String,Comment,Identifier,Special,x,y,z}
1809     sensitive=false,
1810     morecomment=[l]{--},
1811     morestring=[b]",
1812 }[keywords,comments,strings]%
1813 % \begin{macrocode}
1814 </lang3>

```

## 2.36 Lisp, AutoLisp

Most data are from

- GUY STEELE: **Common Lisp**; Copyright 1990 by Digital Equipment Corporation; ISBN 1-55558-042-4.

Thanks to Aslak Raanes for the ‘single comment’ delimiters. The keywords are the ‘one-word’ functions and macros of Common Lisp, i.e. words not containing a minus. But I left out the `caaaaar`, ... functions. If anyone types them in, I’d like to get them.

```
1815 <*lang2>
```

```

1816 \lst@definlanguage{Lisp}%
1817   {morekeywords={abort,abs,acons,acos,acosh,adjoin,alphanumericp,alter,%
1818     append,apply,apropos,aref,arrayp,ash,asin,asinh,assoc,atan,atanh,%
1819     atom,bit,boole,boundp,break,butlast,byte,catenate,ceiling,cerror,%
1820     char,character,characterp,choose,chunk,cis,close,clrhash,coerce,%
1821     collect,commonp,compile,complement,complex,complexp,concatenate,%
1822     conjugate,cons,consp,constantp,continue,cos,cosh,cotruncate,%
1823     count,delete,denominator,describe,directory,disassemble,%
1824     documentation,dpb,dribble,ed,eighth,elt,enclose,endp,eq,eql,%
1825     equal,equalp,error,eval,evalhook,evenp,every,exp,expand,export,%
1826     expt,fboundp,fceiling,fdefinition,ffloor,fifth,fill,find,first,%
1827     float,floatp,floor,fmakunbound,format,fourth,fround,ftruncate,%
1828     funcall,functionp,gatherer,gcd,generator,gensym,gentemp,get,getf,%
1829     gethash,identity,imagpart,import,inspect,integerp,intern,%
1830     intersection,tively,isqrt,keywordp,last,latch,lcm,ldb,ldiff,%
1831     length,list,listen,listp,load,log,logand,logbitp,logcount,logeqv,%
1832     logior,lognand,lognor,lognot,logtest,logxor,macroexpand,%
1833     makunbound,map,mapc,mapcan,mapcar,mapcon,maphash,mapl,maplist,%
1834     mask,max,member,merge,min,mingle,minusp,mismatch,mod,namestring,%
1835     nbutlast,nconc,nintersection,ninth,not,notany,notevery,nreconc,%
1836     nreverse,nsublis,nsubst,nth,nthcdr,null,numberp,numerator,nunion,%
1837     oddp,open,packagep,pairlis,pathname,pathnamep,phase,plusp,%
1838     position,positions,pprint,previous,princ,print,proclaim,provide,%
1839     random,rassoc,rational,rationalize,rationalp,read,readtablep,%
1840     realp,realpart,reduce,rem,remhash,remove,remprop,replace,require,%
1841     rest,revappend,reverse,room,round,rplaca,rplacd,sbit,scan,schar,%
1842     search,second,series,set,seventh,shadow,signal,signum,sin,sinh,%
1843     sixth,sleep,some,sort,split,sqrt,stream,stream,stream,stream,%
1844     subseq,subseries,subsetp,subst,substitute,subtypep,svref,sxhash,%
1845     symbolp,tailp,tan,tanh,tenth,terpri,third,truename,truncate,%
1846     typep,unexport,unintern,union,until,values,vector,vectorp,warn,%
1847     write,zerop,and,assert,case,ccase,cond,ctypecase,decf,declaim,%
1848     defclass,defconstant,defgeneric,defmacro,defmethod,defpackage,%
1849     defparameter,defsetf,defstruct,deftype,defun,defvar,do,dolist,%
1850     dotimes,ecase,encapsulated,etypecase,flet,formatter,gathering,%
1851     incf,iterate,labels,let,locally,loop,macrolet,mapping,or,pop,%
1852     producing,prog,psetf,psetq,push,pushnew,remf,return,rotatef,%
1853     setf,shiftf,step,time,trace,typecase,unless,untrace,when},%
1854     sensitive,% ???
1855     alsodigit=-,%
1856     morecomment=[l];,%
1857     morecomment=[s]{\#|}{|\#},% 1997 Aslak Raanes
1858     morestring=[b]"%
1859   }[keywords,comments,strings]%

1860 </lang2>

1861 <*lang2>

  Stefan Lagotzki warned me to define this as a lisp dialect ...

1862 %%

```

```

1863 %% AutoLISP/VisualLISP - Stefan Lagotzki, info@lagotzki.de
1864 %%
1865 \lst@definlanguage[Auto]{Lisp}%
1866 {morekeywords={abs,acad_colordlg,acad_helpdlg,acad_strlsort,%
1867     action_tile,add_list,alert,alloc,and,angle,angtof,angtos,append,%
1868     apply,arx,arxload,arxunload,ascii,assoc,atan,atof,atoi,atom,%
1869     atoms-family,autoarxload,autoload,Boole,boundp,caddr,cadr,car,%
1870     cdr,chr,client_data_tile,close,command,cond,cons,cos,cvunit,%
1871     defun,defun-q,defun-q-list-ref,defun-q-list-set,dictadd,dictnext,%
1872     dictremove,dictrename,dictsearch,dimx_tile,dimy_tile,distance,%
1873     distof,done_dialog,end_image,end_list,entdel,entget,entlast,%
1874     entmake,entmakex,entmod,entnext,entsel,entupd,eq,equal,*error*,%
1875     eval,exit,exp,expand,expt,fill_image,findfile,fix,float,foreach,%
1876     function,gc,gcd,get_attr,get_tile,getangle,getcfg,getcname,%
1877     getcorner,getdist,getenv,getfiled,getint,getkeyword,getorient,%
1878     getpoint,getreal,getstring,getvar,graphscr,grclear,grdraw,grread,%
1879     grtext,grvecs,handent,help,if,initdia,initget,inters,itoa,lambda,%
1880     last,layoutlist,length,list,listp,load,load_dialog,log,logand,%
1881     logior,lsh,mapcar,max,mem,member,menucmd,menugroup,min,minusp,%
1882     mode_tile,namedobjdict,nentsel,nentselp,new_dialog,not,nth,%
1883     null,numberp,open,or,osnap,polar,prin1,princ,print,progn,prompt,%
1884     quit,quote,read,read-char,read-line,redraw,regapp,rem,repeat,%
1885     reverse,rtos,set,set_tile,setcfg,setenv,setfunhelp,setq,%
1886     setvar,setview,sin,slide_image,sinvalid,sqrt,ssadd,ssdel,ssget,%
1887     ssgetfirst,sslenght,ssmemb,ssname,ssname,ssname,ssname,ssname,%
1888     start_dialog,start_image,start_list,strcmp,strcmp,strcmp,%
1889     substr,tablet,tblnext,tblobjname,tblsearch,term_dialog,terpri,%
1890     textbox,textpage,textscr,trace,trans,type,unload_dialog,untrace,%
1891     vector_image,ver,vl-acad-defun,vl-acad-undefun,vl-arx-import,%
1892     vl-bb-ref,vl-bb-set,vl-catch-all-apply,%
1893     vl-catch-all-error-message,vl-catch-all-error-p,vl-cmdf,vl-consp,%
1894     vl-directory-files,vl-doc-export,vl-doc-import,vl-doc-ref,%
1895     vl-doc-set,vl-every,vl-exit-with-error,vl-exit-with-value,%
1896     vl-file-copy,vl-file-delete,vl-file-directory-p,vl-file-rename,%
1897     vl-file-size,vl-file-systime,vl-filename-base,%
1898     vl-filename-directory,vl-filename-extension,vl-filename-mktemp,%
1899     vl-get-resource,vl-list*,vl-list->string,%
1900     vl-list-exported-functions,vl-list-length,vl-list-loaded-vlx,%
1901     vl-load-all,vl-load-com,vl-load-reactors,vl-member-if,%
1902     vl-member-if-not,vl-position,vl-prin1-to-string,%
1903     vl-princ-to-string,vl-propagate,vl-registry-delete,%
1904     vl-registry-descendents,vl-registry-read,vl-registry-write,%
1905     vl-remove,vl-remove-if,vl-remove-if-not,vl-some,vl-sort,%
1906     vl-sort-i,vl-string->list,vl-string-elt,vl-string-left-trim,%
1907     vl-string-mismatch,vl-string-position,vl-string-right-trim,%
1908     vl-string-search,vl-string-subst,vl-string-translate,%
1909     vl-string-trim,vl-symbol-name,vl-symbol-value,vl-symbolp,%
1910     vl-unload-vlx,vl-vbaload,vl-vbarun,vl-vlx-loaded-p,vlax-3D-point,%
1911     vlax-add-cmd,vlax-create-object,vlax-curve-getArea,%
1912     vlax-curve-getDistAtParam,vlax-curve-getDistAtPoint,%

```



```

1913     vlax-curve-getEndParam,vlax-curve-getEndPoint,%
1914     vlax-curve-getParamAtDist,vlax-curve-getParamAtPoint,%
1915     vlax-curve-getPointAtDist,vlax-curve-getPointAtParam,%
1916     vlax-curve-getStartParam,vlax-curve-getStartPoint,%
1917     vlax-curve-isClosed,vlax-curve-isPeriodic,vlax-curve-isPlanar,%
1918     vlax-curve-getClosestPointTo,%
1919     vlax-curve-getClosestPointToProjection,vlax-curve-getFirstDeriv,%
1920     vlax-curve-getSecondDeriv,vlax-dump-object,%
1921     vlax-ename->vla-object,vlax-erased-p,vlax-for,%
1922     vlax-get-acad-object,vlax-get-object,vlax-get-or-create-object,%
1923     vlax-get-property,vlax-import-type-library,vlax-invoke-method,%
1924     vlax-ldata-delete,vlax-ldata-get,vlax-ldata-list,vlax-ldata-put,%
1925     vlax-ldata-test,vlax-make-safearray,vlax-make-variant,%
1926     vlax-map-collection,vlax-method-applicable-p,%
1927     vlax-object-released-p,vlax-product-key,%
1928     vlax-property-available-p,vlax-put-property,vlax-read-enabled-p,%
1929     vlax-release-object,vlax-remove-cmd,vlax-safearray-fill,%
1930     vlax-safearray-get-dim,vlax-safearray-get-element,%
1931     vlax-safearray-get-l-bound,vlax-safearray-get-u-bound,%
1932     vlax-safearray-put-element,vlax-safearray-type,%
1933     vlax-safearray->list,vlax-tmatrix,vlax-typeinfo-available-p,%
1934     vlax-variant-change-type,vlax-variant-type,vlax-variant-value,%
1935     vlax-vla-object->ename,vlax-write-enabled-p,vlisp-compile,%
1936     vlr-acdb-reactor,vlr-add,vlr-added-p,vlr-beep-reaction,%
1937     vlr-command-reactor,vlr-current-reaction-name,vlr-data,%
1938     vlr-data-set,vlr-deepclone-reactor,vlr-docmanager-reactor,%
1939     vlr-dwg-reactor,vlr-dxf-reactor,vlr-editor-reactor,%
1940     vlr-insert-reactor,vlr-linker-reactor,vlr-lisp-reactor,%
1941     vlr-miscellaneous-reactor,vlr-mouse-reactor,vlr-notification,%
1942     vlr-object-reactor,vlr-owner-add,vlr-owner-remove,vlr-owners,%
1943     vlr-pers,vlr-pers-list,vlr-pers-p,vlr-pers-release,%
1944     vlr-reaction-names,vlr-reaction-set,vlr-reactions,vlr-reactors,%
1945     vlr-remove,vlr-remove-all,vlr-set-notification,%
1946     vlr-sysvar-reactor,vlr-toolbar-reactor,vlr-trace-reaction,%
1947     vlr-type,vlr-types,vlr-undo-reactor,vlr-wblock-reactor,%
1948     vlr-window-reactor,vlr-xref-reactor,vports,wcmatch,while,%
1949     write-char,write-line,xdroom,xsize,zerop},%
1950     alsodigit=->,%
1951     otherkeywords={1+,1-},%
1952     sensitive=false,%
1953     morecomment=[1];,%
1954     morecomment=[1];;,%
1955     morestring=[b]"%
1956 }[keywords,comments,strings]%
1957 </lang2>

```

## 2.37 LLVM

LLVM provides a collection of modular and reusable compiler and toolchain technologies, all further information can be found at its home page <http://llvm.org/>. Scott Pakin provided a language definition for the LLVM intermediate presentation according to <http://llvm.org/docs/>.<sup>2</sup> The language provides

```
1958 <*lang3>
1959 \lst@definelanguage{LLVM}{%
1960   morekeywords={%

      • Instructions

1961       ret,br,switch,indirectbr,invoke,resume,unreachable,%
1962       add,fadd,sub,fsub,mul,fmul,udiv,sdiv,fdiv,urem,srem,frem,%
1963       shl,lshr,ashr,and,or,xor,%
1964       extractelement,insertelement,shufflevector,%
1965       extractvalue,insertvalue,%
1966       alloca,load,store,fence,cmpxchg,atomicrmw,getelementptr,%
1967       trunc,zext,sext,fptrunc,fpext,fptoui,fptosi,uitofp,sitofp,ptrtoint,%
1968       inttoptr,bitcast,to,%
1969       icmp,fcmp,phi,select,call,va_arg,landingpad,%

      • Atomic operations – some duplication with the above

1970       xchg,add,sub,and,nand,or,xor,max,min,umax,umin,%

      • Comparisons

1971       eq,ne,ugt,uge,ult,uless,sgt,sge,slt,sle,%
1972       false,oeq,ogt,oge,olt,ole,one,ord,ueq,ugt,uge,ult,uless,uno,true,%

      • Linkage types

1973       private,linker_private,linker_private_weak,linker_private_weak_def_auto,%
1974       internal,available_externally,linkonce,common,weak,Appending,extern_weak,%
1975       linkonce_odr,weak_odr,external,dllimport,dlllexport,%

      • Function headers

1976       define,declare,%

      • Parameter attributes

1977       zeroext,signext,inreg,byval,sret,noalias,nocapture,next,%

      • Garbage collector names

1978       gc,%
```

---

<sup>2</sup>In this section ‘I’ is Scott Pakin.

- Function attributes

```

1979         address_safety,alignstack,alwaysinline,nonlazybind,inlinehint,naked,%
1980         noimplicitfloat,noinline,noredzone,noreturn,nounwind,optsize,readnone,%
1981         readonly,returns_twice,ssp,sspreq,uwtable,%

```

- Module-level inline assembly

```

1982         module,asm,%

```

- Data layout

```

1983         target,datalayout,%

```

- Inline assembler expressions

```

1984         sideeffect,alignstack,%

```

- Other keywords – I’m probably missing some here.

```

1985         nuw,nsw,exact,inbounds,unnamed_addr},%
1986         morekeywords=[2]{%

```

- Types

```

1987         i1,i2,i4,i8,i16,i32,i64,i128,i256,i512,i1024,% <-- Most common integers
1988         half,float,double,x86_fp80,fp128,ppc_fp128,x86mmx,%
1989         void,label,metadata},%
1990         alsoletter=.,%
1991         sensitive=false,%
1992         morecomment=[1];,%
1993         morestring=[b]"%
1994     }

```

```

1995 </lang3>

```

## 2.38 Logo

I don’t know where the keywords are from and what kind of Logo it is. Help me!

```

1996 <*lang3>
1997 \lst@definlanguage{Logo}%
1998 % ??? {end,unix} also keywords
1999 {morekeywords={and,atan,arctan,both,break,bf,bl,butfirst,butlast,%
2000         cbreak, close,co,continue,cos,count,clearscreen,cs,debquit,%
2001         describe,diff,difference,ed,edit,either,empty,equalp,er,erase,%
2002         errpause,errquit,fifp,filefprint,fifty,fileftype,fip,fileprint,%
2003         fird,fileread,fity,filetype,fiwd,fileword,f,first,or,fp,fprint,%
2004         fput,fty,ftype,full,fullscreen,go,bye,goodbye,gprop,greaterp,%
2005         help,if,iff,iffalse,ift,iftrue,nth,item,keyp,llast,lessp,list,%
2006         local,lput,make,max,maximum,memberp,memtrace,min,minimum,namep,%
2007         not,numberp,oflush,openr,openread,openw,openwrite,op,output,%
2008         pause,plist,pots,pow,pprop,pps,pr,print,product,quotient,random,%

```

```

2009      rc, readchar, rl, readlist, remprop, repcount, repeat, request, rnd, run, %
2010      se, sentence, sentencep, setc, setcolor, setipause, setqpause, po, show, %
2011      sin, split, splitscreen, sqrt, stop, sum, test, text, textscreen, thing, %
2012      to, tone, top, toplevel, type, untrace, wait, word, wordp, yaccdebug, is, %
2013      mod, remainder, trace, zerop, back, bk, bto, btouch, fd, forward, fto, %
2014      ftouch, getpen, heading, hit, hitoot, ht, hideturtle, loff, lampoff, lon, %
2015      lampon, lt, left, lot, lotoot, lto, ltouch, penc, pencolor, pd, pendown, pe, %
2016      penerase, penmode, pu, penup, px, penreverse, rt, right, rto, rtouch, %
2017      scrunch, seth, setheading, setscrunch, setxy, shownp, st, %
2018      showturtle, towardsxy, clean, wipeclean, xcor, ycor, tur, turtle, %
2019      display, dpy}, %
2020      sensitive=f% ???
2021    }[keywords]%
2022 </lang3>

```

## 2.39 Lua

Stephan Hennig contributed the Lua keywords.

```
2023 <*lang2>
```

We begin with the keywords for Lua 5.0:

```

2024 %%
2025 %% Lua definitions (c) 2013 Stephan Hennig
2026 %%
2027 \lst@definelanguage[5.0]{Lua}{%

```

To enable highlighting of library keywords, the dot needs to be a letter.

```
2028   alsoletter={.},%
```

The language definition knows

- language keywords

```

2029     morekeywords=[1]{%
2030         and, break, do, else, elseif, end, false, for, function, if, in, %
2031         local, nil, not, or, repeat, return, then, true, until, while, %
2032     },%

```

- the standard library identifiers

```

2033     morekeywords=[2]{%
2034         _G, _LOADED, _REQUIREDNAME, _VERSION, LUA_PATH, %
2035         assert, collectgarbage, dofile, error, gcinfo, getfenv, %
2036         getmetatable, ipairs, loadfile, loadlib, loadstring, newproxy, %
2037         next, pairs, pcall, print, rawequal, rawget, rawset, require, %
2038         setfenv, setmetatable, tonumber, tostring, type, unpack, xpcall, %
2039         -- coming from the base library
2040         coroutine, coroutine.create, coroutine.resume, %
2041         coroutine.status, coroutine.wrap, coroutine.yield, %

```

```

-- the debug library
2041         _TRACEBACK, debug, debug.debug, debug.gethook, debug.getinfo,%
2042         debug.getlocal, debug.getupvalue, debug.sethook, debug.setlocal,%
2043         debug.setupvalue,debug.traceback,%

-- the io library
2044         io, io.close, io.flush, io.input, io.lines, io.open, io.output,%
2045         io.popen, io.read, io.stderr, io.stdin, io.stdout, io.tmpfile,%
2046         io.type, io.write,%

-- the mathematical library
2047         __pow, math, math.abs, math.acos, math.asin, math.atan, math.atan2,%
2048         math.ceil, math.cos, math.deg, math.exp, math.floor, math.frexp,%
2049         math.ldexp, math.log, math.log10, math.max, math.min, math.mod,%
2050         math.pi, math.pow, math.rad, math.random, math.randomseed, math.sin,%
2051         math.sqrt, math.tan,%

-- the os library
2052         os, os.clock, os.date, os.difftime, os.execute, os.exit, os.getenv,%
2053         os.remove, os.rename, os.setlocale, os.time, os.tmpname,%

-- the string library
2054         string, string.byte, string.char, string.dump, string.find,%
2055         string.format, string.gfind, string.gsub, string.len, string.lower,%
2056         string.rep, string.sub, string.upper,%

-- the table library
2057         table, table.concat, table.foreach, table.foreachi, table.getn,%
2058         table.insert, table.remove, table.setn, table.sort,%
2059     },%

```

and some additional identifiers

```

2060     morekeywords=[2]{%
2061         _PROMPT, _PROMPT2, arg,%
2062     },%

```

These are the common language settings

```

2063     sensitive=true,%
2064     % single line comments
2065     morecomment=[1]{--},%
2066     % multi line comments
2067     morecomment=[s]{--[{}]},%
2068     % backslash escaped strings
2069     morestring=[b]",%
2070     morestring=[b]',%
2071     % multi line strings
2072     morestring=[s]{[[{}]}],%
2073 }[keywords,comments,strings]%

```

And here are the new definitions for Lua 5.1:

```

2074 \lst@definelanguage[5.1]{Lua}[5.0]{Lua}{%

```

There are some deletions

```
2075  deletekeywords=[2]{%  
concerning
```

- the base library

```
2076      _LOADED, _REQUIREDNAME, LUA_PATH, gcinfo, loadlib,%
```

- the debug library

```
2077      _TRACEBACK,%
```

- the mathematical library

```
2078      __pow, math.mod,%
```

- the string library

```
2079      string.gfind,%
```

- the table library

```
2080      table.foreach, table.foreachi, table.getn, table.setn,%  
2081      },%
```

and some new identifiers in standard libraries like

```
2082  morekeywords=[2]{%
```

- the base library

```
2083      load, select,%
```

- coroutine library

```
2084      coroutine.running,%
```

- debug library

```
2085      debug.getfenv, debug.getmetatable, debug.getregistry, debug.setfenv,%  
2086      debug.setmetatable,%
```

- the mathematical library

```
2087      math.cosh, math.fmod, math.huge, math.modf, math.sinh, math.tanh,%
```

- the package library which itself is new in Lua 5.1

```
2088      module, package, package.config, package.cpath, package.loaded,%  
2089      package.loaders, package.loadlib, package.path, package.preload,%  
2090      package.seeall,%
```

- the string library and

```
2091      string.gmatch, string.match, string.reverse,%
```

- the table library

```
2092         table.maxn,%
2093     },%
```

In Lua 5.1 long bracket comments were introduced also

```
2094     morecomment=[s]{--[=[{}{]=]}},%
2095     morecomment=[s]{--[==[]{}==]}},%
2096     morecomment=[s]{--[===[]{}===]}},%
2097     morecomment=[s]{--[====[]{}====]}},%
2098     morecomment=[s]{--[=====[]{}=====]}},%
2099     morecomment=[s]{--[=====[{}{}=====]}},%
2100     morecomment=[s]{--[=====[]{}=====]}},%
2101     morecomment=[s]{--[=====[]{}=====]}},%
2102     morecomment=[s]{--[=====[]{}=====]}},%
2103     morecomment=[s]{--[=====[]{}=====]}},%
```

as well as long bracket strings

```
2104     morestring=[s]{[=[{}{]=]}},%
2105     morestring=[s]{[==[]{}==]}},%
2106     morestring=[s]{[===[]{}===]}},%
2107     morestring=[s]{[====[]{}====]}},%
2108     morestring=[s]{[=====[]{}=====]}},%
2109     morestring=[s]{[=====[{}{}=====]}},%
2110     morestring=[s]{[=====[]{}=====]}},%
2111     morestring=[s]{[=====[]{}=====]}},%
2112     morestring=[s]{[=====[]{}=====]}},%
2113     morestring=[s]{[=====[]{}=====]}},%
2114 }[keywords,comments,strings]%
```

Lua 5.2 also has some changed features. These are

```
2115 \lst@definlanguage[5.2]{Lua}[5.1]{Lua}{%
```

- new language keywords

```
2116     morekeywords=[1]{%
2117         goto,%
2118     },%
```

- deleted identifiers from the standard libraries like

```
2119     deletekeywords=[2]{%
```

– the base library

```
2120         getfenv, loadstring, module, newproxy, setfenv, unpack,%
```

– the debug library

```
2121         debug.getfenv, debug.setfenv,%
```

– the mathematical library

```
2122         math.log10,%
```

```

        -- the package library and
2123         package.loaders, package.seeall,%
        -- the table library
2124         table.maxn,%
2125     },%

```

Again there are some new identifiers in the standard libraries

```

2126     morekeywords=[2]{%
like
    • the base library
2127         rawlen,%

    • the bit library
2128         bit32, bit32.arshift, bit32.band, bit32.bnot, bit32.bor,%
2129         bit32.btest, bit32.bxor, bit32.extract, bit32.lrotate,%
2130         bit32.lshift, bit32.replace, bit32.rrotate, bit32.rshift,%

    • the debug library
2131         debug.getuservalue, debug.setuservalue, debug.upvalueid,%
2132         debug.upvaluejoin,%

    • the package library
2133         package.searchers, package.searchpath,%

    • the table library
2134         table.pack, table.unpack,%
2135     },%

```

There is a new additional identifier

```

2136     morekeywords=[2]{%
2137         _ENV,%
2138     },%

```

and labels are also new in Lua 5.2

```

2139     moredelim=[s][keywordstyle3]{::}{::},%
2140 }[keywords,comments,strings]%
2141 </lang2>

```

Stephan Hennig also supplied a definition of a style for printing Lua code:

```

2142 <*lua-prf>

```



```

2143 \usepackage[rgb, x11names]{xcolor}
2144 \lstdefinestyle{Lua}{%
2145   language=[5.2]Lua,
2146   basicstyle=\ttfamily,
2147   columns=spaceflexible,
2148   keywordstyle=\bfseries\color{Blue4},% language keywords
2149   keywordstyle=[2]\bfseries\color{RoyalBlue3},% std. library identifiers
2150   keywordstyle=[3]\bfseries\color{Purple3},% labels
2151   stringstyle=\bfseries\color{Coral4},% strings
2152   commentstyle=\itshape\color{Green4},% comments
2153 }

```

This code is provided in the file `listings-lua.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```

2154 </lua-prf>

```

## 2.40 Make

Rolf Niepraschk sent me the new definitions. Markus Pahlow found a missing comma and added some keywords, which improve the highlighting with `makemacrouse=true` (but I haven't tested this).

```

2155 <*lang2>
2156 %%
2157 %% Make definitions (c) 2000 Rolf Niepraschk
2158 %%
2159 \lst@definlanguage[gnu]{make}%
2160 {morekeywords={SHELL,MAKE,MAKEFLAGS,$@,$\%,<,$?,$^,$+,$*,%
2161   @,^,<,\%,+,,?,,*,% Markus Pahlow
2162   export,unexport,include,override,define,ifdef,ifneq,ifeq,else,%
2163   endif,vpath,subst,patsubst,strip,findstring,filter,filter-out,%
2164   sort,dir,notdir,suffix,basename,addsuffix,addprefix,join,word,%
2165   words,firstword,wildcard,shell,origin,foreach,%
2166   @D,@F,*D,*F,\%D,\%F,<D,<F,^D,^F,+D,+F,?D,?F,%
2167   AR,AS,CC,CXX,CO,CPP,FC,GET,LEX,PC,YACC,YACC,MAKEINFO,TEXI2DVI,%
2168   WEAVE,CWEAVE,TANGLE,CTANGLE,RM,M2C,LINT,COMPILE,LINK,PREPROCESS,%
2169   CHECKOUT,%
2170   ARFLAGS,ASFLAGS,CFLAGS,CXXFLAGS,COFLAGS,CPPFLAGS,FFLAGS,GFLAGS,%
2171   LDFLAGS,LOADLIBES,LFLAGS,PFLAGS,RFLAGS,YFLAGS,M2FLAGS,MODFLAGS,%
2172   LINTFLAGS,MAKEINFO_FLAGS,TEXI2DVI_FLAGS,COFLAGS,GFLAGS,%
2173   OUTPUT_OPTION,SCCS_OUTPUT_OPTION,% missing comma: Markus Pahlow
2174   .PHONY,.SUFFIXES,.DEFAULT,.PRECIOUS,.INTERMEDIATE,.SECONDARY,%
2175   .IGNORE,.SILENT,.EXPORT_ALL_VARIABLES,MAKEFILES,VPATH,MAKESHELL,%
2176   MAKELEVEL,MAKECMDGOALS,SUFFIXES},%
2177   sensitive=true,
2178   morecomment=[l]\#,%
2179   morestring=[b]"%
2180 }[keywords,comments,strings,make]%
2181 \lst@definlanguage{make}

```

```

2182 {morekeywords={SHELL,MAKE,MAKEFLAGS,$@,$\%,$<,$?,$^,$+,$*},%
2183     sensitive=true,%
2184     morecomment=[l]\#,%
2185     morestring=[b]"%
2186 }[keywords,comments,strings,make]%

```

The two [b]-arguments have been added after a bug report by Dr. Jobst Hoffmann

```
2187 </lang2>
```

## 2.41 Matlab

I took the keywords from <http://www.utexas.edu/math/Matlab/Manual>, but I removed the keywords i, j and tmp—the change was proposed by Kai Below.

```

2188 <*lang1>
2189 \lstdefinlanguage{Matlab}%
2190 {morekeywords={gt,lt,gt,lt,amp,abs,acos,acosh,acot,acoth,acsc,acsch,%
2191     all,angle,ans,any,asec,asech,asin,asinh,atan,atan2,atanh,auread,%
2192     auwrite,axes,axis,balance,bar,bessel,besselk,bessely,beta,%
2193     betainc,betaln,blanks,bone,break,brighten,capture,cart2pol,%
2194     cart2sph,caxis,cd,cdf2rdf,cedit,ceil,chol,cla,clabel,clc,clear,%
2195     clf,clock,close,colmmd,Colon,colorbar,colormap,ColorSpec,colperm,%
2196     comet,comet3,compan,compass,computer,cond,condest,conj,contour,%
2197     contour3,contourc,contrast,conv,conv2,cool,copper,corrcoef,cos,%
2198     cosh,cot,coth,cov,cplxpair,cputime,cross,csc,csch,csvread,%
2199     csvwrite,cumprod,cumsum,cylinder,date,dbclear,dbcont,dbdown,%
2200     dbquit,dbstack,dbstatus,dbstep,dbstop,dbtype,dbup,ddeadv,ddeexec,%
2201     ddeinit,ddepoke,ddereq,ddeterm,ddeunadv,deblank,dec2hex,deconv,%
2202     del2,delete,demo,det,diag,diary,diff,diffuse,dir,disp,dlmread,%
2203     dlmwrite,dmperm,dot,drawnow,echo,eig,ellipj,ellipke,else,elseif,%
2204     end,engClose,engEvalString,engGetFull,engGetMatrix,engOpen,%
2205     engOutputBuffer,engPutFull,engPutMatrix,engSetEvalCallback,%
2206     engSetEvalTimeout,engWinInit,eps,erf,erfc,erfcx,erfinv,error,%
2207     errorbar,etime,etree,eval,exist,exp,expint,expm,expo,eye,fclose,%
2208     feather,feof,ferror,feval,fft,fft2,fftshift,fgetl,fgets,figure,%
2209     fill,fill3,filter,filter2,find,findstr,finite,fix,flag,fliplr,%
2210     flipud,floor,flops,fmin,fmins,fopen,for,format,fplot,fprintf,%
2211     fread,frewind,fscanf,fseek,ftell,full,function,funm,fwrite,fzero,%
2212     gallery,gamma,gammainc,gammainc,gca,gcd,gcf,gco,get,getenv,%
2213     getframe,ginput,global,gplot,gradient,gray,graymon,grid,griddata,%
2214     gtext,hadamard,hankel,help,hess,hex2dec,hex2num,hidden,hilb,hist,%
2215     hold,home,hostid,hot,hsv,hsv2rgb,if,ifft,ifft2,imag,image,%
2216     imagesc,Inf,info,input,int2str,interp1,interp2,interpft,inv,%
2217     invhilb,isempty,isglobal,ishold,isieee,isin,isletter,isnan,%
2218     isreal,isspace,issparse,isstr,jet,keyboard,kron,lasterr,lcm,%
2219     legend,legendre,length,lin2mu,line,linspace,load,log,log10,log2,%
2220     loglog,logm,logspace,lookfor,lower,ls,lscov,lu,magic,matClose,%
2221     matDeleteMatrix,matGetDir,matGetFp,matGetFull,matGetMatrix,%
2222     matGetNextMatrix,matGetString,matlabrc,matlabroot,matOpen,%
2223     matPutFull,matPutMatrix,matPutString,max,mean,median,menu,mesh,%

```

```

2224 meshc,meshgrid,meshz,mexAtExit,mexCallMATLAB,mexdebug,%
2225 mexErrMsgTxt,mexEvalString,mexFunction,mexGetFull,mexGetMatrix,%
2226 mexGetMatrixPtr,mexPrintf,mexPutFull,mexPutMatrix,mexSetTrapFlag,%
2227 min,more,movie,moviein,mu2lin,mxCalloc,mxCopyCharacterToPtr,%
2228 mxCopyComplex16ToPtr,mxCopyInteger4ToPtr,mxCopyPtrToCharacter,%
2229 mxCopyPtrToComplex16,mxCopyPtrToInteger4,mxCopyPtrToReal8,%
2230 mxCopyReal8ToPtr,mxCreateFull,mxCreateSparse,mxCreateString,%
2231 mxFree,mxFreeMatrix,mxGetIr,mxGetJc,mxGetM,mxGetN,mxGetName,%
2232 mxGetNzmax,mxGetPi,mxGetPr,mxGetScalar,mxGetString,mxIsComplex,%
2233 mxIsFull,mxIsNumeric,mxIsSparse,mxIsString,mxIsTypeDouble,%
2234 mxSetIr,mxSetJc,mxSetM,mxSetN,mxSetName,mxSetNzmax,mxSetPi,%
2235 mxSetPr,NaN,nargchk,nargin,nargout,newplot,nextpow2,nnls,nnz,%
2236 nonzeros,norm,normest,null,num2str,nzmax,ode23,ode45,orient,orth,%
2237 pack,pascal,patch,path,pause,pcolor,pi,pink,pinv,plot,plot3,%
2238 pol2cart,polar,poly,polyder,polyeig,polyfit,polyval,polyvalm,%
2239 pow2,print,printopt,prism,prod,pwd,qd,qrdelete,qrinsert,quad,%
2240 quad8,quit,quiver,qz,rand,randn,randperm,rank,rat,rats,rbbox,%
2241 rcond,real,realmax,realmin,refresh,rem,reset,reshape,residue,%
2242 return,rgb2hsv,rgbplot,rootobject,roots,rose,rosser,rot90,rotate,%
2243 round,rref,rrefmovie,rsf2csf,save,saxis,schur,sec,sech,semilogx,%
2244 semilogy,set,setstr,shading,sign,sin,sinh,size,slice,sort,sound,%
2245 spalloc,sparse,spaugment,spconvert,spdiags,specular,speye,spfun,%
2246 sph2cart,sphere,spinmap,spline,spones,spparms,sprandn,sprandsym,%
2247 sprank,sprintf,spy,sqrt,sqrtm,sscanf,stair,stairs,startup,std,stem,%
2248 str2mat,str2num,strcmp,strings,strrep,strtok,subplot,subscribe,%
2249 subspace,sum,surf,surface,surfc,surfl,surfnorm,svd,symbfact,%
2250 symmmd,symrcm,tan,tanh,tempdir,tempname,terminal,text,tic,title,%
2251 toc,toeplitz,trace,trapz,tril,triu,type,uicontrol,uigetfile,%
2252 uimenu,uiputfile,unix,unwrap,upper,vander,ver,version,view,%
2253 viewmtx,waitforbuttonpress,waterfall,wavread,wavwrite,what,%
2254 whatsnew,which,while,white,whitebg,who,whos,wilkinson,wk1read,%
2255 wk1write,xlabel,xor,ylabel,zeros,zlabel,zoom},%
2256 sensitive,%
2257 morecomment=[l]\%,%
2258 morestring=[m]’%
2259 }[keywords,comments,strings]%
2260 </lang1>

```

## 2.42 Mathematica

Michael Wiese typed in all the keywords for the 1.0 and 3.0 versions. Oliver Ruebenkoenig wrote a script to generate the lists for the 5.2 version.

```

2261 <*lang1>
2262 \lst@definlanguage[5.2]{Mathematica}[3.0]{Mathematica}%%
2263 {morekeywords={Above,AbsoluteOptions,AbsoluteTiming,AccountingForm,%
2264 AccuracyGoal,Active,ActiveItem,AddOnHelpPath,%
2265 AdjustmentBox,AdjustmentBoxOptions,After,AiryAiPrime,%
2266 AlgebraicRulesData,Algebraics,Alias,AlignmentMarker,%

```

2267 AllowInlineCells, AllowScriptLevelChange, Analytic, AnimationCycleOffset, %  
 2268 AnimationCycleRepetitions, AnimationDirection, AnimationDisplayTime, ApartSquareFree, %  
 2269 AppellF1, ArgumentCountQ, ArrayDepth, ArrayPlot, %  
 2270 ArrayQ, ArrayRules, AspectRatioFixed, Assuming, %  
 2271 Assumptions, AutoDelete, AutoEvaluateEvents, AutoGeneratedPackage, %  
 2272 AutoIndent, AutoIndentSpacings, AutoItalicWords, AutoloadPath, %  
 2273 AutoOpenNotebooks, AutoOpenPalettes, AutoScroll, AutoSpacing, %  
 2274 AutoStyleOptions, Axis, BackgroundTasksSettings, Backsubstitution, %  
 2275 Backward, Baseline, Before, BeginDialogPacket, %  
 2276 BeginFrontEndInteractionPacket, Below, BezoutMatrix, BinaryFormat, %  
 2277 BinaryGet, BinaryRead, BinaryReadList, BinaryWrite, %  
 2278 BitAnd, BitNot, BitOr, BitXor, %  
 2279 Black, BlankForm, Blue, Boole, %  
 2280 Booleans, Bottom, Bounds, Box, %  
 2281 BoxBaselineShift, BoxData, BoxDimensions, BoxFormFormatTypes, %  
 2282 BoxFrame, BoxMargins, BoxRegion, Brown, %  
 2283 Buchberger, Button, ButtonBox, ButtonBoxOptions, %  
 2284 ButtonCell, ButtonContents, ButtonData, ButtonEvaluator, %  
 2285 ButtonExpandable, ButtonFrame, ButtonFunction, ButtonMargins, %  
 2286 ButtonMinHeight, ButtonNote, ButtonNotebook, ButtonSource, %  
 2287 ButtonStyle, ButtonStyleMenuListing, ByteOrdering, CallPacket, %  
 2288 CarmichaelLambda, Cell, CellAutoOverwrite, CellBaseline, %  
 2289 CellBoundingBox, CellBracketOptions, CellContents, CellDingbat, %  
 2290 CellEditDuplicate, CellElementsBoundingBox, CellElementSpacings, CellEvaluationDuplicate, %  
 2291 CellFrame, CellFrameColor, CellFrameLabelMargins, CellFrameLabels, %  
 2292 CellFrameMargins, CellGroup, CellGroupData, CellGrouping, %  
 2293 CellGroupingRules, CellHorizontalScrolling, CellLabel, CellLabelAutoDelete, %  
 2294 CellLabelMargins, CellLabelPositioning, CellMargins, CellObject, %  
 2295 CellOpen, CellPasswords, CellPrint, CellSize, %  
 2296 CellStyle, CellTags, CellularAutomaton, Center, %  
 2297 CharacterEncoding, CharacterEncodingsPath, CharacteristicPolynomial, CharacterRange, %  
 2298 CheckAll, CholeskyDecomposition, Clip, ClipboardNotebook, %  
 2299 Closed, ClosingAutoSave, CoefficientArrays, CoefficientDomain, %  
 2300 CofactorExpansion, ColonForm, ColorFunctionScaling, ColorRules, %  
 2301 ColorSelectorSettings, Column, ColumnAlignments, ColumnLines, %  
 2302 ColumnsEqual, ColumnSpacings, ColumnWidths, CommonDefaultFormatTypes, %  
 2303 CompileOptimizations, CompletionsListPacket, Complexes, ComplexityFunction, %  
 2304 Compose, ComposeSeries, ConfigurationPath, ConjugateTranspose, %  
 2305 Connect, ConsoleMessage, ConsoleMessagePacket, ConsolePrint, %  
 2306 ContentsBoundingBox, ContextToFileName, ContinuedFraction, ConversionOptions, %  
 2307 ConversionRules, ConvertToBitmapPacket, ConvertToPostScript, ConvertToPostScriptPacket, %  
 2308 Copyable, CoshIntegral, CounterAssignments, CounterBox, %  
 2309 CounterBoxOptions, CounterEvaluator, CounterFunction, CounterIncrements, %  
 2310 CounterStyle, CounterStyleMenuListing, CreatePalettePacket, Cross, %  
 2311 CurrentlySpeakingPacket, Cyan, CylindricalDecomposition, DampingFactor, %  
 2312 DataRange, Debug, DebugTag, Decimal, %  
 2313 DedekindEta, DefaultDuplicateCellStyle, DefaultFontProperties, DefaultFormatType, %  
 2314 DefaultFormatTypeForStyle, DefaultInlineFormatType, DefaultInputFormatType, %  
 2315 DefaultNaturalLanguage, %  
 2316 DefaultNewCellStyle, DefaultNewInlineCellStyle, DefaultNotebook, DefaultOutputFormatType, %

2317 DefaultStyleDefinitions,DefaultTextFormatType,DefaultTextInlineFormatType,DefaultValues,%  
 2318 DefineExternal,DegreeLexicographic,DegreeReverseLexicographic,Deletable,%  
 2319 DeleteContents,DeletionWarning,DelimiterFlashTime,DelimiterMatching,%  
 2320 Delimiters,DependentVariables,DiacriticalPositioning,DialogLevel,%  
 2321 DifferenceOrder,DigitCharacter,DigitCount,DiracDelta,%  
 2322 Direction,DirectoryName,DisableConsolePrintPacket,DiscreteDelta,%  
 2323 DisplayAnimation,DisplayEndPacket,DisplayFlushImagePacket,DisplayForm,%  
 2324 DisplayPacket,DisplayRules,DisplaySetSizePacket,DisplayString,%  
 2325 DivisionFreeRowReduction,DOSTextFormat,DoubleExponential,DoublyInfinite,%  
 2326 Down,DragAndDrop,DrawHighlighted,DualLinearProgramming,%  
 2327 DumpGet,DumpSave,Edit,Editable,%  
 2328 EditButtonSettings,EditCellTagsSettings,EditDefinition,EditIn,%  
 2329 Element,EliminationOrder,EllipticExpPrime,EllipticNomeQ,%  
 2330 EllipticReducedHalfPeriods,EllipticThetaPrime,Empty,EnableConsolePrintPacket,%  
 2331 Encoding,EndAdd,EndDialogPacket,EndFrontEndInteractionPacket,%  
 2332 EndOfLine,EndOfString,Enter,EnterExpressionPacket,%  
 2333 EnterTextPacket,EqualColumns,EqualRows,EquatedTo,%  
 2334 Erfi,ErrorBox,ErrorBoxOptions,ErrorNorm,%  
 2335 ErrorPacket,ErrorsDialogSettings,Evaluatable,EvaluatePacket,%  
 2336 EvaluationCell,EvaluationCompletionAction,EvaluationMonitor,EvaluationNotebook,%  
 2337 Evaluator,EvaluatorNames,EventEvaluator,ExactNumberQ,%  
 2338 ExactRootIsolation,Except,ExcludedForms,Exists,%  
 2339 ExitDialog,ExponentPosition,ExponentStep,Export,%  
 2340 ExportAutoReplacements,ExportPacket,ExportString,ExpressionPacket,%  
 2341 ExpToTrig,Extension,ExternalCall,ExternalDataCharacterEncoding,%  
 2342 Extract,Fail,FEDisableConsolePrintPacket,FEEEnableConsolePrintPacket,%  
 2343 Fibonacci,File,FileFormat,FileInformation,%  
 2344 FileName,FileNameDialogSettings,FindFit,FindInstance,%  
 2345 FindMaximum,FindSettings,FitAll,FlushPrintOutputPacket,%  
 2346 Font,FontColor,FontFamily,FontName,%  
 2347 FontPostScriptName,FontProperties,FontReencoding,FontSize,%  
 2348 FontSlant,FontSubstitutions,FontTracking,FontVariations,%  
 2349 FontWeight,ForAll,FormatRules,FormatTypeAutoConvert,%  
 2350 FormatValues,FormBox,FormBoxOptions,Forward,%  
 2351 ForwardBackward,FourierCosTransform,FourierParameters,FourierSinTransform,%  
 2352 FourierTransform,FractionalPart,FractionBox,FractionBoxOptions,%  
 2353 FractionLine,FrameBox,FrameBoxOptions,FresnelC,%  
 2354 FresnelS,FromContinuedFraction,FromDigits,FrontEndExecute,%  
 2355 FrontEndObject,FrontEndStackSize,FrontEndToken,FrontEndTokenExecute,%  
 2356 FrontEndVersion,Full,FullAxes,FullSimplify,%  
 2357 FunctionExpand,FunctionInterpolation,GaussKronrod,GaussPoints,%  
 2358 GenerateBitmapCaches,GenerateConditions,GeneratedCell,GeneratedParameters,%  
 2359 Generic,GetBoundingBoxSizePacket,GetContext,GetFileName,%  
 2360 GetFrontEndOptionsDataPacket,GetLinebreakInformationPacket,%  
 2361 GetMenusPacket,GetPageBreakInformationPacket,%  
 2362 Glaisher,GlobalPreferences,GlobalSession,Gradient,%  
 2363 GraphicsData,GraphicsGrouping,Gray,Green,%  
 2364 Grid,GridBaseline,GridBox,GridBoxOptions,%  
 2365 GridCreationSettings,GridDefaultElement,GridFrame,GridFrameMargins,%  
 2366 GroupPageBreakWithin,HarmonicNumber,Hash,HashTable,%

2367 HeadCompose, HelpBrowserLookup, HelpBrowserNotebook, HelpBrowserSettings, %  
 2368 HessenbergDecomposition, Hessian, HoldAllComplete, HoldComplete, %  
 2369 HoldPattern, Horizontal, HorizontalForm, HorizontalScrollPosition, %  
 2370 HTMLSave, Hypergeometric0F1Regularized, Hypergeometric1F1Regularized, %  
 2371 Hypergeometric2F1Regularized, %  
 2372 HypergeometricPFQ, HypergeometricPFQRegularized, HyperlinkCreationSettings, Hyphenation, %  
 2373 HyphenationOptions, IgnoreCase, ImageCache, ImageCacheValid, %  
 2374 ImageMargins, ImageOffset, ImageRangeCache, ImageRegion, %  
 2375 ImageResolution, ImageRotated, ImageSize, Import, %  
 2376 ImportAutoReplacements, ImportString, IncludeFileExtension, IncludeSingularTerm, %  
 2377 IndentingNewlineSpacings, IndentMaxFraction, IndexCreationOptions, Inequality, %  
 2378 InexactNumberQ, InexactNumbers, Inherited, InitializationCell, %  
 2379 InitializationCellEvaluation, InitializationCellWarning, %  
 2380 InlineCounterAssignments, InlineCounterIncrements, %  
 2381 InlineRules, InputAliases, InputAutoFormat, InputAutoReplacements, %  
 2382 InputGrouping, InputNamePacket, InputNotebook, InputPacket, %  
 2383 InputSettings, InputStringPacket, InputToBoxFormPacket, InputToInputForm, %  
 2384 InputToStandardForm, InsertionPointObject, IntegerExponent, IntegerPart, %  
 2385 Integers, Interactive, Interlaced, InterpolationOrder, %  
 2386 InterpolationPoints, InterpolationPrecision, InterpretationBox, %  
 2387 InterpretationBoxOptions, %  
 2388 InterpretTemplate, InterruptSettings, Interval, IntervalIntersection, %  
 2389 IntervalMemberQ, IntervalUnion, InverseBetaRegularized, InverseEllipticNomeQ, %  
 2390 InverseErf, InverseErfc, InverseFourierCosTransform, %  
 2391 InverseFourierSinTransform, %  
 2392 InverseFourierTransform, InverseGammaRegularized, InverseJacobiCD, %  
 2393 InverseJacobiCN, %  
 2394 InverseJacobiCS, InverseJacobiDC, InverseJacobiDN, InverseJacobiDS, %  
 2395 InverseJacobiNC, InverseJacobiND, InverseJacobiNS, InverseJacobiSC, %  
 2396 InverseJacobiSD, InverseLaplaceTransform, InverseWeierstrassP, InverseZTransform, %  
 2397 Jacobian, JacobiCD, JacobiCN, JacobiCS, %  
 2398 JacobiDC, JacobiDN, JacobiDS, JacobiNC, %  
 2399 JacobiND, JacobiNS, JacobiSC, JacobiSD, %  
 2400 JordanDecomposition, K, Khinchin, KleinInvariantJ, %  
 2401 KroneckerDelta, Language, LanguageCategory, LaplaceTransform, %  
 2402 Larger, Launch, LayoutInformation, Left, %  
 2403 LetterCharacter, Lexicographic, LicenseID, LimitsPositioning, %  
 2404 LimitsPositioningTokens, LinearSolveFunction, LinebreakAdjustments, LineBreakWithin, %  
 2405 LineForm, LineIndent, LineSpacing, LineWrapParts, %  
 2406 LinkActivate, LinkClose, LinkConnect, LinkConnectedQ, %  
 2407 LinkCreate, LinkError, LinkFlush, LinkHost, %  
 2408 LinkInterrupt, LinkLaunch, LinkMode, LinkObject, %  
 2409 LinkOpen, LinkOptions, LinkPatterns, LinkProtocol, %  
 2410 LinkRead, LinkReadHeld, LinkReadyQ, Links, %  
 2411 LinkWrite, LinkWriteHeld, ListConvolve, ListCorrelate, %  
 2412 Listen, ListInterpolation, ListQ, LiteralSearch, %  
 2413 LongestMatch, LongForm, Loopback, LUBackSubstitution, %  
 2414 LUDecomposition, MachineID, MachineName, MachinePrecision, %  
 2415 MacintoshSystemPageSetup, Magenta, Magnification, MakeBoxes, %  
 2416 MakeExpression, MakeRules, Manual, MatchLocalNameQ, %

2417 MathematicaNotation,MathieuC,MathieuCharacteristicA,MathieuCharacteristicB,%  
 2418 MathieuCharacteristicExponent,MathieuCPrime,MathieuS,MathieuSPrime,%  
 2419 MathMLForm,MathMLText,MatrixRank,Maximize,%  
 2420 MaxIterations,MaxPlotPoints,MaxPoints,MaxRecursion,%  
 2421 MaxStepFraction,MaxSteps,MaxStepSize,Mean,%  
 2422 Median,MeijerG,MenuPacket,MessageOptions,%  
 2423 MessagePacket,MessagesNotebook,MetaCharacters,Method,%  
 2424 MethodOptions,Minimize,MinRecursion,MinSize,%  
 2425 Mode,ModularLambda,MonomialOrder,MonteCarlo,%  
 2426 Most,MousePointerNote,Multidimensional,MultilaunchWarning,%  
 2427 MultilineFunction,MultiplicativeOrder,Multiplicity,Nand,%  
 2428 NeedCurrentFrontEndPackagePacket,NeedCurrentFrontEndSymbolsPacket,%  
 2429 NestedScriptRules,NestWhile,%  
 2430 NestWhileList,NevilleThetaC,NevilleThetaD,NevilleThetaN,%  
 2431 NevilleThetaS,Newton,Next,NHoldAll,%  
 2432 NHoldFirst,NHoldRest,NMaximize,NMinimize,%  
 2433 NonAssociative,NonPositive,Nor,Norm,%  
 2434 NormalGrouping,NormalSelection,NormFunction,Notebook,%  
 2435 NotebookApply,NotebookAutoSave,NotebookClose,NotebookConvert,%  
 2436 NotebookConvertSettings,NotebookCreate,NotebookCreateReturnObject,NotebookDefault,%  
 2437 NotebookDelete,NotebookDirectory,NotebookFind,NotebookFindReturnObject,%  
 2438 NotebookGet,NotebookGetLayoutInformationPacket,NotebookGetMisspellingsPacket,%  
 2439 NotebookInformation,%  
 2440 NotebookLocate,NotebookObject,NotebookOpen,NotebookOpenReturnObject,%  
 2441 NotebookPath,NotebookPrint,NotebookPut,NotebookPutReturnObject,%  
 2442 NotebookRead,NotebookResetGeneratedCells,Notebooks,NotebookSave,%  
 2443 NotebookSaveAs,NotebookSelection,NotebookSetupLayoutInformationPacket,%  
 2444 NotebooksMenu,%  
 2445 NotebookWrite,NotElement,NProductExtraFactors,NProductFactors,%  
 2446 NRoots,NSumExtraTerms,NSumTerms,NumberMarks,%  
 2447 NumberMultiplier,NumberString,NumericFunction,NumericQ,%  
 2448 NValues,Offset,OLEData,OneStepRowReduction,%  
 2449 Open,OpenFunctionInspectorPacket,OpenSpecialOptions,OptimizationLevel,%  
 2450 OptionInspectorSettings,OptionQ,OptionsPacket,OptionValueBox,%  
 2451 OptionValueBoxOptions,Orange,Ordering,Oscillatory,%  
 2452 OutputAutoOverwrite,OutputFormData,OutputGrouping,OutputMathEditExpression,%  
 2453 OutputNamePacket,OutputToOutputForm,OutputToStandardForm,Over,%  
 2454 Overflow,Overlaps,Overscript,OverscriptBox,%  
 2455 OverscriptBoxOptions,OwnValues,PadLeft,PadRight,%  
 2456 PageBreakAbove,PageBreakBelow,PageBreakWithin,PageFooterLines,%  
 2457 PageFooters,PageHeaderLines,PageHeaders,PalettePath,%  
 2458 PaperWidth,ParagraphIndent,ParagraphSpacing,ParameterVariables,%  
 2459 ParentConnect,ParentForm,Parenthesize,PasteBoxFormInlineCells,%  
 2460 Path,PatternTest,PeriodicInterpolation,Pick,%  
 2461 Piecewise,PiecewiseExpand,Pink,Pivoting,%  
 2462 PixelConstrained,Placeholder,Plain,Plot3Matrix,%  
 2463 PointForm,PolynomialForm,PolynomialReduce,Polynomials,%  
 2464 PowerModList,Precedence,PreferencesPath,PreserveStyleSheet,%  
 2465 Previous,PrimaryPlaceholder,Primes,PrincipalValue,%  
 2466 PrintAction,PrintingCopies,PrintingOptions,PrintingPageRange,%

2467 PrintingStartingPageNumber,PrintingStyleEnvironment,PrintPrecision,%  
 2468 PrivateCellOptions,%  
 2469 PrivateEvaluationOptions,PrivateFontOptions,PrivateNotebookOptions,PrivatePaths,%  
 2470 ProductLog,PromptForm,Purple,Quantile,%  
 2471 QuasiMonteCarlo,QuasiNewton,RadicalBox,RadicalBoxOptions,%  
 2472 RandomSeed,RationalFunctions,Rationals,RawData,%  
 2473 RawMedium,RealBlockForm,Reals,Reap,%  
 2474 Red,Refine,Refresh,RegularExpression,%  
 2475 Reinstall,Release,Removed,RenderingOptions,%  
 2476 RepeatedString,ReplaceList,Rescale,ResetMenusPacket,%  
 2477 Resolve,ResumePacket,ReturnExpressionPacket,ReturnInputFormPacket,%  
 2478 ReturnPacket,ReturnTextPacket,Right,Root,%  
 2479 RootReduce,RootSum,Row,RowAlignments,%  
 2480 RowBox,RowLines,RowMinHeight,RowsEqual,%  
 2481 RowSpacings,RSolve,RuleCondition,RuleForm,%  
 2482 RulerUnits,Saveable,SaveAutoDelete,ScreenRectangle,%  
 2483 ScreenStyleEnvironment,ScriptBaselineShifts,ScriptLevel,ScriptMinSize,%  
 2484 ScriptRules,ScriptSizeMultipliers,ScrollingOptions,ScrollPosition,%  
 2485 Second,SectionGrouping,Selectable,SelectedNotebook,%  
 2486 Selection,SelectionAnimate,SelectionCell,SelectionCellCreateCell,%  
 2487 SelectionCellDefaultStyle,SelectionCellParentStyle,SelectionCreateCell,%  
 2488 SelectionDuplicateCell,%  
 2489 SelectionEvaluate,SelectionEvaluateCreateCell,SelectionMove,SelectionSetStyle,%  
 2490 SelectionStrategy,SendFontInformationToKernel,SequenceHold,SequenceLimit,%  
 2491 SeriesCoefficient,SetBoxFormNamesPacket,SetEvaluationNotebook,%  
 2492 SetFileLoadingContext,%  
 2493 SetNotebookStatusLine,SetOptionsPacket,SetSelectedNotebook,%  
 2494 SetSpeechParametersPacket,%  
 2495 SetValue,ShortestMatch,ShowAutoStyles,ShowCellBracket,%  
 2496 ShowCellLabel,ShowCellTags,ShowClosedCellArea,ShowContents,%  
 2497 ShowCursorTracker,ShowGroupOpenCloseIcon,ShowPageBreaks,ShowSelection,%  
 2498 ShowShortBoxForm,ShowSpecialCharacters,ShowStringCharacters,%  
 2499 ShrinkWrapBoundingBox,%  
 2500 SingleLetterItalics,SingularityDepth,SingularValueDecomposition,%  
 2501 SingularValueList,%  
 2502 SinhIntegral,Smaller,Socket,SolveDelayed,%  
 2503 SoundAndGraphics,Sow,Space,SpaceForm,%  
 2504 SpanAdjustments,SpanCharacterRounding,SpanLineThickness,SpanMaxSize,%  
 2505 SpanMinSize,SpanningCharacters,SpanSymmetric,Sparse,%  
 2506 SparseArray,SpeakTextPacket,SpellingDictionaries,SpellingDictionariesPath,%  
 2507 SpellingOptions,SpellingSuggestionsPacket,Spherical,Split,%  
 2508 SqrtBox,SqrtBoxOptions,StandardDeviation,StandardForm,%  
 2509 StartingStepSize,StartOfLine,StartOfString,StartupSound,%  
 2510 StepMonitor,StieltjesGamma,StoppingTest,StringCases,%  
 2511 StringCount,StringExpression,StringFreeQ,StringQ,%  
 2512 StringReplaceList,StringReplacePart,StringSplit,StripBoxes,%  
 2513 StripWrapperBoxes,StructuredSelection,StruveH,StruveL,%  
 2514 StyleBox,StyleBoxAutoDelete,StyleBoxOptions,StyleData,%  
 2515 StyleDefinitions,StyleForm,StyleMenuListing,StyleNameDialogSettings,%  
 2516 StylePrint,StyleSheetPath,Subresultants,SubscriptBox,%



2517 SubscriptBoxOptions,Subsets,Subsuperscript,SubsuperscriptBox,%  
 2518 SubsuperscriptBoxOptions,SubtractFrom,SubValues,SugarCube,%  
 2519 SuperscriptBox,SuperscriptBoxOptions,SuspendPacket,SylvesterMatrix,%  
 2520 SymbolName,Syntax,SyntaxForm,SyntaxPacket,%  
 2521 SystemException,SystemHelpPath,SystemStub,Tab,%  
 2522 TabFilling,TabSpacings,TagBox,TagBoxOptions,%  
 2523 TaggingRules,TagStyle,TargetFunctions,TemporaryVariable,%  
 2524 TensorQ,TeXSave,TextAlignment,TextBoundingBox,%  
 2525 TextData,TextJustification,TextLine,TextPacket,%  
 2526 TextParagraph,TextRendering,TextStyle,ThisLink,%  
 2527 TimeConstraint,TimeVariable,TitleGrouping,ToBoxes,%  
 2528 ToColor,ToFileName,Toggle,ToggleFalse,%  
 2529 Tolerance,TooBig,Top,ToRadicals,%  
 2530 Total,Tr,TraceAction,TraceInternal,%  
 2531 TraceLevel,TraditionalForm,TraditionalFunctionNotation,TraditionalNotation,%  
 2532 TraditionalOrder,TransformationFunctions,TransparentColor,Trapezoidal,%  
 2533 TrigExpand,TrigFactor,TrigFactorList,TrigReduce,%  
 2534 TrigToExp,Tuples,UnAlias,Underflow,%  
 2535 Underoverscript,UnderoverscriptBox,UnderoverscriptBoxOptions,Underscript,%  
 2536 UnderscriptBox,UnderscriptBoxOptions,UndocumentedTestFEParsePacket,%  
 2537 UndocumentedTestGetSelectionPacket,%  
 2538 UnitStep,Up,URL,Using,%  
 2539 V2Get,Value,ValueBox,ValueBoxOptions,%  
 2540 ValueForm,Variance,Verbatim,Verbose,%  
 2541 VerboseConvertToPostScriptPacket,VerifyConvergence,VerifySolutions,Version,%  
 2542 VersionNumber,Vertical,VerticalForm,ViewPointSelectorSettings,%  
 2543 Visible,VisibleCell,WeierstrassHalfPeriods,WeierstrassInvariants,%  
 2544 WeierstrassSigma,WeierstrassZeta,White,Whitespace,%  
 2545 WhitespaceCharacter,WindowClickSelect,WindowElements,WindowFloating,%  
 2546 WindowFrame,WindowFrameElements,WindowMargins,WindowMovable,%  
 2547 WindowSize,WindowTitle,WindowToolbars,WindowWidth,%  
 2548 WordBoundary,WordCharacter,WynnDegree,XMLElement},%  
 2549 moreendkeywords={\$,\$AddOnsDirectory,\$AnimationDisplayFunction,%  
 2550 \$AnimationFunction,%  
 2551 \$Assumptions,\$BaseDirectory,\$BoxForms,\$ByteOrdering,%  
 2552 \$CharacterEncoding,\$ConditionHold,\$CurrentLink,\$DefaultPath,%  
 2553 \$ExportEncodings,\$ExportFormats,\$FormatType,\$FrontEnd,%  
 2554 \$HistoryLength,\$HomeDirectory,\$ImportEncodings,\$ImportFormats,%  
 2555 \$InitialDirectory,\$InstallationDate,\$InstallationDirectory,%  
 2556 \$InterfaceEnvironment,%  
 2557 \$LaunchDirectory,\$LicenseExpirationDate,\$LicenseID,\$LicenseProcesses,%  
 2558 \$LicenseServer,\$MachineDomain,\$MaxExtraPrecision,\$MaxLicenseProcesses,%  
 2559 \$MaxNumber,\$MaxPiecewiseCases,\$MaxPrecision,\$MaxRootDegree,%  
 2560 \$MinNumber,\$MinPrecision,\$NetworkLicense,\$NumberMarks,%  
 2561 \$Off,\$OutputForms,\$ParentLink,\$ParentProcessID,%  
 2562 \$PasswordFile,\$PathnameSeparator,\$PreferencesDirectory,\$PrintForms,%  
 2563 \$PrintLiteral,\$ProcessID,\$ProcessorType,\$ProductInformation,%  
 2564 \$ProgramName,\$PSDirectDisplay,\$RandomState,\$RasterFunction,%  
 2565 \$RootDirectory,\$SetParentLink,\$SoundDisplay,\$SuppressInputFormHeads,%  
 2566 \$SystemCharacterEncoding,\$SystemID,\$TemporaryPrefix,\$TextStyle,%

```

2567     $TopDirectory,$TraceOff,$TraceOn,$TracePattern,%
2568     $TracePostAction,$TracePreAction,$UserAddOnsDirectory,$UserBaseDirectory,%
2569     $UserName,Constant,Flat,HoldAll,%
2570     HoldAllComplete,HoldFirst,HoldRest,Listable,%
2571     Locked,NHoldAll,NHoldFirst,NHoldRest,%
2572     NumericFunction,OneIdentity,Orderless,Protected,%
2573     ReadProtected,SequenceHold},%
2574 }%

2575 %%
2576 %% Mathematica definitions (c) 1999 Michael Wiese
2577 %%
2578 \lst@definlanguage[3.0]{Mathematica}[1.0]{Mathematica}%
2579 {morekeywords={Abort,AbortProtect,AbsoluteDashing,AbsolutePointSize,%
2580     AbsoluteThickness,AbsoluteTime,AccountingFormAiry,AiPrime,AiryBi,%
2581     AiryBiPrime,Alternatives,AnchoredSearch,AxesEdge,AxesOrigin,%
2582     AxesStyle,Background,BetaRegularized,BoxStyle,C,CheckAbort,%
2583     Circle,ClebschGordan,CMYKColor,ColorFunction,ColorOutput,Compile,%
2584     Compiled,CompiledFunction,ComplexExpand,ComposeList,Composition,%
2585     ConstrainedMax,ConstrainedMin,Contexts,ContextToFilename,%
2586     ContourLines,Contours,ContourShading,ContourSmoothing,%
2587     ContourStyle,CopyDirectory,CopyFile,CosIntegral,CreateDirectory,%
2588     Cuboid,Date,DeclarePackage,DefaultColor,DefaultFont>Delete,%
2589     DeleteCases>DeleteDirectory>DeleteFile>Dialog>DialogIndent,%
2590     DialogProlog>DialogSymbols>DigitQ>Directory>DirectoryStack>Disk,%
2591     Dispatch>DownValues>DSolve>Encode>Epilog>Erfc>Evaluate,%
2592     ExponentFunction>FaceGrids>FileByteCount>FileDate>FileNames,%
2593     FileType>Find>FindList>FixedPointList>FlattenAt>Fold>FoldList,%
2594     Frame>FrameLabel>FrameStyle>FrameTicks>FromCharacterCode,%
2595     FromDate>FullGraphics>FullOptions>GammaRegularized,%
2596     GaussianIntegers>GraphicsArray>GraphicsSpacing>GridLines,%
2597     GroebnerBasis>Heads>HeldPart>HomeDirectory>Hue>IgnoreCases,%
2598     InputStream>Install>InString>IntegerDigits>InterpolatingFunction,%
2599     InterpolatingPolynomial>Interpolation>Interrupt>InverseFunction,%
2600     InverseFunctions>JacobiZeta>LetterQ>LinearProgramming>ListPlay,%
2601     LogGamma>LowerCaseQ>MachineNumberQ>MantissaExponent>MapIndexed,%
2602     MapThread>MatchLocalNames>MatrixExp>MatrixPower>MeshRange,%
2603     MeshStyle>MessageList>Module>NDSolve>NSolve>NullRecords,%
2604     NullWords>NumberFormat>NumberPadding>NumberSigns>OutputStream,%
2605     PaddedForm>ParentDirectory>Pause>Play>PlayRange>PlotRegion,%
2606     PolygonIntersections>PolynomialGCD>PolynomialLCM>PolynomialMod,%
2607     PostScript>PowerExpand>PrecisionGoal>PrimePi>Prolog,%
2608     QRDecomposition>Raster>RasterArray>RealDigits>Record>RecordLists,%
2609     RecordSeparators>ReleaseHold>RenameDirectory>RenameFile,%
2610     ReplaceHeldPart>ReplacePart>ResetDirectory>Residue,%
2611     RiemannSiegelTheta>RiemannSiegelZ>RotateLabel>SameTest,%
2612     SampleDepth>SampledSoundFunction>SampledSoundList>SampleRate,%
2613     SchurDecomposition>SessionTime>SetAccuracy>SetDirectory,%
2614     SetFileDate>SetPrecision>SetStreamPosition>Shallow>SignPadding,%
2615     SinIntegral>SixJSymbol>Skip>Sound>SpellingCorrection,%

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2616 SphericalRegion,Stack,StackBegin,StackComplete,StackInhibit,%
2617 StreamPosition,Streams,StringByteCount,StringConversion,%
2618 StringDrop,StringInsert,StringPosition,StringReplace,%
2619 StringReverse,StringTake,StringToStream,SurfaceColor,%
2620 SyntaxLength,SyntaxQ,TableAlignments,TableDepth,%
2621 TableDirections,TableHeadings,TableSpacing,ThreeJSymbol,TimeUsed,%
2622 TimeZone,ToCharacterCode,ToDate,ToHeldExpression,TokenWords,%
2623 ToLowerCase,ToUpperCase,Trace,TraceAbove,TraceBackward,%
2624 TraceDepth,TraceDialog,TraceForward,TraceOff,TraceOn,%
2625 TraceOriginal,TracePrint,TraceScan,Trig,Unevaluated,Uninstall,%
2626 UnsameQ,UpperCaseQ,UpValues,ViewCenter,ViewVertical,With,Word,%
2627 WordSearch,WordSeparators},%
2628 moreendkeywords={Stub,Temporary,$Aborted,$BatchInput,$BatchOutput,%
2629 $CreationDate,$DefaultFont,$DumpDates,$DumpSupported,$Failed,%
2630 $Input,$Inspector,$IterationLimit,$Language,$Letters,$Linked,%
2631 $LinkSupported,$MachineEpsilon,$MachineID,$MachineName,%
2632 $MachinePrecision,$MachineType,$MaxMachineNumber,$MessageList,%
2633 $MessagePrePrint,$MinMachineNumber,$ModuleNumber,$NewMessage,%
2634 $NewSymbol,$Notebooks,$OperatingSystem,$Packages,$PipeSupported,%
2635 $PreRead,$ReleaseNumber,$SessionID,$SoundDisplayFunction,%
2636 $StringConversion,$StringOrder,$SyntaxHandler,$TimeUnit,%
2637 $VersionNumber}%
2638 }%

2639 \lst@definlanguage[1.0]{Mathematica}%
2640 {morekeywords={Abs,Accuracy,AccurayGoal,AddTo,AiryAi,AlgebraicRules,%
2641 AmbientLight,And,Apart,Append,AppendTo,Apply,ArcCos,ArcCosh,%
2642 ArcCot,ArcCoth,ArcCsc,ArcCsch,ArcSec,ArcSech,ArcSin,ArcSinh,%
2643 ArcTan,ArcTanh,Arg,ArithmeticGeometricMean,Array,AspectRatio,%
2644 AtomQ,Attributes,Axes,AxesLabel,BaseForm,Begin,BeginPackage,%
2645 BernoulliB,BesselI,BesselJ,BesselK,BesselY,Beta,Binomial,Blank,%
2646 BlankNullSequence,BlankSequence,Block,Boxed,BoxRatios,Break,Byte,%
2647 ByteCount,Cancel,Cases,Catch,Ceiling,CForm,Character,Characters,%
2648 ChebyshevT,ChebyshevU,Check,Chop,Clear,ClearAll,ClearAttributes,%
2649 ClipFill,Close,Coefficient,CoefficientList,Collect,ColumnForm,%
2650 Complement,Complex,CompoundExpression,Condition,Conjugate,%
2651 Constants,Context,Continuation,Continue,ContourGraphics,%
2652 ContourPlot,Cos,Cosh,Cot,Coth,Count,Csc,Csch,Cubics,Cyclotomic,%
2653 D,Dashing,Decompose,Decrement,Default,Definition,Denominator,%
2654 DensityGraphics,DensityPlot,Depth,Derivative,Det,DiagonalMatrix,%
2655 DigitBlock,Dimensions,DirectedInfinity,Display,DisplayFunction,%
2656 Distribute,Divide,DivideBy,Divisors,DivisorSigma,Do,Dot,Drop,Dt,%
2657 Dump,EdgeForm,Eigensystem,Eigenvalues,Eigenvectors,Eliminate,%
2658 EllipticE,EllipticExp,EllipticF,EllipticK,EllipticLog,EllipticPi,%
2659 EllipticTheta,End,EndPackage,EngineeringForm,Environment,Equal,%
2660 Erf,EulerE,EulerPhi,EvenQ,Exit,Exp,Expand,ExpandAll,%
2661 ExpandDenominator,ExpandNumerator,ExpIntegralE,ExpIntegralEi,%
2662 Exponent,Expression,ExtendedGCD,FaceForm,Factor,FactorComplete,%
2663 Factorial,Factorial2,FactorInteger,FactorList,FactorSquareFree,%
2664 FactorSquareFreeList,FactorTerms,FactorTermsList,FindMinimum,%

```

2665 FindRoot,First,Fit,FixedPoint,Flatten,Floor,FontForm,For,Format,%  
 2666 FormatType,FortranForm,Fourier,FreeQ,FullDefinition,FullForm,%  
 2667 Function,Gamma,GCD,GegenbauerC,General,Get,Goto,Graphics,%  
 2668 Graphics3D,GrayLevel,Greater,GreaterEqual,Head,HermiteH,%  
 2669 HiddenSurface,Hold,HoldForm,HypergeometricOF1,Hypergeometric1F1,%  
 2670 Hypergeometric2F1,HypergeometricU,Identity,IdentityMatrix,If,Im,%  
 2671 Implies,In,Increment,Indent,Infix,Information,Inner,Input,%  
 2672 InputForm,InputString,Insert,Integer,IntegerQ,Integrate,%  
 2673 Intersection,Inverse,InverseFourier,InverseJacobiSN,%  
 2674 InverseSeries,JacobiAmplitude,JacobiP,JacobiSN,JacobiSymbol,Join,%  
 2675 Label,LaguerreL,Last,LatticeReduce,LCM,LeafCount,LegendreP,%  
 2676 LegendreQ,LegendreType,Length,LerchPhi,Less,LessEqual,Level,%  
 2677 Lighting,LightSources,Limit,Line,LinearSolve,LineBreak,List,%  
 2678 ListContourPlot,ListDensityPlot,ListPlot,ListPlot3D,Literal,Log,%  
 2679 LogicalExpand,LogIntegral,MainSolve,Map,MapAll,MapAt,MatchQ,%  
 2680 MatrixForm,MatrixQ,Max,MaxBend,MaxMemoryUsed,MemberQ,%  
 2681 MemoryConstrained,MemoryInUse,Mesh,Message,MessageName,Messages,%  
 2682 Min,Minors,Minus,Mod,Modulus,MoebiusMu,Multinomial,N,NameQ,Names,%  
 2683 NBernoulliB,Needs,Negative,Nest,NestList,NIntegrate,%  
 2684 NonCommutativeMultiply,NonConstants,NonNegative,Normal,Not,%  
 2685 NProduct,NSum,NullSpace,Number,NumberForm,NumberPoint,NumberQ,%  
 2686 NumberSeparator,Numerator,O,OddQ,Off,On,OpenAppend,OpenRead,%  
 2687 OpenTemporary,OpenWrite,Operate,Optional,Options,Or,Order,%  
 2688 OrderedQ,Out,Outer,OutputForm,PageHeight,PageWidth,%  
 2689 ParametricPlot,ParametricPlot3D,Part,Partition,PartitionsP,%  
 2690 PartitionsQ,Pattern,Permutations,Plot,Plot3D,PlotDivision,%  
 2691 PlotJoined,PlotLabel,PlotPoints,PlotRange,PlotStyle,Pochhammer,%  
 2692 Plus,Point,PointSize,PolyGamma,Polygon,PolyLog,PolynomialQ,%  
 2693 PolynomialQuotient,PolynomialRemainder,Position,Positive,Postfix,%  
 2694 Power,PowerMod,PrecedenceForm,Precision,PreDecrement,Prefix,%  
 2695 PreIncrement,Prepend,PrependTo,Prime,PrimeQ,Print,PrintForm,%  
 2696 Product,Protect,PseudoInverse,Put,PutAppend,Quartics,Quit,%  
 2697 Quotient,Random,Range,Rational,Rationalize,Raw,Re,Read,ReadList,%  
 2698 Real,Rectangle,Reduce,Remove,RenderAll,Repeated,RepeatedNull,%  
 2699 Replace,ReplaceAll,ReplaceRepeated,Rest,Resultant,Return,Reverse,%  
 2700 RGBColor,Roots,RotateLeft,RotateRight,Round,RowReduce,Rule,%  
 2701 RuleDelayed,Run,RunThrough,SameQ,Save,Scaled,Scan,ScientificForm,%  
 2702 Sec,Sech,SeedRandom,Select,Sequence,SequenceForm,Series,%  
 2703 SeriesData,Set,SetAttributes,SetDelayed,SetOptions,Shading,Share,%  
 2704 Short,Show,Sign,Signature,Simplify,Sin,SingularValues,Sinh,%  
 2705 Skeleton,Slot,SlotSequence,Solve,SolveAlways,Sort,%  
 2706 SphericalHarmonicY,Splice,Sqrt,StirlingS1,StirlingS2,String,%  
 2707 StringBreak,StringForm,StringJoin,StringLength,StringMatchQ,%  
 2708 StringSkeleton,Subscript,Subscripted,Subtract,SubtractForm,Sum,%  
 2709 Superscript,SurfaceGraphics,Switch,Symbol,Table,TableForm,TagSet,%  
 2710 TagSetDelayed,TagUnset,Take,Tan,Tanh,ToString,TensorRank,TeXForm,%  
 2711 Text,TextForm,Thickness,Thread,Through,Throw,Ticks,%  
 2712 TimeConstrained,Times,TimesBy,Timing,ToExpression,Together,%  
 2713 ToRules,ToString,TotalHeight,TotalWidth,Transpose,TreeForm,TrueQ,%  
 2714 Unequal,Union,Unique,Unprotect,Unset,Update,UpSet,UpSetDelayed,%

```

2715 ValueQ,Variables,VectorQ,ViewPoint,WeierstrassP,%
2716 WeierstrassPPrime,Which,While,WorkingPrecision,Write,WriteString,%
2717 Xor,ZeroTest,Zeta},%
2718 moreendkeywords={All,Automatic,Catalan,ComplexInfinity,Constant,%
2719 Degree,E,EndOfFile,EulerGamma,False,Flat,GoldenRatio,HoldAll,%
2720 HoldFirst,HoldRest,I,Indeterminate,Infinity,Listable,Locked,%
2721 Modular,None,Null,OneIdentity,Orderless,Pi,Protected,%
2722 ReadProtected,True,$CommandLine,$Context,$ContextPath,$Display,%
2723 $DisplayFunction,$Echo,$Epilog,$IgnoreEOF,$Line,$Messages,%
2724 $Output,$Path,$Post,$Pre,$PrePrint,$RecursionLimit,$System,%
2725 $Urgent,$Version},%
2726 sensitive,%
2727 morecomment=[s]{(*}{*)},%
2728 morestring=[d]"%
2729 }[keywords,comments,strings]%
2730 </lang>

```

## 2.43 Mercury

Dominique de Waleffe mailed me the data and Ralph Becket extended the definition.

```

2731 (*lang2)
2732 %%
2733 %% Mercury definition (c) 1997 Dominique de Waleffe
2734 %% Extended (c) 2001 Ralph Becket
2735 %%
2736 \lst@definelanguage{Mercury}%
2737 {otherkeywords={::,->,<->,--->,:-==,<=>,<=>},%
2738   morekeywords={module,include_module,import_module,interface,%
2739     end_module,implementation,mode,is,failure,semidet,nondet,det,%
2740     multi,erroneous,inst,in,out,di,uo,ui,type,typeclass,instance,%
2741     where,with_type,pred,func,lamba,impure,semipure,if,then,else,%
2742     some,all,not,true,fail,pragma,memo,no_inline,inline,loop_check,%
2743     minimal_model,fact_table,type_spec,terminates,does_not_terminate,%
2744     check_termination,promise_only_solution,unsafe_promise_unique,%
2745     source_file,obsolete,import,export,c_header_code,c_code,%
2746     foreign_code,foreign_proc,may_call_mercury,will_not_call_mercury,%
2747     thread_safe,not_thread_safe},%
2748   sensitive=t,%
2749   morecomment=[l]\%,%
2750   morecomment=[s]{/*}{*/},%
2751   morestring=[bd]" ,%
2752   morestring=[bd]'%
2753 }[keywords,comments,strings]%
2754 </lang2>

```

## 2.44 MetaPost

Uwe Siart provided the keywords for a previous version. The current language definition comes from Brooks Moses.

```
2755 <*lang3>
2756 %%
2757 %% MetaPost definition (c) 2004 Brooks Moses
2758 %% This definition is based on the language specifications
2759 %% contained in the _User's Manual for Metapost_, with the core
2760 %% language enhancements that are described in the _Drawing
2761 %% Graphs with MetaPost_ documentation.
2762 %%
2763 \lst@definlanguage{MetaPost}%
2764 {% keywords[1] = MetaPost primitives (not found in following tables)
2765 morekeywords={end,begingroup,endgroup,beginfig,endfig,def,vardef,%
2766 primary,secondary,tertiary,primarydef,secondarydef,tertiarydef,%
2767 expr,suffix,text,enddef,if,fi,else,elseif,for,forsuffixes,%
2768 forever,endfor,upto,downto,stop,until,tension,controls,on,off,%
2769 btex,etex,within,input},
2770 % keywords[2] = Operators (Tables 6-9 in MetaPost User's manual)
2771 morekeywords=[2]{abs,and,angle,arclength,arctime,ASCII,bbox,bluepart,%
2772 boolean,bot,ceiling,center,char,color,cosd,cutafter,cutbefore,%
2773 cycle,decimal,dir,direction,directionpoint,directiontime,div,%
2774 dotprod,floor,fontsize,greenpart,hex,infont,intersectionpoint,%
2775 intersectiontimes,inverse,known,length,lft,llcorner,lrcorner,%
2776 makepath,makepen,mexp,mlog,mod,normaldeviate,not,numeric,oct,%
2777 odd,or,pair,path,pen,penoffset,picture,point,postcontrol,%
2778 precontrol,redpart,reverse,rotated,round,rt,scaled,shifted,%
2779 sind,slanted,sqrt,str,string,subpath,substring,top,transform,%
2780 transformed,ulcorner,uniformdeviate,unitvector,unknown,%
2781 urcorner,whatever,xpart,xscaled,xpart,xpart,ypart,yscaled,%
2782 yxpart,ypart,zscaled,of,reflectedabout,rotatedaround,ulft,urt,%
2783 llft,lrt,readfrom,write,stroked,filled,textual,clipped,bounded,%
2784 pathpart,penpart,dashpart,textpart,fontpart},%
2785 % keywords[3] = Commands (Table 10)
2786 morekeywords=[3]{addto,clip,cutdraw,draw,drawarrow,drawblarrow,%
2787 fill,filldraw,interim,let,loggingall,newinternal,pickup,%
2788 save,setbounds,shipout,show,showdependencies,showtoken,%
2789 showvariable,special,tracingall,tracingnone,undraw,unfill,%
2790 unfilldraw,to,also,contour,doublepath,withcolor,withpen,%
2791 dashed,randomseed},%
2792 % keywords[4] = Function-Like Macros (Table 11)
2793 morekeywords=[4]{boxit,boxjoin,bpath,builtcycle,circleit,dashpattern,%
2794 decr,dotlabel,dotlabels,drawboxed,drawboxes,drawoptions,%
2795 drawunboxed,fixpos,fixsize,incr,interpath,label,labels,max,min,pic,%
2796 thelabel,z,image},%
2797 % keywords[5] = Internal and Predefined Variables (Tables 3, 4)
2798 morekeywords=[5]{ahangle,ahlength,bboxmargin,charcode,circmargin,%
2799 day,defaultdx,defaultdy,defaultpen,defaultscale,labeloffset,%
```

```

2800     linecap,linejoin,miterlimit,month,pausing,prologues,showstopping,%
2801     time,tracingcapsules,tracingchoices,tracingcommands,%
2802     tracingequations,tracinglostchars,tracingmacros,tracingonline,%
2803     tracingoutput,tracingrestores,tracingspecs,tracingstats,%
2804     tracingtitles,truecorners,warningcheck,year},
2805     morekeywords=[5]{background,currentpen,currentpicture,cuttings,%
2806     defaultfont},%
2807     % keywords[6] = Predefined Constants (Table 5)
2808     morekeywords=[6]{beveled,black,blue,bp,butt,cc,cm,dd,ditto,down,%
2809     epsilon,evenly,false,fullcircle,green,halfcircle,identity,%
2810     in,infinity,left,mitered,mm,nullpicture,origin,pc,pencircle,%
2811     pt,quartercircle,red,right,rounded,squared,true,unitsquare,%
2812     up,white,withdots},
2813     sensitive=false,%
2814     alsoother={0123456789$},%
2815     morecomment=[1]\%,%
2816     morestring=[mf]{input\ },%
2817     morestring=[b]"%
2818 }[keywords,comments,strings,mf]%
2819 </lang3>

```

## 2.45 Miranda

Thanks to Peter Bartke for providing the definition.

```

2820 <*lang2>
2821 %%
2822 %% Miranda definition (c) 1998 Peter Bartke
2823 %%
2824 %% Miranda: pure lazy functional language with polymorphic type system,
2825 %%         garbage collection and functions as first class citizens
2826 %%
2827 \lst@definlanguage{Miranda}%
2828 {morekeywords={abstype,div,if,mod,otherwise,readvals,show,type,where,%
2829     with,bool,char,num,sys_message,False,True,Appendfile,Closefile,%
2830     Exit,Stderr,Stdout,System,Tofile,\%include,\%export,\%free,%
2831     \%insert,abs,and,arctan,cjustify,code,concat,const,converse,cos,%
2832     decode,digit,drop,dropwhile,entier,error,exp,filemode,filter,%
2833     foldl,foldl1,foldr,foldr1,force,fst,getenv,hd,hugenum,id,index,%
2834     init,integer,iterate,last,lay,layn,letter,limit,lines,ljustify,%
2835     log,log10,map,map2,max,max2,member,merge,min,min2,mkset,neg,%
2836     numval,or,pi,postfix,product,read,rep,repeat,reverse,rjustify,%
2837     scan,seq,showfloat,shownum,showscaled,sin,snd,sort,spaces,sqrt,%
2838     subtract,sum,system,take,takewhile,tinyum,tl,transpose,undef,%
2839     until,zip2,zip3,zip4,zip5,zip6,zip},%
2840     sensitive,%
2841     morecomment=[1]||,%
2842     morestring=[b]"%
2843 }[keywords,comments,strings]%

```

2844  $\langle$ /lang2 $\rangle$

## 2.46 Mizar

As you can read below, Adam Grabowski provided this language definition.

2845  $\langle$ \*lang3 $\rangle$

```
2846 %%
2847 %% Mizar definition (c) 2003 Adam Grabowski
2848 %%
2849 %% Mizar is freely available at URL www.mizar.org for the Linux x86,
2850 %% Solaris x86, and Windows operating systems.
2851 %%
2852 \lst@definlanguage{Mizar}%
2853 {otherkeywords={->,( \#, \#) , . =) , \&},%
2854   morekeywords={vocabulary, constructors, $1, $1, $2, $3, $4, $5, $6, $7, $8,%
2855     @proof, according, aggregate, and, antonym, as, associativity, assume,%
2856     asymmetry, attr, be, begin, being, by, canceled, case, cases, cluster,%
2857     clusters, coherence, commutativity, compatibility, connectedness,%
2858     consider, consistency, constructors, contradiction, correctness, def,%
2859     deffunc, define, definition, definitions, defpred, end, environ, equals,%
2860     ex, exactly, existence, for, from, func, given, hence, hereby, holds,%
2861     idempotence, if, iff, implies, involutiveness, irreflexivity, is, it,%
2862     let, means, mode, non, not, notation, now, of, or, otherwise, over, per,%
2863     pred, prefix, projectivity, proof, provided, qua, reconsider, redefine,%
2864     reflexivity, requirements, reserve, scheme, schemes, section, selector,%
2865     set, st, struct, such, suppose, symmetry, synonym, take, that, the, then,%
2866     theorem, theorems, thesis, thus, to, transitivity, uniqueness,%
2867     vocabulary, where},%
2868   sensitive=t,%
2869   morecomment=[l]:;%
2870 }[keywords, comments]%
2871  $\langle$ /lang3 $\rangle$ 
```

## 2.47 ML

Thanks to Torben Hoffmann for providing the definition.

2872  $\langle$ \*lang2 $\rangle$

```
2873 %%
2874 %% ML definition (c) 1999 Torben Hoffmann
2875 %%
2876 \lst@definlanguage{ML}%
2877 {morekeywords={abstype, and, andalso, as, case, do, datatype, else, end,%
2878   eqtype, exception, fn, fun, functor, handle, if, in, include, infix,%
2879   infixr, let, local, nonfix, of, op, open, orelse, raise, rec, sharing, sig,%
2880   signature, struct, structure, then, type, val, with, withtype, while},%
2881   sensitive,%
2882   morecomment=[n]{(*){(*)}},%
2883   morestring=[d]"%
```



```

2884 }[keywords,comments,strings]%
2885 </lang2>

```

## 2.48 Modula-2

Took data from

- NIKLAUS WIRTH: **Programmieren in Modula-2**, Übers. Guido Pfeiffer; 2. Auflage – Berlin; Heidelberg; New York; London; Paris; Tokyo; Hong Kong; Springer, 1991; ISBN 3-540-51689-1.

```

2886 <*lang3>
2887 \lstdefinlanguage{Modula-2}%
2888 {morekeywords={AND,ARRAY,BEGIN,BY,CASE,CONST,DIV,DO,ELSE,ELSIF,END,%
2889     EXIT,EXPORT,FOR,FROM,IF,IMPLEMENTATION,IMPORT,IN,MOD,MODULE,NOT,%
2890     OF,OR,POINTER,PROCEDURE,QUALIFIED,RECORD,REPEAT,RETURN,SET,THEN,%
2891     TYPE,UNTIL,VAR,WHILE,WITH,ABS,BITSET,BOOLEAN,CAP,CARDINAL,CHAR,%
2892     CHR,DEC,EXCL,FALSE,FLOAT,HALT,HIGH,INC,INCL,INTEGER,LONGCARD,%
2893     LONGINT,LONGREAL,MAX,MIN,NIL,ODD,ORD,PROC,REAL,SIZE,TRUE,TRUNC,%
2894     VAL,DEFINITION,LOOP},% added keywords due to Peter Bartke 99/07/22
2895     sensitive,%
2896     morecomment=[n]{(*}{*)},%
2897     morestring=[d]',%
2898     morestring=[d]"%
2899 }[keywords,comments,strings]%
2900 </lang3>

```

## 2.49 MuPAD

This definition was provided by Christopher Creutzig. Again thanks to Ulrike Fischer for pointing to a missing @ in \lstdefinlanguage.

```

2901 <*lang3>
2902 \lstdefinlanguage{MuPAD}{%
2903     morekeywords={end,next,break,if,then,elif,else,end_if,case,end_case,%
2904         otherwise,for,from,to,step,downto,in,end_for,while,end_while,%
2905         repeat,until,end_repeat,or,and,not,xor,div,mod,union,minus,%
2906         intersect,subset,proc,begin,end_proc,domain,end_domain,category,%
2907         end_category,axiom,end_axiom,quit,delete,frame},%
2908     morekeywords=[2]{NIL,FAIL,TRUE,FALSE,UNKNOWN,I,RD_INF,RD_NINF,%
2909         RD_NAN,name,local,option,save,inherits,of,do},%
2910     otherkeywords={\%if,?,!,:=,<,>,<=,<>,>==,<=>,:,.,.,.,->,%
2911         @,@@,\$},%
2912     sensitive=true,%
2913     morecomment=[1]{//},%
2914     morecomment=[n]{/*}{*/},%
2915     morestring=[b]",%
2916     morestring=[d]{'%
2917 }[keywords,comments,strings]

```

2918  $\langle$ /lang3 $\rangle$

## 2.50 NASTRAN

2919  $\langle$ \*lang3 $\rangle$

The definition is from Jeffrey Ratcliffe—except the MoreSelectCharTable part which simulates the keyword BEGIN BULK.

```
2920 \lst@definlanguage{NASTRAN}
2921   {morekeywords={ENDDATA},%
2922     morecomment=[l]$,%
2923     MoreSelectCharTable=%
2924       \lst@CargX BEGIN\ BULK\relax\lst@CDef{}%
2925       {\lst@ifmode\else \ifnum\lst@length=\z@
2926         \lst@EnterMode{\lst@GPmode}{\lst@modetrue
2927           \let\lst@currstyle\lst@gkeywords@sty}%
2928         \fi \fi}%
2929       {\ifnum\lst@mode=\lst@GPmode
2930         \lst@XPrintToken \lst@LeaveMode
2931         \fi}%
2932   }[keywords,comments]%
2933  $\langle$ /lang3 $\rangle$ 
```

## 2.51 Oberon-2

2934  $\langle$ \*lang3 $\rangle$

```
2935 \lst@definlanguage{Oberon-2}%
2936   {morekeywords={ARRAY,BEGIN,BOOLEAN,BY,CASE,CHAR,CONST,DIV,DO,ELSE,%
2937     ELSIF,END,EXIT,FALSE,FOR,IF,IMPORT,IN,INTEGER,IS,LONGINT,%
2938     LONGREAL,LOOP,MOD,MODULE,NIL,OF,OR,POINTER,PROCEDURE,REAL,RECORD,%
2939     REPEAT,RETURN,SET,SHORTINT,THEN,TO,TRUE,TYPE,UNTIL,VAR,WHILE,%
2940     WITH,ABS,ASH,CAP,CHR,COPY,DEC,ENTIER,EXCL,HALT,INC,INCL,LEN,LONG,%
2941     MAX,MIN,NEW,ODD,ORD,SHORT,SIZE},%
2942     sensitive,%
2943     morecomment=[n]{(*){(*)}},%
2944     morestring=[d]',%
2945     morestring=[d]"%
2946   }[keywords,comments,strings]%
2947  $\langle$ /lang3 $\rangle$ 
```

## 2.52 OCL

This definition is based on chapter 7 of the OMG UML standard version 1.3:

- **OMG: OMG Unified Modeling Language Specification;** © 1999  
OMG; Available at <ftp://ftp.omg.org/pub/docs/ad/99-06-08.pdf>.

This language is due to Achim D. Brucker.

2948  $\langle$ \*lang3 $\rangle$

```

2949 %%
2950 %% OCL definition (c) 2000 Achim D. Brucker
2951 %%
2952 %% You are allowed to use, modify and distribute this code either under
2953 %% the terms of the LPPL (version 1.0 or later) or the GPL (version 2.0
2954 %% or later).
2955 %%

```

First we define a very decorative style. In the OMG standard only the boolean (infix (?)) operations are highlighted, but I think all OCL-defined operations should be highlighted, because they are *guaranteed* to be side-effect-free (in OCL only side effect free evaluations or path expressions are allowed).

```

2956 \lst@definlanguage[decorative]{OCL}[OMG]{OCL}
2957   {otherkeywords={@pre},%
2958     moreendkeywords={name,attributes,associations,ends,operations,%
2959       supertypes,allSupertypes,allInstances,oclIsKindOf,oclIsTypeOf,%
2960       oclAsType,oclInState,oclIsNew,evaluationType,abs,floor,round,max,%
2961       min,div,mod,size,concat,toUpper,toLower,substring,includes,%
2962       excludes,count,includesAll,excludesAll,isEmpty,notEmpty,sum,%
2963       exists,forAll,isUnique,sortedBy,iterate,union,intersection,%
2964       including,excluding,symmetricDifference,select,reject,collect,%
2965       asSequence,asBag,asSequence,asSet,append,prepend,subSequence,at,%
2966       first,last,true,false,isQuery}%
2967   }%

```

Remark: "isQuery" is not real OCL, but an important attribute of the underlying UML model.

The dialect called **OMG** is a very spare version. If you use this variant with bold style for first and second order keywords you get the look and feel of the OMG standard. First order keywords are the OCL context declarations (see section 7.3 of the OMG standard):

```

2968 \lst@definlanguage[OMG]{OCL}%
2969   {morekeywords={context,pre,inv,post},%

```

Second order keywords are the operations which are defined for type Boolean (see pages 7-34/35 of the OMG standard) and the let-operation (in principle these are the infix operations):

```

2970     ndkeywords={or,xor,and,not,implies,if,then,else,endif},%

```

Third order keywords are the basic data types as declared in section 7.4 of the OMG standard:

```

2971     morekeywords=[3]{Boolean,Integer,Real,String,Set,Sequence,Bag,%
2972       OclType,OclAny,OclExpression,Enumeration,Collection,},%
2973     sensitive=t,%
2974     morecomment=[1]--,%
2975     morestring=[d]'%
2976   }[keywords,comments,strings]%

```

After a bug report by Martin Süßkraut `moreendkeywords` has been changed to the correct optional argument [3].

```

2977 </lang3>

```

## 2.53 Octave

2978 `{*lang1}`

As you can read below the definition is due to Ulrich G. Wortmann. Additions due to Sebastian Schubert.

```
2979 %%
2980 %% Octave definition (c) 2001,2002 Ulrich G. Wortmann
2981 %%
2982 \lst@definelanguage{Octave}%
2983 {morekeywords={gt,lt,amp,abs,acos,acosh,acot,acoth,acsc,acsch,%
2984 all,angle,ans,any,asec,asech,asin,asinh,atan,atan2,atanh,auread,%
2985 auwrite,axes,axis,balance,bar,bessel,besselk,bessely,beta,%
2986 betainc,betaln,blanks,bone,break,brighten,capture,cart2pol,%
2987 cart2sph,caxis,cd,cdf2rdf,cedit,ceil,chol,cla,clabel,clc,clear,%
2988 clf,clock,close,colmmd,Colon,colorbar,colormap,ColorSpec,colperm,%
2989 comet,comet3,compan,compass,computer,cond,condest,conj,contour,%
2990 contour3,contourc,contrast,conv,conv2,cool,copper,corrcoef,cos,%
2991 cosh,cot,coth,cov,cplxpair,cputime,cross,csc,csch,csvread,%
2992 csvwrite,cumprod,cumsum,cylinder,date,dbclean,dbcont,dbdown,%
2993 dbquit,dbstack,dbstatus,dbstep,dbstop,dbtype,dbup,ddeadv,ddeexec,%
2994 ddeinit,ddepoke,ddereq,ddeterm,ddeunadv,deblank,dec2hex,deconv,%
2995 del2,delete,demo,det,diag,diary,diff,diffuse,dir,disp,dlmread,%
2996 dlmwrite,dmperm,dot,drawnow,echo,eig,ellipj,ellipke,else,elseif,%
2997 end,engClose,engEvalString,engGetFull,engGetMatrix,engOpen,%
2998 engOutputBuffer,engPutFull,engPutMatrix,engSetEvalCallback,%
2999 engSetEvalTimeout,engWinInit,eps,erf,erfc,erfcx,erfinv,%
3000 errorbar,etime,etree,eval,exist,exp,expint,expm,expo,eye,fclose,%
3001 feather,feof,ferror,feval,fft,fft2,fftshift,fgetl,fgets,figure,%
3002 fill,fill3,filter,filter2,find,findstr,finite,fix,flag,flipr,%
3003 flipud,floor,flops,fmin,fmins,fopen,for,format,fplot,fprintf,%
3004 fread,frewind,fscanf,fseek,ftell,full,function,funm,fwrite,fzero,%
3005 gallery,gamma,gammainc,gammaln,gca,gcd,gcf,gco,get,getenv,%
3006 getframe,ginput,global,gplot,gradient,gray,graymon,grid,griddata,%
3007 gtext,hadamard,hankel,help,hess,hex2dec,hex2num,hidden,hilb,hist,%
3008 hold,home,hostid,hot,hsv,hsv2rgb,if,ifft,ifft2,imag,image,%
3009 imagesc,Inf,info,input,int2str,interp1,interp2,interpft,inv,%
3010 invhilb,isempty,isglobal,ishold,isieee,isin,isletter,isnan,%
3011 isreal,isspace,issparse,isstr,jet,keyboard,kron,lasterr,lcm,%
3012 legend,legendre,length,lin2mu,line,linspace,load,log,log10,log2,%
3013 loglog,logm,logspace,lookfor,lower,ls,lscov,lu,magic,matClose,%
3014 matDeleteMatrix,matGetDir,matGetFp,matGetFull,matGetMatrix,%
3015 matGetNextMatrix,matGetString,matlabrc,matlabroot,matOpen,%
3016 matPutFull,matPutMatrix,matPutString,max,mean,median,menu,mesh,%
3017 meshc,meshgrid,meshz,mexAtExit,mexCallMATLAB,mexdebug,%
3018 mexErrMsgTxt,mexEvalString,mexFunction,mexGetFull,mexGetMatrix,%
3019 mexGetMatrixPtr,mexPrintf,mexPutFull,mexPutMatrix,mexSetTrapFlag,%
3020 min,more,movie,moviein,mu2lin,mxMalloc,mxCopyCharacterToPtr,%
3021 mxCopyComplex16ToPtr,mxCopyInteger4ToPtr,mxCopyPtrToCharacter,%
3022 mxCopyPtrToComplex16,mxCopyPtrToInteger4,mxCopyPtrToReal8,%
3023 mxCopyReal8ToPtr,mxCreateFull,mxCreateSparse,mxCreateString,%
```

```

3024     mxFree,mxFreeMatrix,mxGetIr,mxGetJc,mxGetM,mxGetN,mxGetName,%
3025     mxGetNzmax,mxGetPi,mxGetPr,mxGetScalar,mxGetString,mxIsComplex,%
3026     mxIsFull,mxIsNumeric,mxIsSparse,mxIsString,mxIsTypeDouble,%
3027     mxSetIr,mxSetJc,mxSetM,mxSetN,mxSetName,mxSetNzmax,mxSetPi,%
3028     mxSetPr,NaN,nargchk,nargin,nargout,newplot,nextpow2,nnls,nnz,%
3029     nonzeros,norm,normest,null,num2str,nzmax,ode23,ode45,orient,orth,%
3030     pack,pascal,patch,path,pause,pcolor,pi,pink,pinv,plot,plot3,%
3031     pol2cart,polar,poly,polyder,polyeig,polyfit,polyval,polyvalm,%
3032     pow2,print,printopt,prism,prod,pwd,qr,qrdelete,qrinsert,quad,%
3033     quad8,quit,quiver,qz,rand,randn,randperm,rank,rat,rats,rbbox,%
3034     rcond,real,realmax,realmin,refresh,rem,reset,reshape,residue,%
3035     return,rgb2hsv,rgbplot,rootobject,roots,rose,rosser,rot90,rotate,%
3036     round,rref,rrefmovie,rsf2csf,save,saxis,schur,sec,sech,semilogx,%
3037     semilogy,set,setstr,shading,sign,sin,sinh,size,slice,sort,sound,%
3038     spalloc,sparse,spaugment,spconvert,spdiags,specular,speye,spfun,%
3039     sph2cart,sphere,spinmap,spline,spones,spparms,sprandn,sprandsym,%
3040     sprank,sprintf,spy,sqrt,sqrtm,sscanf,stair,stairs,startup,std,stem,%
3041     str2mat,str2num,strcmp,strings,strrep,strtok,subplot,subscribe,%
3042     subspace,sum,surf,surface,surfc,surfl,surfnorm,svd,symbfact,%
3043     symmmd,symrcm,tan,tanh,tempdir,tempname,terminal,text,tic,title,%
3044     toc,toeplitz,trace,trapz,tril,triu,type,uicontrol,uigetfile,%
3045     uimenu,uiputfile,unix,unwrap,upper,vander,ver,version,view,%
3046     viewmtx,waitforbuttonpress,waterfall,wavread,wavwrite,what,%
3047     whatsnew,which,while,white,whitebg,who,whos,wilkinson,wk1read,%
3048     stderr,stdout,plot,set,endif,wk1write,xlabel,xor,ylabel,zeros,%
3049     xlabel,zoom,endwhile,endfunction,printf,case,switch,otherwise,%
3050     system,lsode,endfor,error,ones,oneplot,__gnuplot_set__,do,until},%
3051     sensitive=t,%
3052     morecomment=[1]\#,%
3053     morecomment=[1]\#\#,%
3054     morecomment=[1]\%,%
3055     morestring=[m] ',%
3056     morestring=[m] "%
3057 }[keywords,comments,strings]%
3058 </lang1>

```

## 2.54 Oz

```

3059 <*lang2>

```

Thanks to Andres Becerra Sandoval for providing this language definition.

```

3060 %%
3061 %% Oz definition (c) Andres Becerra Sandoval
3062 %%
3063 \lst@definlanguage{Oz}%
3064 {morekeywords={andthen,at,attr,case,catch,choice,class,%
3065     cond,declare,define,dis,div,else,elsecase,%
3066     elseif,end,export,fail,false,feat,finally,%
3067     from,fun,functor,if,import,in,local,%
3068     lock,meth,mod,not,of,or,orelse,%
3069     prepare,proc,prop,raise,require,self,skip,%

```

```

3070     then,thread,true,try,unit},%
3071     sensitive=true,%
3072     morecomment=[l]{\%},%
3073     morecomment=[s]{/*}{*/},%
3074     morestring=[b]",%
3075     morestring=[d]'%
3076 }[keywords,comments,strings]%
3077 </lang2>

```

## 2.55 Pascal

```

3078 <*lang1>

```

Thanks to Andreas Stephan for reporting non-keywords alpha, byte, pack and unpack.

```

3079 \lst@definlanguage[XSC]{Pascal}[Standard]{Pascal}
3080 {deletekeywords={alfa,byte,pack,unpack},% 1998 Andreas Stephan
3081   morekeywords={dynamic,external,forward,module,nil,operator,%
3082     priority,sum,type,use,dispose,mark,page,release,cimatrix,%
3083     cinterval,civector,cmatrix,complex,cvector,dotprecision,imatrix,%
3084     interval,ivector,rmatrix,rvector,string,im,inf,re,sup,chr,comp,%
3085     eof,eoln,expo,image,ival,lb,lbound,length,loc,mant,maxlength,odd,%
3086     ord,pos,pred,round,rval,sign,substring,succ,trunc,ub,ubound}%
3087 }%

3088 \lst@definlanguage[Borland6]{Pascal}[Standard]{Pascal}
3089 {morekeywords={asm,constructor,destructor,implementation,inline,%
3090   interface,nil,object,shl,shr,string,unit,uses,xor},%
3091   moreendkeywords={Abs,Addr,ArcTan,Chr,Concat,Copy,Cos,CSeg,DiskFree,%
3092     DiskSize,DosExitCode,DosVersion,DSeg,EnvCount,EnvStr,Eof,Eoln,%
3093     Exp,FExpand,FilePos,FileSize,Frac,FSearch,GetBkColor,GetColor,%
3094     GetDefaultPalette,GetDriverName,GetEnv,GetGraphMode,GetMaxMode,%
3095     GetMaxX,GetMaxY,GetModeName,GetPaletteSize,GetPixel,GetX,GetY,%
3096     GraphErrorMsg,GraphResult,Hi,ImageSize,InstallUserDriver,%
3097     InstallUserFont,Int,IOResult,KeyPressed,Length,Lo,MaxAvail,%
3098     MemAvail,Msdos,Odd,Ofs,Ord,OvrGetBuf,OvrGetRetry,ParamCount,%
3099     ParamStr,Pi,Pos,Pred,Ptr,Random,ReadKey,Round,SeekEof,SeekEoln,%
3100     Seg,SetAspectRatio,Sin,SizeOf,Sound,SPtr,Sqr,Sqrt,SSeg,Succ,%
3101     Swap,TextHeight,TextWidth,Trunc,TypeOf,UpCase,WhereX,WhereY,%
3102     Append,Arc,Assign,AssignCrt,Bar,Bar3D,BlockRead,BlockWrite,ChDir,%
3103     Circle,ClearDevice,ClearViewPort,Close,CloseGraph,ClrEol,ClrScr,%
3104     Dec,Delay>Delete,Delline,DetectGraph,Dispose,DrawPoly,Ellipse,%
3105     Erase,Exec,Exit,FillChar,Fillellipse,FillPoly,FindFirst,FindNext,%
3106     FloodFill,Flush,FreeMem,FSplit,GetArcCoords,GetAspectRatio,%
3107     GetDate,GetDefaultPalette,GetDir,GetCBreak,GetFAttr,%
3108     GetFillSettings,GetFTime,GetImage,GetIntVec,GetLineSettings,%
3109     GetMem,GetPalette,GetTextSettings,GetTime,GetVerify,%
3110     GetViewSettings,GoToXY,Halt,HighVideo,Inc,InitGraph,Insert,%
3111     InsLine,Intr,Keep,Line,LineRel,LineTo,LowVideo,Mark,MkDir,Move,%
3112     MoveRel,MoveTo,Msdos,New,NormVideo,NoSound,OutText,OutTextXY,%
3113     OvrClearBuf,OvrInit,OvrInitEMS,OvrSetBuf,PackTime,PieSlice,%

```

```

3114 PutImage,PutPixel,Randomize,Rectangle,Release,Rename,%
3115 RestoreCrtMode,Rmdir,RunError,Sector,Seek,SetActivePage,%
3116 SetAllPalette,SetBkColor,SetCBreak,SetColor,SetDate,SetFAttr,%
3117 SetFillPattern,SetFillStyle,SetFTime,SetGraphBufSize,%
3118 SetGraphMode,SetIntVec,SetLineStyle,SetPalette,SetRGBPalette,%
3119 SetTextBuf,SetTextJustify,SetTextStyle,SetTime,SetUserCharSize,%
3120 SetVerify,SetViewPort,SetVisualPage,SetWriteMode,Sound,Str,%
3121 SwapVectors,TextBackground,TextColor,TextMode,Truncate,%
3122 UnpackTime,Val,Window}%
3123 }%

3124 \lst@definlanguage[Standard]{Pascal}%
3125 {morekeywords={alfa,and,array,begin,boolean,byte,case,char,const,div,%
3126 do,downto,else,end,false,file,for,function,get,goto,if,in,%
3127 integer,label,maxint,mod,new,not,of,or,pack,packed,page,program,%
3128 put,procedure,read,readln,real,record,repeat,reset,rewrite,set,%
3129 text,then,to,true,type,unpack,until,var,while,with,write,%
3130 writeln},%
3131 sensitive=f,%
3132 morecomment=[s]{(*)},%
3133 morecomment=[s]{\{\}\},%
3134 morestring=[d]'%
3135 }[keywords,comments,strings]%

3136 </lang1>

```

## 2.56 Perl

I got the data from <http://www.perl.com>. But I wish to thank Herbert Weinhndl for the book ‘Learning Perl’.

```

3137 <*lang1>

3138 \lst@definlanguage{Perl}%
3139 {morekeywords={abs,accept,alarm,atan2,bind,binmode,bless,caller,%
3140 chdir,chmod,chomp,chop,chown,chr,chroot,close,closedir,connect,%
3141 continue,cos,crypt,dbmclose,dbmopen,defined,delete,die,do,dump,%
3142 each,else,elsif,endgrent,endhostent,endnetent,endprotoent,%
3143 endpwent,endservent,eof,eval,exec,exists,exit,exp,fcntl,fileno,%
3144 flock,for,foreach,fork,format,formline,getc,getgrent,getgrgid,%
3145 getgrnam,gethostbyaddr,gethostbyname,gethostent,getlogin,%
3146 getnetbyaddr,getnetbyname,getnetent,getpeername,getpgrp,%
3147 getppid,getpriority,getprotobynam,getprotobynumber,getprotoent,%
3148 getpwent,getpwnam,getpwuid,getservbyname,getservbyport,%
3149 getservent,getsockname,getsockopt,glob,gmtime,goto,grep,hex,if,%
3150 import,index,int,ioctl,join,keys,kill,last,lc,lcfirst,length,%
3151 link,listen,local,localtime,log,lstat,m,map,mkdir,msgctl,msgget,%
3152 msgrcv,msgsnd,my,next,no,oct,open,opendir,ord,pack,package,pipe,%
3153 pop,pos,print,printf,prototype,push,q,qq,quotemeta,qw,qx,rand,%
3154 read,readdir,readlink,recv,redo,ref,rename,require,reset,return,%
3155 reverse,rewinddir,rindex,rmdir,s,scalar,seek,seekdir,select,%
3156 semctl,semget,semop,send,setgrent,sethostent,setnetent,setpgrp,%
3157 setpriority,setprotoent,setpwent,setservent,setsockopt,shift,%

```

```

3158     shmctl,shmget,shmread,shmwrite,shutdown,sin,sleep,socket,%
3159     socketpair,sort,splice,split,sprintf,sqrt,srand,stat,study,sub,%
3160     substr,symlink,syscall,sysopen,sysread,system,syswrite,tell,%
3161     telldir,tie,tied,time,times,tr,truncate,uc,ucfirst,umask,undef,%
3162     unless,unlink,unpack,unshift,untie,until,use,utime,values,vec,%
3163     wait,waitpid,wantarray,warn,while,write,y},%
3164     sensitive,%
3165     morecomment=[l]\#,%
3166     morestring=[b]" ,%
3167     morestring=[b]' ,%
3168     MoreSelectCharTable=%
3169     \lst@ReplaceInput{\$\#}{\lst@ProcessOther$\lst@ProcessOther\#}%
3170 }[keywords,comments,strings]%
3171 </lang1>

```

## 2.57 PHP

Luca Balzerani sent me this language definition.

```

3172 <*lang2>
3173 %%
3174 %% PHP definition by Luca Balzerani
3175 %%
3176 \lst@definelanguage{PHP}%
3177 {morekeywords={%
3178 %--- core language
3179 <?,?>,:,:,break,case,continue,default,do,else,%
3180 elseif,for,foreach,if,include,require,phpinfo,%
3181 switch,while,false,FALSE,true,TRUE,%
3182 %--- apache functions
3183 apache_lookup_uri,apache_note,ascii2ebcdic,ebcdic2ascii,%
3184 virtual,apache_child_terminate,apache_setenv,%
3185 %--- array functions
3186 array,array_change_key_case,array_chunk,array_count_values,%
3187 array_filter,array_flip,array_fill,array_intersect,%
3188 array_keys,array_map,array_merge,array_merge_recursive,%
3189 array_pad,array_pop,array_push,array_rand,array_reverse,%
3190 array_shift,array_slice,array_splice,array_sum,array_unique,%
3191 array_values,array_walk,arsort,asort,compact,count,current,each,%
3192 extract,in_array,array_search,key,krsort,ksort,list,natsort,%
3193 next,pos,prev,range,reset,rsort,shuffle,sizeof,sort,usort,%
3194 usort,%
3195 %--- aspell functions
3196 aspell_new,aspell_check,aspell_check_raw,aspell_suggest,%
3197 %--- bc functions
3198 bcadd,bccomp,bcddiv,bcmmod,bcmul,bcpow,bcscale,bcsqrt,bcsub,%
3199 %--- bzip2 functions
3200 bzclose,bzcompress,bzdecompress,bzerrno,bzerror,bzerrstr,%
3201 bzopen,bzread,bzwrite,%

```



```

3202 %--- calendar functions
3203     JDToGregorian, GregorianToJD, JDToJulian, JulianToJD, JDToJewish, %
3204     JDToFrench, FrenchToJD, JDMonthName, JDDayOfWeek, easter_date, %
3205     unixtojd, jdtounix, cal_days_in_month, cal_to_jd, cal_from_jd, %
3206 %--- ccvs functions
3207     ccvs_init, ccvs_done, ccvs_new, ccvs_add, ccvs_delete, ccvs_auth, %
3208     ccvs_reverse, ccvs_sale, ccvs_void, ccvs_status, ccvs_count, %
3209     ccvs_report, ccvs_command, ccvs_textvalue, %
3210 %--- classobj functions
3211     call_user_method, call_user_method_array, class_exists, get_class, %
3212     get_class_vars, get_declared_classes, get_object_vars, %
3213     is_a, is_subclass_of, method_exists, %
3214 %--- com functions
3215     COM, VARIANT, com_load, com_invoke, com_propget, com_get, com_propput, %
3216     com_set, com_addref, com_release, com_isenum, com_load_typelib, %
3217 %--- cpdf functions
3218     cpdf_add_annotation, cpdf_add_outline, cpdf_arc, cpdf_begin_text, %
3219     cpdf_clip, cpdf_close, cpdf_closepath, cpdf_closepath_fill_stroke, %
3220     cpdf_continue_text, cpdf_curveto, cpdf_end_text, cpdf_fill, %
3221     cpdf_finalize, cpdf_finalize_page, %
3222     cpdf_import_jpeg, cpdf_lineto, cpdf_moveto, cpdf_newpath, cpdf_open, %
3223     cpdf_page_init, cpdf_place_inline_image, cpdf_rect, cpdf_restore, %
3224     cpdf_rmoveto, cpdf_rotate, cpdf_rotate_text, cpdf_save, %
3225     cpdf_scale, cpdf_set_char_spacing, cpdf_set_creator, %
3226     cpdf_set_font, cpdf_set_horiz_scaling, cpdf_set_keywords, %
3227     cpdf_set_page_animation, cpdf_set_subject, cpdf_set_text_matrix, %
3228     cpdf_set_text_rendering, cpdf_set_text_rise, cpdf_set_title, %
3229     cpdf_setdash, cpdf_setflat, cpdf_setgray, cpdf_setgray_fill, %
3230     cpdf_setlinecap, cpdf_setlinejoin, cpdf_setlinewidth, %
3231     cpdf_setrgbcolor, cpdf_setrgbcolor_fill, cpdf_setrgbcolor_stroke, %
3232     cpdf_show_xy, cpdf_stringwidth, cpdf_set_font_directories, %
3233     cpdf_set_viewer_preferences, cpdf_stroke, cpdf_text, %
3234     cpdf_set_action_url, %
3235 %--- crack functions
3236     crack_opendict, crack_closedict, crack_check, crack_getlastmessage, %
3237 %--- ctype functions
3238     ctype_alnum, ctype_alpha, ctype_cntrl, ctype_digit, ctype_lower, %
3239     ctype_print, ctype_punct, ctype_space, ctype_upper, ctype_xdigit, %
3240 %--- curl functions
3241     curl_init, curl_setopt, curl_exec, curl_close, curl_version, %
3242     curl_error, curl_getinfo, %
3243 %--- cybercash functions
3244     cybercash_encr, cybercash_decr, cybercash_base64_encode, %
3245 %--- cybermut functions
3246     cybermut_creerformulairecm, cybermut_testmac, %
3247 %--- cyrus functions
3248     cyrus_connect, cyrus_authenticate, cyrus_bind, cyrus_unbind, %
3249     cyrus_close, %
3250 %--- datetime functions
3251     checkdate, date, getdate, gettimeofday, gmdate, gmmktime, gmstrftime, %

```

```

3252     microtime,mktime,strftime,time,strtotime,%
3253 %--- dbase functions
3254     dbase_create,dbase_open,dbase_close,dbase_pack,dbase_add_record,%
3255     dbase_delete_record,dbase_get_record,%
3256     dbase_numfields,dbase_numrecords,%
3257 %--- dba functions
3258     dba_close,dba_delete,dba_exists,dba_fetch,dba_firstkey,%
3259     dba_nextkey,dba_popen,dba_open,dba_optimize,dba_replace,%
3260 %--- dbm functions
3261     dbmopen,dbmclose,dbmexists,dbmfetch,dbminsert,dbmreplace,%
3262     dbmfirstkey,dbmnextkey,dblist,%
3263 %--- dbx functions
3264     dbx_close,dbx_connect,dbx_error,dbx_query,dbx_sort,dbx_compare,%
3265 %--- dio functions
3266     dio_open,dio_read,dio_write,dio_truncate,dio_stat,dio_seek,%
3267     dio_close,%
3268 %--- dir functions
3269     chroot,chdir,dir,closedir,getcwd,opendir,readdir,rewinddir,%
3270 %--- dotnet functions
3271     dotnet_load,%
3272 %--- errorfunc functions
3273     error_log,error_reporting,restore_error_handler,%
3274     trigger_error,user_error,%
3275 %--- exec functions
3276     escapeshellarg,escapeshellcmd,exec,passthru,system,shell_exec,%
3277 %--- fbsql functions
3278     fbsql_affected_rows,fbsql_autocommit,fbsql_change_user,%
3279     fbsql_commit,fbsql_connect,fbsql_create_db,fbsql_create_blob,%
3280     fbsql_database_password,fbsql_data_seek,fbsql_db_query,%
3281     fbsql_drop_db,fbsql_errno,fbsql_error,fbsql_fetch_array,%
3282     fbsql_fetch_field,fbsql_fetch_lengths,fbsql_fetch_object,%
3283     fbsql_field_flags,fbsql_field_name,fbsql_field_len,%
3284     fbsql_field_table,fbsql_field_type,fbsql_free_result,%
3285     fbsql_list_dbs,fbsql_list_fields,fbsql_list_tables,%
3286     fbsql_num_fields,fbsql_num_rows,fbsql_pconnect,fbsql_query,%
3287     fbsql_read_clob,fbsql_result,fbsql_rollback,fbsql_set_lob_mode,%
3288     fbsql_start_db,fbsql_stop_db,fbsql_tablename,fbsql_warnings,%
3289     fbsql_get_autostart_info,fbsql_hostname,fbsql_password,%
3290     fbsql_username,%
3291 %--- fdf functions
3292     fdf_open,fdf_close,fdf_create,fdf_save,fdf_get_value,%
3293     fdf_next_field_name,fdf_set_ap,fdf_set_status,fdf_get_status,%
3294     fdf_get_file,fdf_set_flags,fdf_set_opt,%
3295     fdf_set_javascript_action,fdf_set_encoding,fdf_add_template,%
3296 %--- filepro functions
3297     filepro,filepro_fieldname,filepro_fieldtype,filepro_fieldwidth,%
3298     filepro_fieldcount,filepro_rowcount,%
3299 %--- filesystem functions
3300     basename,chgrp,chmod,chown,clearstatcache,copy,delete,dirname,%
3301     diskfree,disk_total_space,fclose,feof,fflush,fgetc,fgetcsv,%

```

```

3302     fgetss,file_get_contents,file,file_exists,fileatime,filectime,%
3303     fileinode,filemtime,fileowner,fileperms,filesize,filetype,flock,%
3304     fopen,fpassthru,fputs,fread,fscanf,fseek,fstat,ftell,ftruncate,%
3305     set_file_buffer,is_dir,is_executable,is_file,is_link,%
3306     is_writable,is_writeable,is_uploaded_file,link,linkinfo,mkdir,%
3307     parse_ini_file,pathinfo,pclose,popen,readfile,readlink,rename,%
3308     rmdir,stat,lstat,realpath,symlink,tempnam,tmpfile,touch,umask,%
3309 %--- fribidi functions
3310     fribidi_log2vis,%
3311 %--- ftp functions
3312     ftp_connect,ftp_login,ftp_pwd,ftp_cdup,ftp_chdir,ftp_mkdir,%
3313     ftp_nlist,ftp_rawlist,ftp_systype,ftp_pasv,ftp_get,ftp_fget,%
3314     ftp_fput,ftp_size,ftp_mdtm,ftp_rename,ftp_delete,ftp_site,%
3315     ftp_quit,ftp_exec,ftp_set_option,ftp_get_option,%
3316 %--- funchand functions
3317     call_user_func_array,call_user_func,create_function,%
3318     func_get_args,func_num_args,function_exists,%
3319     register_shutdown_function,register_tick_function,%
3320 %--- gettext functions
3321     bindtextdomain,bind_textdomain_codeset,dcgettext,dcngettext,%
3322     dngettext,gettext,ngettext,textdomain,%
3323 %--- gmp functions
3324     gmp_init,gmp_intval,gmp_strval,gmp_add,gmp_sub,gmp_mul,%
3325     gmp_div_r,gmp_div_qr,gmp_div,gmp_mod,gmp_divexact,gmp_cmp,%
3326     gmp_com,gmp_abs,gmp_sign,gmp_fact,gmp_sqrt,gmp_sqrtrm,%
3327     gmp_pow,gmp_powm,gmp_prob_prime,gmp_gcd,gmp_gcdext,gmp_invert,%
3328     gmp_jacobi,gmp_random,gmp_and,gmp_or,gmp_xor,gmp_setbit,%
3329     gmp_scan0,gmp_scan1,gmp_popcount,gmp_hamdist,%
3330 %--- http functions
3331     header,headers_sent,setcookie,%
3332 %--- hw functions
3333     hw_Array2Objrec,hw_Children,hw_ChildrenObj,hw_Close,hw_Connect,%
3334     hw_Deleteobject,hw_DocByAnchor,hw_DocByAnchorObj,%
3335     hw_Document_BodyTag,hw_Document_Content,hw_Document_SetContent,%
3336     hw_ErrorMsg,hw_EditText,hw_Error,hw_Free_Document,hw_GetParents,%
3337     hw_GetChildColl,hw_GetChildCollObj,hw_GetRemote,%
3338     hw_GetSrcByDestObj,hw_GetObject,hw_GetAndLock,hw_GetText,%
3339     hw_GetObjectByQueryObj,hw_GetObjectByQueryColl,%
3340     hw_GetChildDocColl,hw_GetChildDocCollObj,hw_GetAnchors,%
3341     hw_Mv,hw_Identify,hw_InCollections,hw_Info,hw_InsColl,hw_InsDoc,%
3342     hw_InsertObject,hw_mapid,hw_Modifyobject,hw_New_Document,%
3343     hw_Output_Document,hw_pConnect,hw_PipeDocument,hw_Root,%
3344     hw_Who,hw_getusername,hw_stat,hw_setlinkroot,hw_connection_info,%
3345     hw_insertanchors,hw_getrellink,hw_changeobject,%
3346 %--- ibase functions
3347     ibase_connect,ibase_pconnect,ibase_close,ibase_query,%
3348     ibase_fetch_row,ibase_fetch_object,ibase_field_info,%
3349     ibase_free_result,ibase_prepare,ibase_execute,ibase_trans,%
3350     ibase_rollback,ibase_timefmt,ibase_num_fields,ibase_blob_add,%
3351     ibase_blob_close,ibase_blob_create,ibase_blob_echo,%

```

```

3352     ibase_blob_import,ibase_blob_info,ibase_blob_open,%
3353 %--- icap functions
3354     icap_open,icap_close,icap_fetch_event,icap_list_events,%
3355     icap_delete_event,icap_snooze,icap_list_alarms,%
3356     icap_rename_calendar,icap_delete_calendar,icap_reopen,%
3357 %--- iconv functions
3358     iconv,iconv_get_encoding,iconv_set_encoding,ob_iconv_handler,%
3359 %--- ifx functions
3360     ifx_connect,ifx_pconnect,ifx_close,ifx_query,ifx_prepare,ifx_do,%
3361     ifx_errormsg,ifx_affected_rows,ifx_getsqlca,ifx_fetch_row,%
3362     ifx_fielddtypes,ifx_fieldproperties,ifx_num_fields,ifx_num_rows,%
3363     ifx_create_char,ifx_free_char,ifx_update_char,ifx_get_char,%
3364     ifx_copy_blob,ifx_free_blob,ifx_get_blob,ifx_update_blob,%
3365     ifx_textasvarchar,ifx_byteasvarchar,ifx_nullformat,%
3366     ifxus_free_slob,ifxus_close_slob,ifxus_open_slob,%
3367     ifxus_seek_slob,ifxus_read_slob,ifxus_write_slob,%
3368 %--- iisfunc functions
3369     iis_get_server_by_path,iis_get_server_by_comment,iis_add_server,%
3370     iis_set_dir_security,iis_get_dir_security,iis_set_server_rights,%
3371     iis_set_script_map,iis_get_script_map,iis_set_app_settings,%
3372     iis_stop_server,iis_stop_service,iis_start_service,%
3373 %--- image functions
3374     exif_imagetype,exif_read_data,exif_thumbnail,getimagesize,%
3375     imagealphablending,imagearc,imagefilledarc,imageellipse,%
3376     imagechar,imagecharup,imagecolorallocate,imagecolordeallocate,%
3377     imagecolorclosest,imagecolorclosestalpha,imagecolorclosestthwb,%
3378     imagecolorexactalpha,imagecolorresolve,imagecolorresolvealpha,%
3379     imagecolorset,imagecolorsforindex,imagecolorstotal,%
3380     imagecopy,imagecopymerge,imagecopymergegray,imagecopyresized,%
3381     imagecreate,imagecreatetruecolor,imagetruecolorpalette,%
3382     imagecreatefromgd2,imagecreatefromgd2part,imagecreatefromgif,%
3383     imagecreatefrompng,imagecreatefromwbmp,imagecreatefromstring,%
3384     imagecreatefromxpm,imagedashedline,imagedestroy,imagefill,%
3385     imagefilledrectangle,imagefilltoborder,imagefontheight,%
3386     imagegd,imagegd2,imagegif,imagepng,imagejpeg,imagewbmp,%
3387     imageline,imageloadfont,imagepalettecopy,imagepolygon,%
3388     imagepsencodefont,imagepsfreefont,imagepsloadfont,%
3389     imagepsslantfont,imagepstext,imagerectangle,imagesetpixel,%
3390     imagesetstyle,imagesettile,imagesetthickness,imagestring,%
3391     imagesx,imagesy,imagettfbbox,imageftbbox,imagettftext,%
3392     imagetypes,jpeg2wbmp,png2wbmp,iptcembed,read_exif_data,%
3393 %--- imap functions
3394     imap_8bit,imap_alerts,imap_append,imap_base64,imap_binary,%
3395     imap_bodystruct,imap_check,imap_clearflag_full,imap_close,%
3396     imap_delete,imap_deletemailbox,imap_errors,imap_expunge,%
3397     imap_fetchbody,imap_fetchheader,imap_fetchstructure,%
3398     imap_getmailboxes,imap_getsubscribed,imap_header,%
3399     imap_headers,imap_last_error,imap_listmailbox,%
3400     imap_mail,imap_mail_compose,imap_mail_copy,imap_mail_move,%
3401     imap_mime_header_decode,imap_msgno,imap_num_msg,imap_num_recent,%

```

```

3402     imap_ping,imap_popen,imap_qprint,imap_renamemailbox,imap_reopen,%
3403     imap_rfc822_parse_headers,imap_rfc822_write_address,%
3404     imap_search,imap_setacl,imap_set_quota,imap_setflag_full,%
3405     imap_status,imap_subscribe,imap_uid,imap_undelete,%
3406     imap_utf7_decode,imap_utf7_encode,imap_utf8,imap_thread,%
3407 %--- info functions
3408     assert,assert_options,extension_loaded,dlopen,getenv,get_cfg_var,%
3409     get_defined_constants,get_extension_funcs,getmygid,%
3410     get_loaded_extensions,get_magic_quotes_gpc,%
3411     getlastmod,getmyinode,getmypid,getmyuid,get_required_files,%
3412     ini_alter,ini_get,ini_get_all,ini_restore,ini_set,phpcredits,%
3413     phpversion,php_logo_guid,php_sapi_name,php_uname,putenv,%
3414     set_time_limit,version_compare,zend_logo_guid,zend_version,%
3415 %--- ircg functions
3416     ircg_pconnect,ircg_fetch_error_msg,ircg_set_current,ircg_join,%
3417     ircg_msg,ircg_notice,ircg_nick,ircg_topic,ircg_channel_mode,%
3418     ircg_whois,ircg_kick,ircg_ignore_add,ircg_ignore_del,%
3419     ircg_is_conn_alive,ircg_lookup_format_messages,%
3420     ircg_set_on_die,ircg_set_file,ircg_get_username,%
3421     ircg_nickname_unescape,%
3422 %--- java functions
3423     java_last_exception_clear,java_last_exception_get,%
3424 %--- ldap functions
3425     ldap_add,ldap_bind,ldap_close,ldap_compare,ldap_connect,%
3426     ldap_delete,ldap_dn2ufn,ldap_err2str,ldap_errno,ldap_error,%
3427     ldap_first_attribute,ldap_first_entry,ldap_free_result,%
3428     ldap_get_dn,ldap_get_entries,ldap_get_option,ldap_get_values,%
3429     ldap_list,ldap_modify,ldap_mod_add,ldap_mod_del,%
3430     ldap_next_attribute,ldap_next_entry,ldap_read,ldap_rename,%
3431     ldap_set_option,ldap_unbind,ldap_8859_to_t61,%
3432     ldap_next_reference,ldap_parse_reference,ldap_parse_result,%
3433     ldap_sort,ldap_start_tls,ldap_t61_to_8859,%
3434 %--- mail functions
3435     mail,ezmlm_hash,%
3436 %--- math functions
3437     abs,acos,acosh,asin,asinh,atan,atanh,atan2,base_convert,bindec,%
3438     cos,cosh,decbin,dechex,decoct,deg2rad,exp,expm1,floor,%
3439     hexdec,hypot,is_finite,is_infinite,is_nan,lcg_value,log,log10,%
3440     max,min,mt_rand,mt_srand,mt_getrandmax,number_format,octdec,pi,%
3441     rad2deg,rand,round,sin,sinh,sqrt,srand,tan,tanh,%
3442 %--- mbstring functions
3443     mb_language,mb_parse_str,mb_internal_encoding,mb_http_input,%
3444     mb_detect_order,mb_substitute_character,mb_output_handler,%
3445     mb_strlen,mb_strpos,mb_strrpos,mb_substr,mb_strcut,mb_strwidth,%
3446     mb_convert_encoding,mb_detect_encoding,mb_convert_kana,%
3447     mb_decode_mimeheader,mb_convert_variables,%
3448     mb_decode_numericentity,mb_send_mail,mb_get_info,%
3449     mb_ereg,mb_eregi,mb_ereg_replace,mb_eregi_replace,mb_split,%
3450     mb_ereg_search,mb_ereg_search_pos,mb_ereg_search_regs,%
3451     mb_ereg_search_getregs,mb_ereg_search_getpos,%

```

```

3452 %--- mcal functions
3453     mcal_open,mcal_popen,mcal_reopen,mcal_close,%
3454     mcal_rename_calendar,mcal_delete_calendar,mcal_fetch_event,%
3455     mcal_append_event,mcal_store_event,mcal_delete_event,%
3456     mcal_list_alarms,mcal_event_init,mcal_event_set_category,%
3457     mcal_event_set_description,mcal_event_set_start,%
3458     mcal_event_set_alarm,mcal_event_set_class,mcal_is_leap_year,%
3459     mcal_date_valid,mcal_time_valid,mcal_day_of_week,%
3460     mcal_date_compare,mcal_next_recurrence,%
3461     mcal_event_set_recur_daily,mcal_event_set_recur_weekly,%
3462     mcal_event_set_recur_monthly_wday,mcal_event_set_recur_yearly,%
3463     mcal_event_add_attribute,mcal_expunge,mcal_week_of_year,%
3464 %--- mcrypt functions
3465     mcrypt_get_cipher_name,mcrypt_get_block_size,%
3466     mcrypt_create_iv,mcrypt_cbc,mcrypt_cfb,mcrypt_ecb,mcrypt_ofb,%
3467     mcrypt_list_modes,mcrypt_get_iv_size,mcrypt_encrypt,%
3468     mcrypt_module_open,mcrypt_module_close,mcrypt_generic_deinit,%
3469     mcrypt_generic,mdecrypt_generic,mcrypt_generic_end,%
3470     mcrypt_enc_is_block_algorithm_mode,%
3471     mcrypt_enc_is_block_mode,mcrypt_enc_get_block_size,%
3472     mcrypt_enc_get_supported_key_sizes,mcrypt_enc_get_iv_size,%
3473     mcrypt_enc_get_modes_name,mcrypt_module_self_test,%
3474     mcrypt_module_is_block_algorithm,mcrypt_module_is_block_mode,%
3475     mcrypt_module_get_algo_key_size,%
3476 %--- mhash functions
3477     mhash_get_hash_name,mhash_get_block_size,mhash_count,mhash,%
3478 %--- misc functions
3479     connection_aborted,connection_status,connection_timeout,%
3480     define,defined,die,eval,exit,get_browser,highlight_file,%
3481     ignore_user_abort,iptcparse,leak,pack,show_source,sleep,uniqid,%
3482     usleep,%
3483 %--- mnogosearch functions
3484     udm_add_search_limit,udm_alloc_agent,udm_api_version,%
3485     udm_cat_list,udm_clear_search_limits,udm_errno,udm_error,%
3486     udm_free_agent,udm_free_ispell_data,udm_free_res,%
3487     udm_get_res_field,udm_get_res_param,udm_load_ispell_data,%
3488     udm_check_charset,udm_check_stored,udm_close_stored,udm_crc32,%
3489 %--- msession functions
3490     msession_connect,msession_disconnect,msession_count,%
3491     msession_destroy,msession_lock,msession_unlock,msession_set,%
3492     msession_uniq,msession_randstr,msession_find,msession_list,%
3493     msession_set_array,msession_listvar,msession_timeout,%
3494     msession_getdata,msession_setdata,msession_plugin,%
3495 %--- mysql functions
3496     mysql,mysql_affected_rows,mysql_close,mysql_connect,mysql_create_db,%
3497     mysql_data_seek,mysql_dbname,mysql_drop_db,mysql_dropdb,mysql_error,%
3498     mysql_fetch_field,mysql_fetch_object,mysql_fetch_row,%
3499     mysql_field_seek,mysql_fieldtable,mysql_fieldtype,mysql_fieldflags,%
3500     mysql_free_result,mysql_freeresult,mysql_list_fields,%
3501     mysql_list_dbs,mysql_listdbs,mysql_list_tables,mysql_listtables,%

```

```

3502     msql_num_rows,msql_numfields,msql_numrows,msql_pconnect,%
3503     msql_regcase,msql_result,msql_select_db,msql_selectdb,%
3504 %--- mssql functions
3505     mssql_close,mssql_connect,mssql_data_seek,mssql_fetch_array,%
3506     mssql_fetch_object,mssql_fetch_row,mssql_field_length,%
3507     mssql_field_seek,mssql_field_type,mssql_free_result,%
3508     mssql_min_error_severity,mssql_min_message_severity,%
3509     mssql_num_fields,mssql_num_rows,mssql_pconnect,mssql_query,%
3510     mssql_select_db,mssql_bind,mssql_execute,mssql_fetch_assoc,%
3511     mssql_guid_string,mssql_init,mssql_rows_affected,%
3512 %--- muscat functions
3513     muscat_setup,muscat_setup_net,muscat_give,muscat_get,%
3514 %--- mysql functions
3515     mysql_affected_rows,mysql_change_user,mysql_character_set_name,%
3516     mysql_connect,mysql_create_db,mysql_data_seek,mysql_db_name,%
3517     mysql_drop_db,mysql_errno,mysql_error,mysql_escape_string,%
3518     mysql_fetch_assoc,mysql_fetch_field,mysql_fetch_lengths,%
3519     mysql_fetch_row,mysql_field_flags,mysql_field_name,%
3520     mysql_field_seek,mysql_field_table,mysql_field_type,%
3521     mysql_info,mysql_insert_id,mysql_list_dbs,mysql_list_fields,%
3522     mysql_list_tables,mysql_num_fields,mysql_num_rows,%
3523     mysql_ping,mysql_query,mysql_unbuffered_query,%
3524     mysql_result,mysql_select_db,mysql_tablename,mysql_thread_id,%
3525     mysql_get_host_info,mysql_get_proto_info,mysql_get_server_info,%
3526 %--- network functions
3527     checkdnsrr,closelog,debugger_off,debugger_on,%
3528     fsockopen,gethostbyaddr,gethostbyname,gethostbyname1,getmxrr,%
3529     getprotobyname,getservbyname,getservbyport,ip2long,long2ip,%
3530     pfsockopen,socket_get_status,socket_set_blocking,%
3531     syslog,%
3532 %--- nis functions
3533     yp_get_default_domain,yp_order,yp_master,yp_match,yp_first,%
3534     yp_errno,yp_err_string,yp_all,yp_cat,%
3535 %--- oci8 functions
3536     OCIDefineByName,OCIBindByName,OCILogon,OCIPLogon,OCINLogon,%
3537     OCIExecute,OCICommit,OCIRollback,OCINewDescriptor,OCIRowCount,%
3538     OCIResult,OCIFetch,OCIFetchInto,OCIFetchStatement,%
3539     OCIColumnName,OCIColumnSize,OCIColumnType,OCIServerVersion,%
3540     OCINewCursor,OCIFreeStatement,OCIFreeCursor,OCIFreeDesc,%
3541     OCIError,OCIInternalDebug,OCICancel,OCISetPrefetch,%
3542     OCISaveLobFile,OCISaveLob,OCILoadLob,OCIColumnScale,%
3543     OCIColumnTypeRaw,OCINewCollection,OCIFreeCollection,%
3544     OCICollAppend,OCICollAssignElem,OCICollGetElem,OCICollMax,%
3545     OCICollTrim,%
3546 %--- oracle functions
3547     Ora_Bind,Ora_Close,Ora_ColumnName,Ora_ColumnSize,Ora_ColumnType,%
3548     Ora_CommitOff,Ora_CommitOn,Ora_Do,Ora_Error,Ora_ErrorCode,%
3549     Ora_Fetch,Ora_Fetch_Into,Ora_GetColumn,Ora_Logoff,Ora_Logon,%
3550     Ora_Numcols,Ora_Numrows,Ora_Open,Ora_Parse,Ora_Rollback,%
3551 %--- outcontrol functions

```

```

3552     flush,ob_start,ob_get_contents,ob_get_length,ob_get_level,%
3553     ob_flush,ob_clean,ob_end_flush,ob_end_clean,ob_implicit_flush,%
3554 %--- ovrimos functions
3555     ovrimos_connect,ovrimos_close,ovrimos_longreadlen,%
3556     ovrimos_execute,ovrimos_cursor,ovrimos_exec,ovrimos_fetch_into,%
3557     ovrimos_result,ovrimos_result_all,ovrimos_num_rows,%
3558     ovrimos_field_name,ovrimos_field_type,ovrimos_field_len,%
3559     ovrimos_free_result,ovrimos_commit,ovrimos_rollback,%
3560 %--- pcntl functions
3561     pcntl_fork,pcntl_signal,pcntl_waitpid,pcntl_wexitstatus,%
3562     pcntl_wifsignaled,pcntl_wifstopped,pcntl_wstopsig,%
3563     pcntl_exec,%
3564 %--- pcre functions
3565     preg_match,preg_match_all,preg_replace,preg_replace_callback,%
3566     preg_quote,preg_grep,Pattern Modifiers,Pattern Syntax,%
3567 %--- pdf functions
3568     pdf_add_annotation,pdf_add_bookmark,pdf_add_launchlink,%
3569     pdf_add_note,pdf_add_outline,pdf_add_pdflink,pdf_add_thumbnail,%
3570     pdf_arc,pdf_arcn,pdf_attach_file,pdf_begin_page,%
3571     pdf_begin_template,pdf_circle,pdf_clip,pdf_close,pdf_closepath,%
3572     pdf_closepath_stroke,pdf_close_image,pdf_close_pdi,%
3573     pdf_concat,pdf_continue_text,pdf_curveto,pdf_delete,%
3574     pdf_endpath,pdf_end_pattern,pdf_end_template,pdf_fill,%
3575     pdf_findfont,pdf_get_buffer,pdf_get_font,pdf_get_fontname,%
3576     pdf_get_image_height,pdf_get_image_width,pdf_get_parameter,%
3577     pdf_get_pdi_value,pdf_get_majorversion,pdf_get_minorversion,%
3578     pdf_initgraphics,pdf_lineto,pdf_makespotcolor,pdf_moveto,%
3579     pdf_open,pdf_open_CCITT,pdf_open_file,pdf_open_gif,%
3580     pdf_open_image_file,pdf_open_jpeg,pdf_open_memory_image,%
3581     pdf_open_pdi_page,pdf_open_png,pdf_open_tiff,pdf_place_image,%
3582     pdf_rect,pdf_restore,pdf_rotate,pdf_save,pdf_scale,pdf_setcolor,%
3583     pdf_setflat,pdf_setfont,pdf_setgray,pdf_setgray_fill,%
3584     pdf_setlinecap,pdf_setlinejoin,pdf_setlinewidth,pdf_setmatrix,%
3585     pdf_setpolydash,pdf_setrgbcolor,pdf_setrgbcolor_fill,%
3586     pdf_set_border_color,pdf_set_border_dash,pdf_set_border_style,%
3587     pdf_set_duration,pdf_set_font,pdf_set_horiz_scaling,%
3588     pdf_set_info_author,pdf_set_info_creator,pdf_set_info_keywords,%
3589     pdf_set_info_title,pdf_set_leading,pdf_set_parameter,%
3590     pdf_set_text_rendering,pdf_set_text_rise,pdf_set_text_matrix,%
3591     pdf_set_word_spacing,pdf_show,pdf_show_boxed,pdf_show_xy,%
3592     pdf_stringwidth,pdf_stroke,pdf_translate,%
3593 %--- pfpro functions
3594     pfpro_init,pfpro_cleanup,pfpro_process,pfpro_process_raw,%
3595 %--- pgsql functions
3596     pg_close,pg_affected_rows,pg_connect,pg_dbname,pg_end_copy,%
3597     pg_query,pg_fetch_array,pg_fetch_object,pg_fetch_row,%
3598     pg_field_name,pg_field_num,pg_field_prtlen,pg_field_size,%
3599     pg_free_result,pg_last_oid,pg_host,pg_last_notice,pg_lo_close,%
3600     pg_lo_export,pg_lo_import,pg_lo_open,pg_lo_read,pg_lo_seek,%
3601     pg_lo_read_all,pg_lo_unlink,pg_lo_write,pg_num_fields,%

```



```

3602     pg_options,pg_pconnect,pg_port,pg_put_line,pg_fetch_result,%
3603     pg_client_encoding,pg_trace,pg_tty,pg_untrace,pg_get_result,%
3604     pg_send_query,pg_cancel_query,pg_connection_busy,%
3605     pg_connection_status,pg_copy_from,pg_copy_to,pg_escape_bytea,%
3606     pg_result_error,%
3607 %--- posix functions
3608     posix_kill,posix_getpid,posix_getppid,posix_getuid,%
3609     posix_getgid,posix_getegid,posix_setuid,posix_seteuid,%
3610     posix_setegid,posix_getgroups,posix_getlogin,posix_getpgrp,%
3611     posix_setpgid,posix_getpgid,posix_getsid,posix_uname,%
3612     posix_ctermid,posix_ttyname,posix_isatty,posix_getcwd,%
3613     posix_getgrnam,posix_getgrgid,posix_getpwnam,posix_getpwuid,%
3614 %--- printer functions
3615     printer_open,printer_abort,printer_close,printer_write,%
3616     printer_set_option,printer_get_option,printer_create_dc,%
3617     printer_start_doc,printer_end_doc,printer_start_page,%
3618     printer_create_pen,printer_delete_pen,printer_select_pen,%
3619     printer_delete_brush,printer_select_brush,printer_create_font,%
3620     printer_select_font,printer_logical_fontheight,%
3621     printer_draw_rectangle,printer_draw_ellipse,printer_draw_text,%
3622     printer_draw_chord,printer_draw_pie,printer_draw_bmp,%
3623 %--- pspell functions
3624     pspell_add_to_personal,pspell_add_to_session,pspell_check,%
3625     pspell_config_create,pspell_config_ignore,pspell_config_mode,%
3626     pspell_config_repl,pspell_config_runtogether,%
3627     pspell_new,pspell_new_config,pspell_new_personal,%
3628     pspell_store_replacement,pspell_suggest,%
3629 %--- qtdom functions
3630     qdom_tree,qdom_error,%
3631 %--- readline functions
3632     readline,readline_add_history,readline_clear_history,%
3633     readline_info,readline_list_history,readline_read_history,%
3634 %--- recode functions
3635     recode_string,recode,recode_file,%
3636 %--- regex functions
3637     ereg,ereg_replace,eregi,eregi_replace,split,spliti,sql_regcase,%
3638 %--- sem functions
3639     sem_get,sem_acquire,sem_release,sem_remove,shm_attach,%
3640     shm_remove,shm_put_var,shm_get_var,shm_remove_var,ftok,%
3641 %--- sesam functions
3642     sesam_connect,sesam_disconnect,sesam_settransaction,%
3643     sesam_rollback,sesam_execimm,sesam_query,sesam_num_fields,%
3644     sesam_diagnostic,sesam_fetch_result,sesam_affected_rows,%
3645     sesam_field_array,sesam_fetch_row,sesam_fetch_array,%
3646     sesam_free_result,%
3647 %--- session functions
3648     session_start,session_destroy,session_name,session_module_name,%
3649     session_id,session_register,session_unregister,session_unset,%
3650     session_get_cookie_params,session_set_cookie_params,%
3651     session_encode,session_set_save_handler,session_cache_limiter,%

```

```

3652     session_write_close,%
3653 %--- shmop functions
3654     shmop_open,shmop_read,shmop_write,shmop_size,shmop_delete,%
3655 %--- snmp functions
3656     snmpget,snmpset,snmpwalk,snmpwalkoid,snmp_get_quick_print,%
3657     snmprealwalk,%
3658 %--- strings functions
3659     addcslashes,addslashes,bin2hex,chop,chr,chunk_split,%
3660     count_chars,crc32,crypt,echo,explode,get_html_translation_table,%
3661     hebrew,hebrevc,htmlentities,htmlspecialchars,implode,join,%
3662     localeconv,ltrim,md5,md5_file,metaphone,nl_langinfo,nl2br,ord,%
3663     print,printf,quoted_printable_decode,quotemeta,str_rot13,rtrim,%
3664     setlocale,similar_text,soundex,sprintf,strcasecmp,strcmp,%
3665     strcmp,strcmp,strcmp,strip_tags,stripslashes,stripslashes,%
3666     strlen,strnatcmp,strnatcasecmp,strcmp,str_pad,strpos,strchr,%
3667     strrev,strrpos,strpos,strstr,strtok,strtolower,strtoupper,%
3668     strstr,substr,substr_count,substr_replace,trim,ucfirst,ucwords,%
3669     vsprintf,wordwrap,%
3670 %--- swf functions
3671     swf_openfile,swf_closefile,swf_labelframe,swf_showframe,%
3672     swf_getframe,swf_mulcolor,swf_addcolor,swf_placeobject,%
3673     swf_removeobject,swf_nextid,swf_startdoaction,%
3674     swf_actiongeturl,swf_actionnextframe,swf_actionprevframe,%
3675     swf_actionstop,swf_actiontogglequality,swf_actionwaitforframe,%
3676     swf_actiongotolabel,swf_enddoaction,swf_defineline,%
3677     swf_definepoly,swf_startshape,swf_shapelinesolid,%
3678     swf_shapefillsolid,swf_shapefillbitmapclip,%
3679     swf_shapemoveto,swf_shapelineto,swf_shapecurveto,%
3680     swf_shapearc,swf_endshape,swf_definefont,swf_setfont,%
3681     swf_fontslant,swf_fonttracking,swf_getfontinfo,swf_definetext,%
3682     swf_definebitmap,swf_getbitmapinfo,swf_startsymbol,%
3683     swf_startbutton,swf_addbuttonrecord,swf_oncondition,%
3684     swf_viewport,swf_ortho,swf_ortho2,swf_perspective,swf_polarview,%
3685     swf_pushmatrix,swf_popmatrix,swf_scale,swf_translate,swf_rotate,%
3686 %--- sybase functions
3687     sybase_affected_rows,sybase_close,sybase_connect,%
3688     sybase_fetch_array,sybase_fetch_field,sybase_fetch_object,%
3689     sybase_field_seek,sybase_free_result,sybase_get_last_message,%
3690     sybase_min_error_severity,sybase_min_message_severity,%
3691     sybase_num_fields,sybase_num_rows,sybase_pconnect,sybase_query,%
3692     sybase_select_db,%
3693 %--- uodbc functions
3694     odbc_autocommit,odbc_binmode,odbc_close,odbc_close_all,%
3695     odbc_connect,odbc_cursor,odbc_do,odbc_error,odbc_errormsg,%
3696     odbc_execute,odbc_fetch_into,odbc_fetch_row,odbc_fetch_array,%
3697     odbc_fetch_object,odbc_field_name,odbc_field_num,%
3698     odbc_field_len,odbc_field_precision,odbc_field_scale,%
3699     odbc_longreadlen,odbc_num_fields,odbc_pconnect,odbc_prepare,%
3700     odbc_result,odbc_result_all,odbc_rollback,odbc_setoption,%
3701     odbc_tableprivileges,odbc_columns,odbc_columnprivileges,%

```

```

3702     odbcc_primarykeys,odbc_foreignkeys,odbc_procedures,%
3703     odbcc_specialcolumns,odbc_statistics,%
3704 %--- url functions
3705     base64_decode,base64_encode,parse_url,rawurldecode,rawurlencode,%
3706     urlencode,%
3707 %--- var functions
3708     doubleval,empty,floatval,gettype,get_defined_vars,%
3709     import_request_variables,intval,is_array,is_bool,is_double,%
3710     is_int,is_integer,is_long,is_null,is_numeric,is_object,is_real,%
3711     is_scalar,is_string,isset,print_r,serialize,unset,settype,strcmp,%
3712     unset,var_dump,var_export,is_callable,%
3713 %--- vpopmail functions
3714     vpopmail_add_domain,vpopmail_del_domain,%
3715     vpopmail_add_domain_ex,vpopmail_del_domain_ex,%
3716     vpopmail_add_user,vpopmail_del_user,vpopmail_passwd,%
3717     vpopmail_auth_user,vpopmail_alias_add,vpopmail_alias_del,%
3718     vpopmail_alias_get,vpopmail_alias_get_all,vpopmail_error,%
3719 %--- w32api functions
3720     w32api_set_call_method,w32api_register_function,%
3721     w32api_deftype,w32api_init_dtype,%
3722 %--- wddx functions
3723     wddx_serialize_value,wddx_serialize_vars,wddx_packet_start,%
3724     wddx_add_vars,wddx_deserialize,%
3725 %--- xml functions
3726     xml_parser_create,xml_set_object,xml_set_element_handler,%
3727     xml_set_processing_instruction_handler,xml_set_default_handler,%
3728     xml_set_notation_decl_handler,%
3729     xml_parse,xml_get_error_code,xml_error_string,%
3730     xml_get_current_column_number,xml_get_current_byte_index,%
3731     xml_parser_free,xml_parser_set_option,xml_parser_get_option,%
3732     utf8_encode,xml_parser_create_ns,%
3733     xml_set_start_namespace_decl_handler,%
3734 %--- xslt functions
3735     xslt_set_log,xslt_create,xslt_errno,xslt_error,xslt_free,%
3736     xslt_set_sax_handler,xslt_set_scheme_handler,%
3737     xslt_set_base,xslt_set_encoding,xslt_set_sax_handlers,%
3738 %--- yaz functions
3739     yaz_addinfo,yaz_close,yaz_connect,yaz_errno,yaz_error,yaz_hits,%
3740     yaz_database,yaz_range,yaz_record,yaz_search,yaz_present,%
3741     yaz_scan,yaz_scan_result,yaz_ccl_conf,yaz_ccl_parse,%
3742     yaz_wait,yaz_sort,%
3743 %--- zip functions
3744     zip_close,zip_entry_close,zip_entry_compressedsize,%
3745     zip_entry_filesize,zip_entry_name,zip_entry_open,zip_entry_read,%
3746     zip_read,%
3747 %--- zlib functions
3748     gzclose,gzclose,gzfile,gzgetc,gzgets,gzgetss,gzopen,gzpassthru,%
3749     gzread,gzrewind,gzseek,gztell,gzwrite,readgzfile,gzcompress,%
3750     gzdeflate,gzinflate,gzencode,},%
3751     sensitive,%

```

```

3752     morecomment=[l]\#,%
3753     morecomment=[l]//,%
3754     morecomment=[s]{/*}{*/},%
3755     morestring=[b]",%
3756     morestring=[b]'%
3757 }[keywords,comments,strings]%
3758 </lang2>

```

## 2.58 Plasm

Alessio Pace provided the following definition.

```

3759 <*lang3>
3760 \lst@definelanguage{Plasm}%
3761 {sensitive=false,%
3762   morekeywords={aa,abs,ac,acolor,acos,actor,al,alias,align,and,%
3763     animation,animation,appearance,apply,ar,arc,as,asin,assoc,atan,%
3764     axialcamera,axialcameras,basehermite,bbox,bbox,bernstein,%
3765     bernsteinbasis,bezier,beziercurve,beziermanifold,bezierstripe,%
3766     beziersurface,bigger,biggest,bilinearsurface,binormal,%
3767     biquadraticsurface,black,blend,blue,bottom,box,brown,bspize,%
3768     bspline,bsplinebasis,c,cabinet,camera,case,cat,catch,ceil,%
3769     centeredcameras,centralcavalier,char,charseq,choose,circle,%
3770     circumference,class,cmap,color,comp,computecoords,cone,%
3771     conicalsurface,cons,control,convexcoords,convexhull,coonspatch,%
3772     copy,cos,cosh,crease,crosspolytope,cube,cubiccardinal,%
3773     cubiccardinalbasis,cubichermite,cubicbspline,cubicbsplinebasis,%
3774     cuboid,curl,curvature,curve2cspath,curve2mapvect,cyan,cylinder,%
3775     cylindricalsurface,d,deboor,def,depol,depth_sort,depth_test,%
3776     derbernstein,derbernsteinbase,derbezier,determinant,difference,%
3777     differencepr,dim,dimetric,dirproject,displaygraph,displaynubspline,%
3778     displaynurb spline,distl,distr,div,divergence,dodecahedron,dot,down,%
3779     dp,drawedges,drawforks,drawtree,ds,dsphere,dump,dumprep,ellipse,%
3780     embed,end,eq,ex,exp,explode,export,extract_bodies,extract_polygons,%
3781     extract_wires,extrude,extrusion,fact,false,feature,ff,fillcolor,%
3782     filter,finitcone,first,flash,flashani,floor,fontcolor,fontheight,%
3783     fontspacing,fontwidth,fractalsimplex,frame,frame,frameflash,fromto,%
3784     gausscurvature,ge,grad,gradient,gradmap,gray,green,gt,help,hermite,%
3785     hermitebasis,hermitesurface,hexahedron,icosahedron,id,idnt,if,in,%
3786     inarcs,innerprod,inset,insl,insr,intersection,intersectionpr,%
3787     intervals,intmax,intmin,intsto,inv,isa,isanimpol,isbool,ischar,%
3788     isclosedshape,iscloseto,isempty,iseven,isfun,isfunvect,isge,isgt,%
3789     isint,isintneg,isinto,isintpos,isle,islt,ismat,ismatof,isnat,%
3790     isnull,isnum,isnumneg,isnumpos,isodd,isometric,isorthoshape,ispair,%
3791     ispoint,ispointseq,ispol,ispoldim,ispolytope,ispurepol,isreal,%
3792     isrealneg,isrealpos,isrealvect,isseq,isseqof,issshape,issimplex,%
3793     issqrmat,isstring,isvect,iszero,jacobian,join,joints,k,last,le,%
3794     left,leftcavalier,len,less,lesseq,lex,lift,light,linecolor,%
3795     linesize,list,ln,load,loadlib,loop,lt,lxmy,magenta,map,mapshapes,%

```

```

3796 markersize,mat,matdotprod,material,mathom,max,mean,meanpoint,med,%
3797 merge,mesh,min,minkowski,mirror,mixedprod,mk,mkframe,mkpol,%
3798 mkvector,mkversork,mod,model,move,mul,multextrude,mxby,mxmy,mxty,%
3799 myfont,n,nat2string,neq,ngon,norm2,normalmap,not,nu_grid,nubspline,%
3800 nubsplineknots,nurbspline,nurbsplineknots,octahedron,offset,%
3801 onepoint,open,optimize,or,orange,ord,ortho,orthoproject,orthox,%
3802 orthoy,orthoz,outarcs,outerloop,outerwarp,pairdiff,parallel,%
3803 pascaltriangle,pdiff,pdifference,permutahedron,permutations,%
3804 perspective,perspective,pi,pivotop,plane,planemapping,pmap,%
3805 points2shape,polar,polyline,polymarker,polypoint,power,powerset,%
3806 presort,principalnormal,print,prism,profileprodsurface,%
3807 progressivesum,project,projection,purple,pyramid,q,quadratic,%
3808 quadmesh,quote,r,raise,range,rationalbezier,rationalblend,%
3809 rationalbspline,rationalize,red,rev,reverse,rgbacolor,right,%
3810 rightcavalier,ring,rn,rotatedtext,rotationalsurface,rotn,rtail,%
3811 ruledsurface,rxmy,s,save,scalarmatprod,scalarvectprod,schlegel2d,%
3812 schlegel3d,sdifference,sdifferencepr,segment,sel,setand,setdiff,%
3813 setfontcolor,setor,setxor,sex,shape_0,shape_1,shape2points,%
3814 shape2pol,shapeclosed,shapecomb,shapediff,shapedist,%
3815 shapeinbetweening,shapeinf,shapejoin,shapelen,shapenorm,%
3816 shapenormal,shapeprod,shaperot,shapesum,shapesup,shapezero,shift,%
3817 showprop,sign,signal,simplex,simplexpile,sin,sinh,size,skeleton,%
3818 skew,smaller,smallest,solidifier,solidify,sort,sphere,spline,%
3819 splinesampling,splitcells,splitpols,sqr,sqrt,star,string,%
3820 stringtokens,struct,sub,svg,sweep,t,tail,tan,tangent,tanh,%
3821 tensorprodsurface,tetrahedron,text,texture,textwithattributes,%
3822 thinsolid,threepoints,time,tmax,tmin,top,torus,torusmap,trace,%
3823 trans,tree,trianglefan,trianglestripe,trimetric,true,trunccone,tt,%
3824 tube,twopoints,uk,ukpol,ukpolf,union,unionpr,unitvect,unprune,up,%
3825 vect2dtoangle,vect2mat,vectdiff,vectnorm,vectprod,vectsum,view,%
3826 viewmodel,viewmodel,vrml,warp,warp,where,white,with,xcavalier,xor,%
3827 xquadratic,xx,ycavalier,yellow},%
3828 moredirectives={loadlib},%
3829 otherkeywords={- , + , * , ** , / , ~ , | , . . , ^ , \& , \&\& , \# , \#\# },%
3830 morecomment=[s]{\%}{\%},%
3831 morestring=[b] ',%
3832 literate={~}{\sim$}{1} {~}{\wedge$}{1},%
3833 }[keywords,directives,comments,strings]%
3834 </lang3>

```

## 2.59 PL/I

Found the data in

- BERNHARD FISCHER, HERMAN FISCHER: **Structured Programming in PL/I and PL/C**; Copyright © 1976 by Marcel Dekker, Inc.; ISBN 0-8247-6394-7

```
3835 <*lang3>
```

```

3836 \lst@definlanguage{PL/I}%
3837   {morekeywords={ABS,ATAN,AUTOMATIC,AUTO,ATAND,BEGIN,BINARY,BIN,BIT,%
3838     BUILTIN,BY,CALL,CHARACTER,CHAR,CHECK,COLUMN,COL,COMPLEX,CPLX,%
3839     COPY,COS,COSD,COSH,DATA,DATE,DECIMAL,DEC,DECLARE,DCL,DO,EDIT,%
3840     ELSE,END,ENDFILE,ENDPAGE,ENTRY,EXP,EXTERNAL,EXT,FINISH,FIXED,%
3841     FIXEDOVERFLOW,FOFL,FLOAT,FORMAT,GET,GO,GOTO,IF,IMAG,INDEX,%
3842     INITIAL,INIT,INTERNAL,INT,LABEL,LENGTH,LIKE,LINE,LIST,LOG,LOG2,%
3843     LOG10,MAIN,MAX,MIN,MOD,NOCHECK,NOFIXEDOVERFLOW,NOFOFL,NOOVERFLOW,%
3844     NOOFL,NOSIZE,NOUNDERFLOW,NOUFL,NOZERODIVIDE,NOZDIV,ON,OPTIONS,%
3845     OVERFLOW,OFL,PAGE,PICTURE,PROCEDURE,PROC,PUT,READ,REPEAT,RETURN,%
3846     RETURNS,ROUND,SIN,SIND,SINH,SIZE,SKIP,SQRT,STATIC,STOP,STRING,%
3847     SUBSTR,SUM,SYSIN,SYSPRINT,TAN,TAND,TANH,THEN,TO,UNDERFLOW,UFL,%
3848     VARYING,WHILE,WRITE,ZERODIVIDE,ZDIV},%
3849     sensitive=f,%
3850     morecomment=[s]{/*}{*/},%
3851     morestring=[d]'}%
3852   }[keywords,comments,strings]%
3853 </lang3>

```

## 2.60 PostScript

Herbert Voss provided the following definition, written by Christophe Jorssen provided the following definition.

```

3854 <*lang3>
3855 %%
3856 %% PostScript language definition (c) 2005 Christophe Jorssen.
3857 %%
3858 \lst@definlanguage{PostScript}{%
3859   morekeywords={abs,add,aload,anchorsearch,and,arc,arcn,arct,arcto,array,ashow,
3860     astore,atan,awidthshow,begin,bind,bitshift,bytesavailable,cachestatus,
3861     ceiling,charpath,clear,cleartomark,cleardictstack,clip,clippath,closefile,
3862     closepath,colorimage,concat,concatmatrix,condition,copy,copypage,cos,count,
3863     countdictstack,countexecstack,counttomark,cshow,currentblackgeneration,
3864     currentcacheparams,currentcmykcolor,currentcolor,currentcolorrendering,
3865     currentcolorscreen,currentcolorspace,currentcolortransfer,currentcontext,
3866     currentdash,currentdevparams,currentdict,currentfile,currentflat,currentfont,
3867     currentglobal,currentgray,currentgstate,currenthalftone,currenthalftonephase,
3868     currenthsbcolor,currentlinecap,currentlinejoin,currentlinewidth,currentmatrix,
3869     currentmiterlimit,currentobjectformat,currentpacking,currentpagedevice,
3870     currentpoint,currentrgbcolor,currentscreen,currentshared,currentstrokeadjust,
3871     currentsystemparams,currenttransfer,currentundercolorremoval,currentuserparams,
3872     curveto,cvi,cvilit,cvn,cvr,cvrs,cvs,cvx,def,defaultmatrix,definefont,
3873     defineresource,defineusername,defineuserobject,deletefile,detach,deviceinfo,
3874     dict,dictstack,div,dtransform,dup,
3875     echo,eexec,end,eoclip,eofill,eoviewclip,eq,erasepage,errordict,exch,exec,
3876     execform,execstack,execuserobject,executeonly,executive,exit,
3877     exp,false,file,filenameforall,fileposition,fill,filter,findencoding,findfont,
3878     findresource,flattenpath,floor,flush,flushfile,FontDirectory,for,forall,fork,ge,

```

```

3879 get,getinterval,globaldict,GlobalFontDirectory,glyphshow,grestore,grestoreall,
3880 gsave,gstate,gt,identmatrix,idiv,idtransform,if,ifelse,image,
3881 imagemask,index,ineofill,infill,initclip,initgraphics,initmatrix,initviewclip,
3882 instroke,internaldict,inueofill,inufill,inustroke,
3883 invertmatrix,ISOLatin1Encoding,itransform,join,kshow,
3884 known,languagelevel,le,length,lineto,ln,load,lock,log,loop,lt,
3885 makefont,makepattern,mark,matrix,maxlength,mod,monitor,moveto,mul,ne,neg,
3886 newpath,noaccess,not,notify,null,nulldevice,or,packedarray,
3887 pathbbox,pathforall,pop,print,printobject,product,prompt,pstack,put,putinterval,
3888 quit,rand,rcurveto,read,readhexstring,readline,readonly,readstring,
3889 realtime,rectclip,rectfill,rectstroke,rectviewclip,renamefile,repeat,resetfile,
3890 resourceforall,resourcestatus,restore,reversepath,revision,rlineto,rmoveto,roll,
3891 rootfont,rotate,round,rrand,run,save,scale,scalefont,scheck,search,selectfont,
3892 serialnumber,setbbox,setblackgeneration,setcachedevice,setcachedevice2,
3893 setcachelimit,setcacheparams,setcharwidth,setcmykcolor,setcolor,
3894 setcolorrendering,setcolorscreen,setcolorspace,setcolortransfer,setdash,
3895 setdevparams,setfileposition,setflat,setfont,setglobal,setgray,setgstate,
3896 sethalftone,sethalftonephase,sethsbcolor,setlinecap,setlinejoin,setlinewidth,
3897 setmatrix,setmiterlimit,setobjectformat,setoverprint,setpacking,setpagedevice,
3898 setpattern,setrgbcolor,setscreen,setshared,setstrokeadjust,setsystemparams,
3899 settransfer,setucacheparams,setundercolorremoval,setuserparams,setvmthreshold,
3900 shareddict,show,showpage,sin,sqrt,srand,stack,
3901 StandardEncoding,start,startjob,status,statusdict,stop,stopped,store,string,
3902 stringwidth,stroke,strokepath,sub,systemdict,transform,
3903 translate,true,truncate,type,token,uappend,ucache,ucachestatus,
3904 ueofill,ufill,undef,
3905 upath,userdict,UserObjects,
3906 usertime,ustroke,ustrokepath,version,viewclip,viewclippath,vmreclaim,
3907 vmstatus,wait,wcheck,where,widthshow,write,writehexstring,writeobject,
3908 writestring,wtranslation,xcheck,xor,xshow,xyshow,yield,yshow},
3909 sensitive,
3910 morecomment=[1]\%}[keywords,comments]
3911 </lang3>

```

## 2.61 POV-Ray

Berthold Höllmann sent me the definition. But I removed `blankstring=false` and `flexiblecolumns=true` from the driver since they have nothing to do with a language definition.

```

3912 <*lang1>
3913 %%
3914 %% POV definition (c) 1999 Berthold H"ollmann
3915 %%
3916 \lst@definlanguage{POV}%
3917 {morekeywords={abs,absorption,acos,acosh,adaptive,adc_bailout,agate,%
3918 agate_turb,all,alpha,ambient,ambient_light,angle,aperture,append,%
3919 arc_angle,area_light,array,asc,asin,asinh,assumed_gamma,atan,%
3920 atan2,atanh,average,background,bezier_spline,bicubic_patch,%

```

```

3921 black_hole,blob,blue,blur_samples,bounded_by,box,boxed,bozo,%
3922 break,brick,brick_size,brightness,brilliance,bumps,bump_map,%
3923 bump_size,camera,case,caustics,ceil,checker,chr,clipped_by,clock,%
3924 clock_delta,color,color_map,colour,colour_map,component,%
3925 composite,concat,cone,confidence,conic_sweep,control0,control1,%
3926 cos,cosh,count,crackle,crand,cube,cubic,cubic_spline,cubic_wave,%
3927 cylinder,cylindrical,debug,declare,default,defined,degrees,%
3928 density,density_file,density_map,dents,difference,diffuse,%
3929 dimensions,dimension_size,direction,disc,distance,%
3930 distance_maximum,div,eccentricity,else,emission,end,error,%
3931 error_bound,exp,extinction,fade_distance,fade_power,falloff,%
3932 falloff_angle,false,fclose,file_exists,filter,finish,fisheye,%
3933 flatness,flip,floor,focal_point,fog,fog_alt,fog_offset,fog_type,%
3934 fopen,frequency,gif,global_settings,gradient,granite,%
3935 gray_threshold,green,height_field,hexagon,hf_gray_16,hierarchy,%
3936 hollow,hypercomplex,if,ifdef,iff,ifndef,image_map,include,int,%
3937 interior,interpolate,intersection,intervals,inverse,ior,irid,%
3938 irid_wavelength,jitter,julia_fractal,lambda,lathe,leopard,%
3939 light_source,linear_spline,linear_sweep,local,location,log,%
3940 looks_like,look_at,low_error_factor,macro,mandel,map_type,marble,%
3941 material,material_map,matrix,max,max_intersections,max_iteration,%
3942 max_trace_level,media,media_attenuation,media_interaction,merge,%
3943 mesh,metallic,min,minimum_reuse,mod,mortar,nearest_count,no,%
3944 normal,normal_map,no_shadow,number_of_waves,object,octaves,off,%
3945 offset,omega,omnimax,on,once,onion,open,orthographic,panoramic,%
3946 perspective,pgm,phase,phong,phong_size,pi,pigment,pigment_map,%
3947 planar,plane,png,point_at,poly,polygon,poly_wave,pot,pow,ppm,%
3948 precision,prism,pwr,quadratic_spline,quadric,quartic,quaternion,%
3949 quick_color,quick_colour,quilted,radial,radians,radiosity,radius,%
3950 rainbow,ramp_wave,rand,range,ratio,read,reciprocal,%
3951 recursion_limit,red,reflection,reflection_exponent,refraction,%
3952 render,repeat,rgb,rgbf,rgbft,rgbt,right,ripples,rotate,roughness,%
3953 samples,scale,scallop_wave,scattering,seed,shadowless,sin,%
3954 sine_wave,sinh,sky,sky_sphere,slice,slope_map,smooth,%
3955 smooth_triangle,sor,specular,sphere,spherical,spiral1,spiral2,%
3956 spotlight,spotted,sqr,sqrt,statistics,str,strcmp,strength,strlen,%
3957 strlwr,strupr,sturm,substr,superellipsoid,switch,sys,t,tan,tanh,%
3958 text,texture,texture_map,tga,thickness,threshold,tightness,tile2,%
3959 tiles,torus,track,transform,translate,transmit,triangle,%
3960 triangle_wave,true,ttf,turbulence,turb_depth,type,u,%
3961 ultra_wide_angle,undef,union,up,use_color,use_colour,use_index,%
3962 u_steps,v,val,variance,vaxis_rotate,vcross,vdot,version,vlength,%
3963 vnormalize,vrotate,v_steps,warning,warp,water_level,waves,while,%
3964 width,wood,wrinkles,write,x,y,yes,z},%
3965 moredirectives={break,case,debug,declare,default,else,end,fclose,%
3966 fopen,local,macro,read,render,statistics,switch,undef,version,%
3967 warning,write},%
3968 moredelim=[directive]\#,%
3969 sensitive,%
3970 morecomment=[1]//,%

```



```

3971   morecomment=[s]{/*}{*/},%
3972   morestring=[d]" ,%
3973   }[keywords,directives,comments,strings]%
3974 </lang1>

```

## 2.62 Prolog

Dominique de Waleffe mailed me the data for Prolog. He took the keywords from the LGrind language definition file.

```

3975 <*lang2>
3976 %%
3977 %% Prolog definition (c) 1997 Dominique de Waleffe
3978 %%
3979 \lst@definlanguage{Prolog}%
3980 {morekeywords={op,mod,abort,ancestors,arg,ascii,ask,assert,asserta,%
3981   assertz,atom,atomic,char,clause,close,concat,consult,ed,ef,em,%
3982   eof,fail,file,findall,write,functor,getc,integer,is,length,%
3983   listing,load,name,nl,nonvar,not,numbervars,op,or,pp,prin,print,%
3984   private,prompt,putc,ratom,read,read_from_this_file,rename,repeat,%
3985   retract,retractall,save,see,seeing,seen,sh,skip,statistics,%
3986   subgoal_of,system,tab,tell,telling,time,told,trace,true,unload,%
3987   untrace,var,write},%
3988   sensitive=f,%
3989   morecomment=[l]\%,%
3990   morecomment=[s]{/*}{*/},%
3991   morestring=[bd]" ,%
3992   morestring=[bd]'%
3993   }[keywords,comments,strings]%
3994 </lang2>

```

## 2.63 Promela

Thanks to William ThimblebyPromela for this language definition.

```

3995 <*lang3>
3996 %%
3997 %% Promela definition (c) 2004 William Thimbleby
3998 %%
3999 \lst@definlanguage{Promela}
4000 {morekeywords={active,assert,atomic,bit,bool,break,byte,chan,d_step,%
4001   Dproctype,do,else,empty,enabled,fi,full,goto,hidden,if,init,int,%
4002   len,mtype,nempty,never,nfull,od,of,pcvalue,printf,priority,%
4003   proctype,provided,run,short,skip,timeout,typedef,unless,unsigned,%
4004   xr,xs,true,false,inline,eval},%
4005   moredirectives={define,ifdef,ifndef,if,if,else,endif,undef,include},%
4006   moredelim=[directive]\#,%
4007   morecomment=[s]{/*}{*/},%
4008   morestring=[b]"%
4009   }[keywords,comments,strings,directives]%

```

4010  $\langle$ /lang3 $\rangle$

## 2.64 PSTricks

PSTricks is a T<sub>E</sub>X macro package bundle. Herbert Voss provided the following definition.

```
4011  $\langle$ *lang3 $\rangle$ 
4012 %%
4013 %% PSTricks definition (c) 2006 Herbert Voss
4014 %%
4015 \lstdefinelanguage{PSTricks}{%
4016   {morekeywords={%
4017     begin,end,definecolor,multido,%
4018     KillGlue,DontKillGlue,pslbrace,bsrbrace,psscalebox,psset,pstVerb,pstverb,%
4019     pst@def,,psframebox,psclip,endclip,endpspicture,psframe,
4020     %%      pspicture,%
4021     multirput,multips,Rput,rput,uput,cput,lput,%
4022     newrgbcolor,newgray,newcmykcolor,
4023     %%
4024     %% psticks-add
4025     psStep,psgraph,psbrace,psPrintValue,
4026     %%
4027     %% pst-plot
4028     psvlabel,pslabel,psplot,psline,pscustom,pscurve,psccurve,%
4029     readdata,savedata,fileplot,dataplot,listplot,%
4030     psecurve,psgraph,parametricplot,%
4031     psellipse,psaxes,ncline,nccurve,psbezier,parabola,%
4032     qdisk,qline,clipbox,endpsclip,%
4033     psgrid,pscircle,pscirclebox,psdiabox,pstribox,%
4034     newpsfontdot,psdot,psdots,%
4035     pspolygon,psdiamond,psoval,pstriangle,%
4036     psarc,psarcn,psellipticarc,psellipticarcn,pswedge,psellipticwedge,
4037     pcline,pcdiag,pcdiag,pccurve,pcurve,pcecurve,%
4038     scalebox,scaleboxto,psmathboxtrue,everypsbox,psverbboxtrue,overlaybox,%
4039     psoverlay,putoverlaybox,%
4040     newpsstyle,newpsobject,%
4041     moveto,newpath,closepath,stroke,fill,gsave,grestore,msave,mrestore,translate,scale,%
4042     swapaxes,rotate,openshadow,closedshadow,movetopath,lineto,rlineto,curveto,rcurveto,%
4043     code,dim,coor,rcoor,file,arrows,setcolor,%
4044     rotateleft,rotateright,rotatedown,%
4045     %%
4046     %% pst-node
4047     nput,naput,nbput,nput,%
4048     ncarc,nbox,ncangle,ncangles,ncloop,ncdiag,ncdiag,ncarcbox,ncbar,%
4049     cnodeput,nccircle,%
4050     pnode,rnode,Rnode,Cnode,cnode,fnode,%
4051     circnode,ovalnode,trinode,dianode,%
4052     psmatrix,endpsmatrix,psspan,%
4053     %%
```

```

4054 %% pst-tree
4055     pstree, Tcircle, TCircle, Ttri, Tn, TC, Tc, Tfan, TR, Tr, Tdia, Toval, Tdot, Tp, Tf, %
4056     skiplevel, skiplevels, endskiplevels, tspace, tlpur, %
4057 %%
4058 %% pst-text
4059     pscharpath, pstextpath,
4060 %%
4061 %% pst-barcode
4062     psbarcode,
4063 %%
4064 %% pst-coil
4065     psboxfill, pscoil, psCoil, pszigzag, nccoil,
4066     psshadow, pstilt, psTilt, ThreeDput,
4067 %%
4068 %% pst-gr3d
4069     PstGridThreeDNodeProcessor, %
4070 %%
4071 %% pst-vue3d
4072     PstGridThreeD,
4073     AxesThreeD, LineThreeD, DieThreeD, FrameThreeD, SphereCircleThreeD, SphereMeridienThreeD,
4074     QuadrillageThreeD, TetraedreThreeD, PyramideThreeD, ConeThreeD, CylindreThreeD,
4075     DodecahedronThreeD, ConeThreeD, SphereThreeD, SphereInverseThreeD, DemiSphereThreeD,
4076     SphereCreuseThreeD, SphereCircledThreeD, PortionSphereThreeD, pNodeThreeD, CubeThreeD, %
4077 %%
4078 %% pst-3dplot
4079     pstThreeDCoor, pstThreeDDot, pstThreeDTriangle, pstThreeDCircle, pstPlanePut, %
4080     pstThreeDBox, pstThreeDEllipse, pstThreeDLine, pstThreeDput, %
4081     pstThreeDNode, pstThreeDSquare, psplotThreeD, parametricplotThreeD, fileplotThreeD, %
4082     dataplotThreeD, pstScalePoints, %
4083 %%
4084 %% pst-circ
4085     resistor, battery, Ucc, Icc, capacitor, coil, diode, Zener, LED, lamp, switch, wire, tension,
4086     circledipole, multidipole, OA, transistor, Tswitch, potentiometer, transformer,
4087     optoCoupler, logic,
4088 %%
4089 %% pst-eucl
4090     pstTriangle, pstMediatorAB, pstInterLL, pstMiddleAB, pstProjection, pstCircleOA, pstLineAB, %
4091 %%
4092 %% pst-func
4093     psBessel, psPolynomial, psFourier, psGaussI, psGauss, psSi, pssi, psCi, psci, %
4094 %%
4095 %% pst-infixplot
4096     psPlot,
4097 %%
4098 %% pst-ob3d
4099     PstDie, PstCube,
4100 %%
4101 %% pst-poly
4102     PstPolygon, pspolygonbox,
4103 %%

```

```

4104 %% pst-bar
4105     psbarchart,readpsbardata,psbarscale,newpsbarstyle,%
4106 %%
4107 %% pst-lens
4108     PstLens,%
4109 %%
4110 %% pst-geo
4111     WorldMap,WorldMapII,WorldMapThreeD,WorldMapThreeDII,pnodeMap,MapPut,%
4112 %%
4113 %% pst-autoseg
4114     asr,firstnode,merge,assoc,labelmerge,%
4115 %%
4116 %% gastex
4117     node,imark,fmark,rmark,drawqbpedge,drawedge,drawloop,%
4118 %%
4119 %% pst-labo
4120     Distillation,Ballon,%
4121 %%
4122 %% pst-optic
4123     lens,Transform,%
4124 %%
4125 %% pst-light3d
4126     PstLightThreeDText,%
4127 %%
4128 %% calendrier
4129     Calendrier,%
4130 %%
4131 %% pst-osci
4132     Oscillo%
4133 },%
4134     sensitive,%
4135     alsoother={0123456789$_},%
4136     morecomment=[1]\% %
4137 }[keywords,comments]%
4138 </lang3>

```

## 2.65 Python

Michael Weber sent me the definition. He got data from MARK LUTZ: **Programming Python**; O'Reilly 1996; ISBN 1-56592-197-6. Stephen Kelly reported some problems that indicated that the comment definitions needed to be moved after the string definitions to work correctly.

In August 2013 Alexis Dimitriadis reworked the definition by supplying the builtins.

```

4139 <*lang1>
4140 %%
4141 %% Python definition (c) 1998 Michael Weber
4142 %% Additional definitions (2013) Alexis Dimitriadis

```

```

4143 %%
4144 \lst@definlanguage{Python}%
4145   {morekeywords={access,and,break,class,continue,def,del,elif,else,%
4146     except,exec,finally,for,from,global,if,import,in,is,lambda,not,%
4147     or,pass,print,raise,return,try,while},%

Python has a long list of builtin-in functions (http://docs.python.org/2/library/functions.html) and it is a good idea to make them visible in printed
code

4148   % Built-ins
4149   morekeywords=[2]{abs,all,any, basestring,bin,bool, bytearray, callable, chr,
4150     classmethod,cmp,compile,complex,delattr,dict,dir,divmod,enumerate,eval,
4151     execfile,file,filter,float,format,frozenset,getattr,globals,hasattr,hash,
4152     help,hex,id,input,int,isinstance,issubclass,iter,len,list,locals,long,map,
4153     max,memoryview,min,next,object,open,ord,pow,property,range,raw_input,
4154     reduce,reload,repr,reversed,round,set,setattr,slice,sorted,staticmethod,str,
4155     sum,super,tuple,type,unichr,unicode,vars,xrange,zip,apply,buffer,coerce,
4156     intern},
4157   sensitive=true,%
4158   morecomment=[l]\#,%
4159   morestring=[b]',,%
4160   morestring=[b]",,%

```

According to PEP (Python Enhancement Proposals) comment should be distinguished from documentation strings, so we define

```

4161   morestring=[s]{'''}{'''},% used for documentation text (multiline strings)
4162   morestring=[s]{"""}{"""},% added by Philipp Matthias Hahn

```

Python now supports so called *raw strings* and also Unicode strings. Here is the definition of these strings:

```

4163   morestring=[s]{r'}{'},% 'raw' strings
4164   morestring=[s]{r"}{"},%
4165   morestring=[s]{r'''}{'''},%
4166   morestring=[s]{r"""}{"""},%
4167   morestring=[s]{u'}{'},% unicode strings
4168   morestring=[s]{u"}{"},%
4169   morestring=[s]{u'''}{'''},%
4170   morestring=[s]{u"""}{"""},%
4171 }%

```

Philipp Matthias Hahn added the third comment. eRreuR found a bug using Python and Nicolas Markey informed me about the corresponding thread on `fr.comp.text.tex` and provided the fix—adding `[b]` to both `morestring` declarations.

```

4172 </lang1>

```

Alexis Dimitriadis also proposes the following configuration for printing Python code which simulates colorizing the code as it's done by the IDLE GUI:

```

4173 <*python-prf>
4174 \usepackage{xcolor}

```

```

4175 \usepackage{textcomp}
4176
4177 %% Actual colors from idlelib/config-highlight.def --> corrected to ‘web-safe’
4178 %% strings = #00aa00 / 0,170,0      (a darker green)
4179 %% builtins = #900090 / 144,0,144    (purple-ish)
4180 %% keywords = #FF7700 / 255,119,0    (quite close to plain ‘orange’)
4181 %\definecolor{IDLEorange}{RGB}{255,119,0} % pretty close to real orange
4182 %\definecolor{IDLEpurple}{RGB}{144,0,144}
4183 %\definecolor{IDLEgreen}{RGB}{0,170,0}
4184 %\definecolor{IDLERed}{RGB}{221,0,0}
4185 %% Corrected to ‘web-safe’
4186 %\definecolor{orange2}{RGB}{255,102,0}
4187 \definecolor{purple2}{RGB}{153,0,153} % there’s actually no standard purple
4188 \definecolor{green2}{RGB}{0,153,0} % a darker green
4189 %\definecolor{red2}{RGB}{221,0,0}
4190
4191 % Except for green and purple, the other colors are pretty good in standard
4192 % hue
4193 \lstdefinestyle{python-idle-code}{%
4194   language=Python,                % the language
4195   basicstyle=\normalsize\ttfamily, % size of the fonts for the code
4196   % Color settings to match IDLE style
4197   keywordstyle=\color{orange},     % core keywords
4198   keywordstyle={[2]\color{purple2}}, % built-ins
4199   stringstyle=\color{green2},
4200   commentstyle=\color{red},
4201   upquote=true,                   % requires textcomp
4202 }
4203 % Unimplemented IDLE syntax: function/class names being defined should be
4204 % blue

This code is provided in the file listings-python.prf, see section 2.4.1 (Prefer-
ences) of the listings documentation.
4205 </python-prf>

```

## 2.66 Rexx

Patrick TJ McPhee provided this definition.

```

4206 <*\lang2>
4207 %%
4208 %% classic rexx listings definition
4209 %% by Patrick TJ McPhee <ptjm@interlog.com>
4210 %%
4211 \lst@definlanguage{Rexx}
4212   {morekeywords={address,arg,call,do,drop,else,end,exit,if,iterate,%
4213                 interpret,leave,nop,numeric,options,otherwise,parse,%
4214                 procedure,pull,push,queue,return,say,signal,then,to,%
4215                 trace,when},%
4216   sensitive=false,%

```

```

4217   morecomment=[n]{/*}{*/},%
4218   morestring=[d]{'},%
4219   morestring=[d]{"},%
4220   }[keywords,comments,strings]%
4221 </lang2>

```

## 2.67 Reduce

was provided by Geraint Paul Bevan.

```

4222 <*lang3>
4223 %%
4224 %% Reduce definition (c) 2002 Geraint Paul Bevan
4225 %%
4226 \lst@definlanguage{Reduce}%
4227   {morekeywords={%
4228     %% reserved identifiers
4229     abs,acos,acosh,acot,acoth,acsc,acsch,%
4230     adjprec,algebraic,algint,allbranch,allfac,and,%
4231     antisymmetric,append,arglength,array,asec,asech,%
4232     asin,asinh,atan,atan2,atanh,begin,bfspace,bye,%
4233     card_no,ceiling,clear,clearrules,coeff,coeffn,%
4234     cofactor,combineexpt,combinelogs,comment,comp,%
4235     complex,conj,cons,cont,cos,cosh,cot,coth,cramer,%
4236     cref,csc,csch,decompose,define,defn,deg,demo,den,%
4237     depend,det,df,difference,dilog,display,div,do,e,%
4238     echo,ed,editdef,ei,end,eps,eq,equal,erf,errcont,%
4239     evalhseqp,eval_mode,even,evenp,exp,expandlogs,%
4240     expr,expt,ezgcd,factor,factorial,factorize,fexpr,%
4241     first,fix,fixp,floor,for,forall,foreach,fort,%
4242     fort_width,freeof,fullroots,g,gcd,geq,go,goto,%
4243     greaterp,high_pow,hypot,i,if,ifactor,impart,in,%
4244     index,infinity,infix,input,int,integer,interpol,%
4245     intstr,k,korder,lambda,lcm,lcof,length,leq,lessp,%
4246     let,lhs,linear,linelength,lisp,list,listargp,%
4247     listargs,ln,load,load_package,log,log10,logb,%
4248     low_pow,lterm,macro,mainvar,mass,mat,match,%
4249     mateigen,matrix,max,mcd,member,memq,min,minus,mkid,%
4250     modular,msg,mshell,multiplicities,nat,neq,nero,%
4251     nextprime,nil,nodepend,noncom,nonzero,nosplit,%
4252     nospur,nullspace,num,numberp,odd,off,on,operator,%
4253     or,order,ordp,out,output,part,pause,period,pf,pi,%
4254     plus,precedence,precise,precision,pret,pri,primep,%
4255     print_precision,procedure,product,quit,quotient,%
4256     random,random_new_seed,rank,rat,ratarg,rational,%
4257     rationalize,ratpri,real,rederr,reduct,remainder,%
4258     remfac,remind,repert,repeat,rest,resultant,retry,%
4259     return,reverse,revpri,rhs,rlisp88,%
4260     root_multiplicity,round,roundall,roundbf,rounded,%

```

```

4261 saveas,savestructr,scalar,sec,sech,second,set,%
4262 setmod,setq,share,showrules,showtime,shut,sign,sin,%
4263 sinh,smacro,solve,solvesingular,spur,sqrt,structr,%
4264 sub,sum,symbolic,symmetric,t,tan,tanh,third,time,%
4265 times,tp,tra,trace,trfac,trigform,trint,until,%
4266 varname,vecdim,vector,weight,when,where,while,%
4267 write,ws,wlevel,%
4268 %% identifiers with spaces
4269 %% for all,for each,go to,such that,%
4270 },%
4271 sensitive=false,%
4272 morecomment=[l]\%,%
4273 morecomment=[s]{COMMENT}{;},%
4274 morecomment=[s]{COMMENT}{$},%
4275 morestring="%
4276 }[keywords,comments,strings]%
4277 </lang3>

```

## 2.68 RSL

Thanks go to Brian Christensen.

```

4278 <*lang3>
4279 %%
4280 %% RSL definition (c) 2004 Brian Christensen
4281 %%
4282 \lst@definlanguage{RSL}%
4283 {morekeywords={Bool,Char,devt_relation,Int,Nat,Real,Text,Unit,abs,any,%
4284 as,axiom,card,case,channel,chaos,class,do,dom,elems,else,elsif,end,%
4285 extend,false,for,hd,hide,if,in,inds,initialise,int,len,let,local,%
4286 object,of,out,post,pre,read,real,rng,scheme,skip,stop,swap,%
4287 test_case,theory,then,tl,true,type,until,use,value,variable,while,%
4288 with,write},%
4289 literate=%
4290 {<}{<$}{1}%
4291 {>}{>$}{1}%
4292 {[ ]}{[ ]$}{1}%
4293 [{ ]}{[{ ]$}{1}%
4294 {^}{\mbox{$\widehat{\;}$}}{1}%
4295 {'}{\raisebox{1ex}[1ex][0ex]{\protect\scriptsize$\prime$}}{1}%
4296 {||}{\mbox{$\parallel$}}{2}%
4297 {|-}{|\vdash}{1}%
4298 {|=|}{\mbox{$\lceil\!\!\rceil\!\!\lfloor\!\!\rfloor$}}{1}%
4299 {**}{\uparrow}{1}%
4300 {/\}{\wedge}{1}%
4301 {inter}{\cap}{1}%
4302 {-\}{\lambda}{1}%
4303 {->}{\rightarrow}{1}%
4304 {-m->}{\mbox{$\rightarrow$ \hspace{-2.5\lst@width} _m\;}}{1}%

```



4305 {-~m->}{{\mbox{\$\stackrel{\sim}{\rightarrow}}\hspace{-2.5\lst@width} \_{m}\;}}{1}%  
4306 {-~>}{{\mbox{\$\stackrel{\sim}{\rightarrow}}}{1}}{1}%  
4307 {-set}{\bf{-set}}{4}%  
4308 {-list}{{\ast}}{1}%  
4309 {-inflist}{{\omega}}{1}%  
4310 {-infset}{{\bf{-infset}}}{7}%  
4311 {\#}{\circ}{1}%  
4312 {:-}{\raisebox{.4ex}{\tiny \$\bullet\$}}{1}%  
4313 {=}{=\$}{1}%  
4314 {==}{==\$}{2}%  
4315 {=>}{{\rightarrow}}{1}%  
4316 {\ is\protect\^M}{{\equiv}}{2}%  
4317 {\ is\ }{{\equiv}}{3}%  
4318 {\ isin\protect\^M}{{\in}}{2}%  
4319 {\sim}{\sim}{1}%  
4320 {\sim=}{\neq}{1}%  
4321 {\simisin}{\notin}{1}%  
4322 {+>}{{\mapsto}}{1}%  
4323 {++}{{}}{1}%  
4324 {\lceil}{\lceil}{1}%  
4325 {\vee}{\vee}{1}%  
4326 {exists}{{\exists}}{1}%  
4327 {union}{{\cup}}{1}%  
4328 {>=}{{\geq}}{1}%  
4329 {><}{{\times}}{1}%  
4330 {>>}{{\supset}}{1}%  
4331 {>>=}{{\supseteq}}{1}%  
4332 {<=}{{\leq}}{1}%  
4333 {<<}{{\subset}}{1}%  
4334 {<.>}{{\langle}}{1}%  
4335 {<<=}{{\subseteq}}{1}%  
4336 {<->}{{\leftrightarrow}}{1}%  
4337 {[=]}{{\sqsubseteq}}{1}%  
4338 {\{=}}{{\preceq}}{1}%  
4339 {\ all\protect\^M}{{\forall}}{2}%  
4340 {\ all\ }{{\forall}}{3}%  
4341 {!!}{{\dagger}}{1}%  
4342 {always}{{\Box}}{1}%  
4343 {.>}{{\rangle}}{1}%  
4344 {'alpha}{{\alpha}}{1}%  
4345 {'beta}{{\beta}}{1}%  
4346 {'gamma}{{\gamma}}{1}%  
4347 {'delta}{{\delta}}{1}%  
4348 {'epsilon}{{\epsilon}}{1}%  
4349 {'zeta}{{\zeta}}{1}%  
4350 {'eta}{{\eta}}{1}%  
4351 {'theta}{{\theta}}{1}%  
4352 {'iota}{{\iota}}{1}%  
4353 {'kappa}{{\kappa}}{1}%  
4354 {'mu}{{\mu}}{1}%

```

4355 {'nu'}{$\nu$}{1}%
4356 {'xi'}{$\xi$}{1}%
4357 {'pi'}{$\pi$}{1}%
4358 {'rho'}{$\rho$}{1}%
4359 {'sigma'}{$\sigma$}{1}%
4360 {'tau'}{$\tau$}{1}%
4361 {'upsilon'}{$\upsilon$}{1}%
4362 {'phi'}{$\phi$}{1}%
4363 {'chi'}{$\chi$}{1}%
4364 {'psi'}{$\psi$}{1}%
4365 {'omega'}{$\omega$}{1}%
4366 {'Gamma'}{$\Gamma$}{1}%
4367 {'Delta'}{$\Delta$}{1}%
4368 {'Theta'}{$\Theta$}{1}%
4369 {'Lambda'}{$\Lambda$}{1}%
4370 {'Xi'}{$\Xi$}{1}%
4371 {'Pi'}{$\Pi$}{1}%
4372 {'Sigma'}{$\Sigma$}{1}%
4373 {'Upsilon'}{$\Upsilon$}{1}%
4374 {'Phi'}{$\Phi$}{1}%
4375 {'Psi'}{$\Psi$}{1}%
4376 {'Omega'}{$\Omega$}{1},%
4377     sensitive=true,%
4378     morecomment=[l]{--},%
4379     morecomment=[s]{/*}{*/}%
4380 }[keywords,comments]%
4381 </lang3>

```

## 2.69 Ruby

Christian Kaiser provided the initial definition. Xavier Noria replaced the keywords with the keywords from the at the time of writing current stable Ruby version. An erroneous string delimiter was removed following a bug reported on comp.text.tex on 2006/09/01.

Ruby supports string delimiters of the form %q!...!, where ! can be any character, or can be matched braces or parentheses or brackets. The included string definitions include most of the common variants, but are of course not comprehensive.

```

4382 <*lang2>
4383 \lst@definlanguage{Ruby}%
4384 {morekeywords={__FILE__,__LINE__,BEGIN,END,alias,and,begin,break,%
4385     case,class,def,defined?,do,else,elsif,end,ensure,false,for,%
4386     if,in,module,next,nil,not,or,redo,rescue,retry,return,self,%
4387     super,then,true,undef,unless,until,when,while,yield},%
4388     sensitive=true,%
4389     morecomment=[l]\#,%
4390     morecomment=[l]\#\#,%
4391     morecomment=[s]{=BEGIN}{=END},%

```

```

4392     morestring=[b] ',%
4393     morestring=[b] ",%
4394     morestring=[s]{\%q/}{/},%
4395     morestring=[s]{\%q!}{!},%
4396     morestring=[s]{\%q\}{\},%
4397     morestring=[s]{\%q(}{)},%
4398     morestring=[s]{\%q[}{]},%
4399     morestring=[s]{\%q-}{-},%
4400     morestring=[s]{\%Q/}{/},%
4401     morestring=[s]{\%Q!}{!},%
4402     morestring=[s]{\%Q\}{\},%
4403     morestring=[s]{\%Q(}{)},%
4404     morestring=[s]{\%Q[}{]},%
4405     morestring=[s]{\%Q-}{-}%
4406 }[keywords,comments,strings]%
4407 %     \begin{macrocode}
4408 </lang2>

```

## 2.70 Scilab

Thanks go to Jean-Philippe Grivet.

```

4409 <*lang1>

4410 %%
4411 %% Scilab definition (c) 2002,2003 Jean-Philippe Grivet
4412 %%
4413 \lst@definlanguage{Scilab}%
4414 {morekeywords={abcd,abinv,abort,abs,acoshm,acosh,acosm,acos,addcolor,%
4415     addf,addinter,addmenu,add_edge,add_node,adj2sp,adj_lists,aff2ab,%
4416     amell,analf,analyze,ans,apropos,arc_graph,arc_number,argn,arhmk,%
4417     arl2,arma2p,armac,armax1,armax,arma,arsimul,artest,articul,ascii,%
4418     asinhm,asinh,asinm,asin,atanhm,atanh,atanm,atan,augment,auread,%
4419     auwrite,balanc,balreal,bandwr,basename,bdiag,besseli,besselj,%
4420     bessell,bessely,best_match,bézout,bifish,bilin,binomial,black,%
4421     bloc2exp,bloc2ss,bode,bool2s,boolean,boucle,break,bstap,buttmg,%
4422     bvode,cainv,calerf,calfrq,call,canon,casc,case,ccontrg,cdfbet,%
4423     cdfbin,cdfchi,cdfchn,cdfnc,cdf,cdfgam,cdfnbn,cdfnor,cdfpoi,%
4424     cdf,ceil,center,cepstrum,chaintest,chain_struct,champ1,champ,%
4425     chart,chdir,cheb1mag,cheb2mag,check_graph,check_io,chepol,chfact,%
4426     chol,chsolve,circuit,classmarkov,clean,clearfun,clearglobal,%
4427     clear,close,cls2dls,cmb_lin,cmdred,cmoment,code2str,coeff,coffg,%
4428     coff,colcompr,colcomp,colinout,colormap,colregul,companion,comp,%
4429     cond,conj,connex,contour2di,contour2d,contourf,contour,%
4430     contract_edge,contrss,contr,cont_frm,cont_mat,convex_hull,convol,%
4431     convstr,con_nodes,copfac,copy,correl,corr,coshm,cosh,cosm,cos,%
4432     cotg,cothm,coth,covar,csim,cspect,ctr_gram,cumprod,cumsum,%
4433     curbloc,cycle_basis,czt,c_link,dasrt,dassl,datafit,date,dbphi,%
4434     dcf,ddp,debug,dec2hex,deff,definedfields,degree,delbpt,%
4435     delete_arcs,delete_nodes,delete,delip,delmenu,demos,denom,%
4436     derivative,derivat,des2ss,des2tf,determ,detr,det,dft,dhinf,%

```

```

4437 dhnorm,diag,diary,diff,diophant,dirname,dispbpt,dispfiles,disp,%
4438 dlgamma,double,dragrect,drawaxis,drawlater,drawnow,draw,driver,%
4439 dscr,dsearch,dsimul,dtsi,dt_ility,duplicate,edge_number,%
4440 edit_curv,edit_graph_menus,edit_graph,edit,eigenmarkov,ell1mag,%
4441 elseif,else,emptystr,endfunction,end,eqfir,eqiir,equil1,equil,%
4442 ereduc,erfcx,erfc,erf,errbar,errcatch,errclear,error,eval3dp,%
4443 eval3d,eval,evans,evstr,excel2sci,execstr,exec,exists,exit,expm,%
4444 exp,external,eye,fac3d,factors,faurre,fchamp,fcontour2d,fcontour,%
4445 fec,feedback,feval,ffilt,fftshift,fft,fgrayplot,figure,fileinfo,%
4446 file,filter,findm,findobj,findx0BD,find_freq,find_path,find,%
4447 findABCD,findAC,findBD,findBDK,findR,fit_dat,fix,floor,flts,foo,%
4448 formatman,format,fort,for,fourplan,fplot2d,fplot3d1,fplot3d,%
4449 fprintf,fprintfMat,frep2tf,freq,freson,frexp,frfit,frmag,fscanf,%
4450 fscanfMat,fsfirlin,fsolve,fspecg,fstabst,fstair,fstest,ftuneq,%
4451 fullrfk,fullrf,full,fun2string,funcprot,functions,function,%
4452 funptr,fusee,gainplot,gamitg,gammaln,gamma,gcare,gcd,gcf,%
4453 genfac3d,genlib,genmarkov,gen_net,geom3d,geomean,getblocklabel,%
4454 getcolor,getcurblock,getcwd,getdate,getd,getenv,getfield,getfont,%
4455 getf,getio,getlinestyle,getmark,getpid,getcscosvars,getsymbol,%
4456 getvalue,getversion,get_function_path,get,gfare,gfrancis,girth,%
4457 givens,glever,glist,global,glue,gpeche,graduate,grand,%
4458 graphics_entities,graph_2_mat,graph_center,graph_complement,%
4459 graph_diameter,graph_power,graph_simp,graph_sum,graph_union,%
4460 graph-list,graycolormap,grayplot,graypolarplot,grep,group,%
4461 gr_menu,gschur,gsort,gspec,gstacksize,gtild,g_margin,h2norm,halt,%
4462 hamilton,hankelsv,hank,harmean,havewindow,help,hermit,hess,%
4463 hex2dec,hilb,hinf,hist3d,histplot,horner,host,hotcolormap,%
4464 householder,hrmt,htrianr,hypermat,h_cl,h_inf_st,h_inf,h_norm,%
4465 iconvert,icon_edit,ieee,if,iirgroup,iirlp,iir,ilib_build,%
4466 ilib_compile,ilib_for_link,ilib_gen_gateway,ilib_gen_loader,%
4467 ilib_gen_Make,imag,impl,imrep2ss,imult,im_inv,inistate,input,%
4468 int16,int2d,int32,int3d,int8,intc,intdec,integrate,interpLn,%
4469 interp,intersci,intersect,intg,intl,intppty,intsplin,inttrap,%
4470 inttype,int,invr,invsyslin,inv_coeff,inv,iqr,isdef,isdir,isequal,%
4471 iserror,isglobal,isinf,isnan,isoview,isreal,is_connex,jmat,%
4472 justify,kalm,karmarkar,kernel,keyboard,knapsack,kpure,krac2,%
4473 kroneck,kron,lasterror,lattn,lattp,lcf,lcmdiag,lcm,ldivf,ldiv,%
4474 leastsq,legends,length,leqr,levin,lev,lex_sort,lft,lgfft,library,%
4475 lib,lin2mu,lincos,lindquist,lines,line_graph,linfn,linf,link,%
4476 linmeq,linpro,linsolve,linspace,lin,listfiles,list,lmisolver,%
4477 lmitool,loadmatfile,loadplots,loadwave,load_graph,load,locate,%
4478 log10,log1p,log2,logm,logspace,log,lotest,lqe,lqg2stan,lqg_ltr,%
4479 lqg,lqr,lsq,lsslist,lstcat,lstsize,ltitr,ludel,lufact,luget,%
4480 lusolve,lu,lyap,macglov,macr2lst,macrovar,macro,mad,make_graph,%
4481 make_index,manedit,man,mapsound,markp2ss,matfile2sci,matrix,%
4482 mat_2_graph,maxi,max_cap_path,max_clique,max_flow,max,mclearerr,%
4483 mclose,meanf,mean,median,meof,mese,mesh2d,mfft,mfile2sci,mgeti,%
4484 mgetl,mgetstr,mget,milk_drop,mine,mini,minreal,minss,%
4485 min_lcost_cflow,min_lcost_flow1,min_lcost_flow2,min_qcost_flow,%
4486 min_weight_tree,min,mlist,mode,module,moment,mopen,move,%

```



```

4537     unix_s,unix_w,unix_x,unix,unobs,unsetmenu,user,varargin,%
4538     varargout,variancef,variance,varn,warning,wavread,wavwrite,%
4539     wcenter,wfir,what,whereami,whereis,where,while,whos,who_user,who,%
4540     wiener,wigner>window,winsid,with_gtk,with_pvm,with_texmacs,%
4541     with_tk,writb,write4b,write,xarcs,xarc,xarrows,xaxis,xbasr,%
4542     xbasimp,xbasr,xchange,xclear,xclea,xclick,xclip,xdel,xend,xfarcs,%
4543     xfarc,xfpolys,xfpoly,xfrect,xgetech,xgetfile,xgetmouse,xget,%
4544     xgraduate,xgrid,xinfo,xinit,xlfont,xload,xname,xnumb,xpause,%
4545     xpolys,xpoly,xrects,xrect,xrpoly,xs2fig,xs2gif,xs2ppm,xs2ps,%
4546     xsave,xsegs,select,xsetech,xsetm,xset,xstringb,xstringl,xstring,%
4547     xtape,xtitle,x_choices,x_choose,x_dialog,x_matrix,x_mdialog,%
4548     x_message_modeless,x_message,yulewalk,zeropen,zeros,zgrid,zpbutt,%
4549     zpch1,zpch2,zpell,mfprintf,mfscanf,mprintf,mscanf,msprintf,%
4550     msscanf,mucomp,%
4551     ABSBLK_f,AFFICH_f,ANDLOG_f,ANIMXY_f,BIGSOM_f,CLINDUMMY_f,CLKIN_f,%
4552     CLKINV_f,CLKOUT_f,CLKOUTV_f,CLKSOM_f,CLKSOMV_f,CLKSPLIT_f,%
4553     CLOCK_f,CLR_f,CLSS_f,CONST_f,COSBLK_f,CURV_f,DELAY_f,DELAYV_f,%
4554     DEMUX_f,DLR_f,DLRADAPT_f,DLSS_f,EVENTSCOPE_f,EVTDLY_f,EVTGEN_f,%
4555     EXPBLK_f,G_make,GAIN_f,GAINBLK_f,GENERAL_f,GENERIC_f,GENSIN_f,%
4556     GENSQR_f,HALT_f,IFTHEL_f,IN_f,INTEGRAL_f,INTRP2BLK_f,INTRPLBLK_f,%
4557     INVBLK_f,LOGBLK_f,LOOKUP_f,Matplot1,Matplot,MAX_f,MCLOCK_f,%
4558     MFCLCK_f,MIN_f,MUX_f,NDcost,NEGTOPPOS_f,OUT_f,POSTONEG_f,POWBLK_f,%
4559     PROD_f,QUANT_f,RAND_f,READC_f,REGISTER_f,RELAY_f,RFILE_f,%
4560     ScilabEval,Sfgrayplot,Sgrayplot,SAMPLEHOLD_f,SAT_f,SAWTOOTH_f,%
4561     SCOPE_f,SCOPXY_f,SELECT_f,SINBLK_f,SOM_f,SPLIT_f,STOP_f,SUPER_f,%
4562     TANBLK_f,TCLSS_f,TEXT_f,TIME_f,TK_EvalFile,TK_EvalStr,TK_GetVar,%
4563     TK_SetVar,TRASH_f,WFILE_f,WRITEC_f,ZCROSS_f,%
4564     \\\asn,\\helps,\\k,\\sn},%
4565     alsoletter=\\,% chmod
4566     sensitive,%
4567     morecomment=[l]//,%
4568     morestring=[b]" ,%
4569     morestring=[m]' %
4570 }[keywords,comments,strings]%
4571 </lang1>

```

## 2.71 SHELXL

Thanks to Aidan Philip Heerdegen for mailing this definition.

```

4572 <*lang2>
4573 %%
4574 %% SHELXL definition (c) 1999 Aidan Philip Heerdegen
4575 %%
4576 \lst@definlanguage{SHELXL}%
4577 {morekeywords={TITL,CELL,ZERR,LATT,SYMM,SFAC,DISP,UNIT,LAUE,%
4578     REM,MORE,TIME,END,HKLF,OMIT,SHEL,BASF,TWIN,EXTI,SWAT,%
4579     MERG,SPEC,RESI,MOVE,ANIS,AFIX,HFIX,FRAG,FEND,EXYZ,EADP,%
4580     EQIV,OMIT,CONN,PART,BIND,FREE,DFIX,BUMP,SAME,SADI,CHIV,%

```

```

4581     FLAT,DELU,SIMU,DEFS,ISOR,SUMP,L.S.,CGLS,SLIM,BLOC,DAMP,%
4582     WGHT,FVAR,BOND,CONF,MPLA,RTAB,LIST,ACTA,SIZE,TEMP,WPDB,%
4583     FMAP,GRID,PLAN,MOLE},%
4584     sensitive=false,%
4585     alsoother=_,% Makes the syntax highlighting ignore the underscores
4586     morecomment=[1]{! },%
4587 }%
4588 </lang2>

```

## 2.72 Simula

Took data from

- GÜNTHER LAMPRECHT: **Introduction to SIMULA 67**; Braunschweig; Wiesbaden: Vieweg, 1981

```

4589 <*lang3>
4590 \lst@definlanguage[IBM]{Simula}[DEC]{Simula}{}%
4591 \lst@definlanguage[DEC]{Simula}[67]{Simula}%
4592 {morekeywords={and,eq,eqv,ge,gt,hidden,imp,le,long,lt,ne,not,%
4593     options,or,protected,short}}%
4594 }%
4595 \lst@definlanguage[CII]{Simula}[67]{Simula}%
4596 {morekeywords={and,equiv,exit,impl,not,or,stop}}%
4597 \lst@definlanguage[67]{Simula}%
4598 {morekeywords={activate,after,array,at,before,begin,boolean,%
4599     character,class,comment,delay,detach,do,else,end,external,false,%
4600     for,go,goto,if,in,inner,inspect,integer,is,label,name,new,none,%
4601     notext,otherwise,prior,procedure,qua,reactivate,real,ref,resume,%
4602     simset,simulation,step,switch,text,then,this,to,true,until,value,%
4603     virtual,when,while}},%
4604     sensitive=f,%
4605     keywordcommentsemicolon={end}{else,end,otherwise,when}{comment},%
4606     morestring=[d]" ,%
4607     morestring=[d]' %
4608 }[keywords,keywordcomments,strings]%
4609 </lang3>

```

## 2.73 SPARQL

This definition for the SPARQL query language (SPARQL Protocol and RDF Query Language, <http://www.w3.org/TR/rdf-sparql-query/>) was provided by Christoph Kiefer.

```

4610 <*lang3>
4611 %%
4612 %% SPARQL definition (c) 2006 Christoph Kiefer

```

```

4613 %%
4614 \lst@definlanguage{SPARQL}%
4615 {morekeywords={BASE,PREFIX,SELECT,DISTINCT,CONSTRUCT,DESCRIBE,ASK,%
4616 FROM,NAMED,WHERE,ORDER,BY,ASC,DESC,LIMIT,OFFSET,OPTIONAL,%
4617 GRAPH,UNION,FILTER,a,STR,LANG,LANGMATCHES,DATATYPE,BOUND,%
4618 isIRI,isURI,isBLANK,isLITERAL,REGEX,true,false},%
4619 sensitive=false,%
4620 morecomment=[l]\#,%
4621 morestring=[d]',%
4622 morestring=[d]"%
4623 }[keywords,comments,strings]%
4624 </lang3>

```

## 2.74 SQL

Data come from Christian Haul. Neil Conway added some keywords, ditto Torsten Flatter, Robert Frank and Dirk Jesko.

```

4625 <*lang1>
4626 %%
4627 %% SQL definition (c) 1998 Christian Haul
4628 %% (c) 2002 Neil Conway
4629 %% (c) 2002 Robert Frank
4630 %% (c) 2003 Dirk Jesko
4631 %%
4632 \lst@definlanguage{SQL}%
4633 {morekeywords={ABSOLUTE,ACTION,ADD,ALLOCATE,ALTER,ARE,AS,ASSERTION,%
4634 AT,BETWEEN,BIT_LENGTH,BOTH,BY,CASCADE,CASCADED,CASE,CAST,%
4635 CATALOG,CHAR_LENGTH,CHARACTER_LENGTH,CLUSTER,COALESCE,%
4636 COLLATE,COLLATION,COLUMN,CONNECT,CONNECTION,CONSTRAINT,%
4637 CONSTRAINTS,CONVERT,CORRESPONDING,CREATE,CROSS,CURRENT_DATE,%
4638 CURRENT_TIME,CURRENT_TIMESTAMP,CURRENT_USER,DAY,DEALLOCATE,%
4639 DEC,DEFERRABLE,DEFERED,DESCRIBE,DESCRIPTOR,DIAGNOSTICS,%
4640 DISCONNECT,DOMAIN,DROP,ELSE,END,EXEC,EXCEPT,EXCEPTION,EXECUTE,%
4641 EXTERNAL,EXTRACT,FALSE,FIRST,FOREIGN,FROM,FULL,GET,GLOBAL,%
4642 GRAPHIC,HAVING,HOUR,IDENTITY,IMMEDIATE,INDEX,INITIALLY,INNER,%
4643 INPUT,INSENSITIVE,INSERT,INTO,INTERSECT,INTERVAL,%
4644 ISOLATION,JOIN,KEY,LAST,LEADING,LEFT,LEVEL,LIMIT,LOCAL,LOWER,%
4645 MATCH,MINUTE,MONTH,NAMES,NATIONAL,NATURAL,NCHAR,NEXT,NO,NOT,NULL,%
4646 NULLIF,OCTET_LENGTH,ON,ONLY,ORDER,ORDERED,OUTER,OUTPUT,OVERLAPS,%
4647 PAD,PARTIAL,POSITION,PREPARE,PRESERVE,PRIMARY,PRIOR,READ,%
4648 RELATIVE,RESTRICT,REVOKE,RIGHT,ROWS,SCROLL,SECOND,SELECT,SESSION,%
4649 SESSION_USER,SIZE,SPACE,SQLSTATE,SUBSTRING,SYSTEM_USER,%
4650 TABLE,TEMPORARY,THEN,TIMEZONE_HOUR,%
4651 TIMEZONE_MINUTE,TRAILING,TRANSACTION,TRANSLATE,TRANSLATION,TRIM,%
4652 TRUE,UNIQUE,UNKNOWN,UPPER,USAGE,USING,VALUE,VALUES,%
4653 VARGRAPHIC,VARYING,WHEN,WHERE,WRITE,YEAR,ZONE,%
4654 AND,ASC,avg,CHECK,COMMIT,count,DECODE,DESC,DISTINCT,GROUP,IN,% FF
4655 LIKE,NUMBER,ROLLBACK,SUBSTR,sum,VARCHAR2,% FF

```



```

4656     MIN,MAX,UNION,UPDATE,% RF
4657     ALL,ANY,CUBE,CUBE,DEFAULT,DELETE,EXISTS,GRANT,OR,RECURSIVE,% DJ
4658     ROLE,ROLLUP,SET,SOME,TRIGGER,VIEW},% DJ
4659     morekeywords={BIT,BLOB,CHAR,CHARACTER,CLOB,DATE,DECIMAL,FLOAT,% DJ
4660     INT,INTEGER,NUMERIC,SMALLINT,TIME,TIMESTAMP,VARCHAR},% moved here
4661     sensitive=false,% DJ
4662     morecomment=[l]--,%
4663     morecomment=[s]{/*}{*/},%
4664     morestring=[d]',,%
4665     morestring=[d]"%
4666 }[keywords,comments,strings]%
4667 </lang1>

```

## 2.75 Tcl/Tk

Tcl/Tk is a very dynamic language. A statical analysis might not be adequate. Nevertheless the following definitions produce the desired result for my programs with a minimum of “misses”.

Data come from

- WELCH, BRENT B.: **Practical Programming in Tcl and Tk**; © 1997 Prentice Hall, Inc.; ISBN 0-13-616830-2.
- OUSTERHOUT, JOHN K.: **Tcl and the Tk Toolkit**; © 1997 Addison-Wesley Publishing Company; ISBN 0-201-6337-X.

Gerd Neugebauer added support for Tcl/Tk.

```

4668 <*lang2>
4669 %%
4670 %% Tcl/Tk definition (c) Gerd Neugebauer
4671 %%
4672 \lst@definlanguage[tcl]{tcl}[] {tcl}%
4673 {morekeywords={activate,add,separator,radiobutton,checkboxbutton,%
4674     command,cascade,all,bell,bind,bindtags,button,canvas,canvasx,%
4675     canvasy,cascade,cget,checkboxbutton,config,configu,configur,%
4676     configure,clipboard,create,arc,bitmap,image,line,oval,polygon,%
4677     rectangle,text,textwindow,curselection,delete,destroy,end,entry,%
4678     entrycget,event,focus,font,actual,families,measure,metrics,names,%
4679     frame,get,grab,current,release,status,grid,columnconfigure,%
4680     rowconfigure,image,image,create,bitmap,photo,delete,height,types,%
4681     widt,names,index,insert,invoke,itemconfigure,label,listbox,lower,%
4682     menu,menubutton,message,move,option,add,clear,get,readfile,pack,%
4683     photo,place,radiobutton,raise,scale,scroll,scrollbar,search,see,%
4684     selection,send,stdin,stdout,stderr,tag,bind,text,tk,tkerror,%
4685     tkwait>window,variable,visibility,toplevel,unknown,update,winfo,%
4686     class,exists,ismapped,parent,reqwidth,reqheight,rootx,rooty,%
4687     width,height,wm,aspect,client,command,deiconify,focusmodel,frame,%
4688     geometry,group,iconbitmap,iconify,iconmask,iconname,iconposition,%
4689     iconwindow,maxsize,minsize,overrideredirect,positionfrom,%

```

```

4690 protocol,sizefrom,state,title,transient,withdraw,xview,yview,%
4691 yposition,%
4692 -accelerator,-activebackground,-activeborderwidth,%
4693 -activeforeground,-after,-anchor,-arrow,-arrowshape,-aspect,%
4694 -async,-background,-before,-bg,-begincrement,-bitmap,-bordermode,%
4695 -borderwidth,-button,-capstyle,-channel,-class,-closeenough,%
4696 -colormap,-column,-columnspan,-command,-confine,-container,%
4697 -count,-cursor,-data,-default,-detail,-digits,-direction,%
4698 -displayof,-disableforeground,-elementborderwidth,-expand,%
4699 -exportselection,-extend,-family,-fg,-file,-fill,-focus,-font,%
4700 -fontmap,-foreground,-format,-from,-gamma,-global,-height,%
4701 -highlightbackground,-highlightcolor,-highlightthickness,-icon,%
4702 -image,-in,-insertbackground,-insertborderwidth,-insertofftime,%
4703 -insertontime,-insertwidth,-ipadx,-ipady,-joinstyle,-jump,%
4704 -justify,-keycode,-keysym,-label,-lastfor,-length,-maskdata,%
4705 -maskfile,-menu,-message,-mode,-offvalue,-onvalue,-orient,%
4706 -outlien,-outlinestipple,-overstrike,-override,-padx,-pady,%
4707 -pageanchor,-pageheight,-pagewidth,-pagey,-pagey,-palette,%
4708 -parent,-place,-postcommand,-relheight,-relief,-relwidth,-relx,%
4709 -rely,-repeatdelay,-repeatinterval,-resolution,-root,-rootx,%
4710 -rooty,-rotate,-row,-rowspan,-screen,-selectcolor,-selectimage,%
4711 -sendevent,-serial,-setgrid,-showvalue,-shrink,-side,-size,%
4712 -slant,-sliderlength,-sliderrelief,-smooth,-splinesteps,-state,%
4713 -sticky,-stipple,-style,-subsample,-subwindow,-tags,-takefocus,%
4714 -tearoff,-tearoffcommand,-text,-textvariable,-tickinterval,-time,%
4715 -title,-to,-troughcolor,-type,-underline,-use,-value,-variable,%
4716 -visual,-width,-wrap,-wraplength,-x,-xscrollcommand,-y,%
4717 -bgstipple,-fgstipple,-lmargin1,-lmargin2,-rmargin,-spacing1,%
4718 -spacing2,-spacing3,-tabs,-yscrollcommand,-zoom,%
4719 activate,add,addtag,bbox,cget,clone,configure,coords,%
4720 curselection,debug,delete,delta,deselect,dlineinfo,dtag,dump,%
4721 entrycget,entryconfigure,find,flash,fraction,get,gettext,handle,%
4722 icursor,identify,index,insert,invoke,itemcget,itemconfigure,mark,%
4723 moveto,own,post,postcascade,postscript,put,redither,ranges,%
4724 scale,select,show,tag,type,unpost,xscrollcommand,xview,%
4725 yscrollcommand,yview,yposition}%
4726 }%

4727 \lst@definlanguage[] {tcl}%
4728 {alsoletter={.:,*=&-},%
4729 morekeywords={after,append,array, names, exists, anymore, donesearch,%
4730 get, nextelement, set, size, startsearch, auto_mkindex, binary, break,%
4731 case, catch, cd, clock, close, concat, console, continue, default, else,%
4732 elseif, eof, error, eval, exec, -keepnewline, exit, expr, fblocked,%
4733 fconfigure, fcopy, file, atime, dirname, executable, exists, extension,%
4734 isdirectory, isfile, join, lstat, mtime, owned, readable, readlink,%
4735 rootname, size, stat, tail, type, writable, -permissions, -group, -owner,%
4736 -archive, -hidden, -readonly, -system, -creator, -type, -force,%
4737 fileevent, flush, for, foreach, format, gets, glob, global, history, if,%
4738 incr, info, argsbody, cmdcount, commands, complete, default, exists,%

```

```

4739     globals,level,library,locals,patchlevel,procs,script,tclversion,%
4740     vars,interp,join,lappend,lindex,linsert,list,llength,lrange,%
4741     lreplace,lsearch,-exact,-regexp,-glob,lsort,-ascii,-integer,%
4742     -real,-dictionary,-increasing,-decreasing,-index,-command,load,%
4743     namespace,open,package,forget,ifneeded,provide,require,unknown,%
4744     vcompare,versions,vsatisfies,pid,proc,puts,-nonewline,pwd,read,%
4745     regexp,-indices,regsub,-all,-nocasereaname,return,scan,seek,set,%
4746     socket,source,split,string,compare,first,index,last,length,match,%
4747     range,tolower,toupper,trim,trimleft,trimright,subst,switch,tell,%
4748     time,trace,variable,vdelete,vinfo,unknown,unset,uplevel,upvar,%
4749     vwait,while,acos,asin,atan,atan2,ceil,cos,cosh,exp,floor,fmod,%
4750     hypot,log,log10,pow,sin,sinh,sqrt,tan,tanh,abs,double,int,round%
4751     },%
4752     morestring=[d] ",%
4753     morecomment=[f]\#,%
4754     morecomment=[l]{;\#},%
4755     morecomment=[l]{[\#},%
4756     morecomment=[l]{\{\#}%
4757 }[keywords,comments,strings]%

```

And after receiving a bug report from Vitaly A. Repin I converted the version 0.21 contents of MoreSelectCharTable to version 1.0.

4758  $\langle$ /lang2 $\rangle$

## 2.76 Statistical languages

These languages have been added by Winfried Theis. Robert Denham contributed the additional string delimiter '.

4759  $\langle$ \*lang3 $\rangle$

```

4760 \lst@definlanguage{S}[] {R}{-}
4761 \lst@definlanguage[PLUS]{S}[] {R}{-}
4762 \lst@definlanguage{R}%
4763 {keywords={abbreviate,abline,abs,acos,acosh,action,add1,add,%
4764     aggregate,alias,Alias,alist,all,anova,any,aov,aperm,append,apply,%
4765     approx,approxfun,apropos,Arg,args,array,arrows,as,asin,asinh,%
4766     atan,atan2,atanh,attach,attr,attributes,autoload,autoloader,ave,%
4767     axis,backsolve,barplot,basename,besselI,besselJ,besselK,besselY,%
4768     beta,binomial,body,box,boxplot,break,browser,bug,builtins,bxp,by,%
4769     c,C,call,Call,case,cat,category,cbind,ceiling,character,char,%
4770     charmatch,check,chol,chol2inv,choose,chull,class,close,cm,codes,%
4771     coef,coefficients,co,col,colnames,colors,colours,commandArgs,%
4772     comment,complete,complex,conflicts,Conj,contents,contour,%
4773     contrasts,contr,control,helmert,contrib,convolve,cooks,coords,%
4774     distance,coplot,cor,cos,cosh,count,fields,cov,covratio,wt,CRAN,%
4775     create,crossprod,cummax,cummin,cumprod,cumsum,curve,cut,cycle,D,%
4776     data,dataentry,date,dbeta,dbinom,dcauchy,dchisq,de,debug,%
4777     debugger,Defunct,default,delay,delete,deltat,demo,de,density,%
4778     deparse,dependencies,Deprecated,deriv,description,detach,%
4779     dev2bitmap,dev,cur,deviance,off,prev,,dexp,df,dfbetas,dffits,%

```

```

4780 dgamma,dgeom,dget,dhyper,diag,diff,digamma,dim,dimnames,dir,%
4781 dirname,dlnorm,dlogis,dnbinom,dnchisq,dnorm,do,dotplot,double,%
4782 download,dpois,dput,drop,drop1,dsignrank,dt,dummy,dump,dunif,%
4783 duplicated,dweibull,dwilcox,dyn,edit,eff,effects,eigen,else,%
4784 emacs,end,environment,env,erase,eval,equal,evalq,example,exists,%
4785 exit,exp,expand,expression,External,extract,extractAIC,factor,%
4786 fail,family,fft,file,filled,find,fitted,fivenum,fix,floor,for,%
4787 For,formals,format,formatC,formula,Fortran,forwardsolve,frame,%
4788 frequency,ftable,ftable2table,function,gamma,Gamma,gammaCody,%
4789 gaussian,gc,gcinfo,gctorture,get,getenv,geterrmessage,getOption,%
4790 getwd,gl,glm,globalenv,gnome,GNOME,graphics,gray,grep,grey,grid,%
4791 gsub,hasTsp,hat,heat,help,hist,home,hsv,httpclient,I,identify,if,%
4792 ifelse,Im,image,\%in%,index,influence,measures,inherits,install,%
4793 installed,integer,interaction,interactive,Internal,intersect,%
4794 inverse,invisible,IQR,is,jitter,kappa,kronecker,labels,lapply,%
4795 layout,lbeta,lchoose,lcm,legend,length,levels,lgamma,library,%
4796 licence,license,lines,list,lm,load,local,locator,log,log10,log1p,%
4797 log2,logical,loglin,lower,lowess,ls,lsfit,lsf,ls,machine,Machine,%
4798 mad,mahalanobis,make,link,margin,match,Math,matlines,mat,matplot,%
4799 matpoints,matrix,max,mean,median,memory,menu,merge,methods,min,%
4800 missing,Mod,mode,model,response,mosaicplot,mtext,mvfft,na,nan,%
4801 names,omit,nargs,nchar,ncol,NCOL,new,next,NextMethod,nextn,%
4802 nlevels,nlm,noquote,NotYetImplemented,NotYetUsed,nrow,NROW,null,%
4803 numeric,\%o%,objects,offset,old,on,Ops,optim,optimise,optimize,%
4804 options,or,order,ordered,outer,package,packages,page,pairlist,%
4805 pairs,palette,panel,par,parent,parse,paste,path,pbeta,pbinom,%
4806 pcauchy,pchisq,pentagamma,persp,pexp,pf,pgamma,pgeom,phyper,pico,%
4807 pictex,piechart,Platform,plnorm,plogis,plot,pmatch,pmax,pmin,%
4808 pnbinom,pnchisq,pnorm,points,poisson,poly,polygon,polyroot,pos,%
4809 postscript,power,ppoints,ppois,predict,preplot,pretty,Primitive,%
4810 print,prmatrix,proc,prod,profile,proj,prompt,prop,provide,%
4811 psignrank,ps,pt,ptukey,punif,pweibull,pwilcox,q,qbeta,qbinom,%
4812 qcauchy,qchisq,qexp,qf,qgamma,qgeom,qhyper,qlnorm,qlogis,qnbinom,%
4813 qnchisq,qnorm,qpois,qqline,qqnorm,qqplot,qr,Q,qty,qy,qsignrank,%
4814 qt,qtukey,quantile,quasi,quit,qunif,quote,qweibull,qwilcox,%
4815 rainbow,range,rank,rbeta,rbind,rbinom,rcauchy,rchisq,Re,read,csv,%
4816 csv2,fwf,readline,socket,real,Recall,rect,reformulate,regexpr,%
4817 releval,remove,rep,repeat,replace,replications,report,require,%
4818 resid,residuals,restart,return,rev,rexpr,rf,rgamma,rgb,rgeom,R,%
4819 rhyper,rle,rlnorm,rlogis,rm,rnbinom,RNGkind,rnorm,round,row,%
4820 rownames,rowsum,rpois,rsignrank,rstandard,rstudent,rt,rug,runif,%
4821 rweibull,rwilcox,sample,sapply,save,scale,scan,scan,screen,sd,se,%
4822 search,searchpaths,segments,seq,sequence,setdiff,setequal,set,%
4823 setwd,show,sign,signif,sin,single,sinh,sink,solve,sort,source,%
4824 spline,splinefun,split,sqrt,stars,start,stat,stem,step,stop,%
4825 storage,strsrheight,stripplot,strsplit,structure,strwidth,sub,%
4826 subset,substitute,substr,substring,sum,summary,sunflowerplot,svd,%
4827 sweep,switch,symbol,symbols,symnum,sys,status,system,t,table,%
4828 tabulate,tan,tanh,tapply,tempfile,terms,terrain,tetragamma,text,%
4829 time,title,topo,trace,traceback,transform,tri,trigamma,trunc,try,%

```

```

4830      ts,tsp,typeof,unclass,undebbug,undoc,union,unique,uniroot,unix,%
4831      unlink,unlist,unname,untrace,update,upper,url,UseMethod,var,%
4832      variable,vector,Version,vi,warning,warnings,weighted,weights,%
4833      which,while>window,write,\%x\%,x11,X11,xedit,xemacs,xinch,xor,%
4834      xpdrows,xy,xyinch,yinch,zapsmall,zip},%
4835      otherkeywords={!,!=,~, $,*,\&,\%/\%,\%*\%,\%\/%,<-,<<-,_,/},%
4836      alsoother={._$},%
4837      sensitive,%
4838      morecomment=[l]\#,%
4839      morestring=[d]" ,%
4840      morestring=[d]'% 2001 Robert Denham
4841    }%

```

Benjamin Janson got a `prockeywords` undefined error, which was removed by Heiko Oberdiek.

```

4842 \lst@definelanguage{SAS}%
4843   {procnamekeys={proc},%
4844     morekeywords={DATA,AND,OR,NOT,EQ,GT,LT,GE,LE,NE,INFILE,INPUT,DO,BY,%
4845       TO,SIN,COS,OUTPUT,END,PLOT,RUN,LIBNAME,VAR,TITLE,FIRSTOBS,OBS,%
4846       DELIMITER,DLM,EOF,ABS,DIM,HBOUND,LBOUND,MAX,MIN,MOD,SIGN,SQRT,%
4847       CEIL,FLOOR,FUZZ,INT,ROUND,TRUNC,DIGAMMA,ERF,ERFC,EXP,GAMMA,%
4848       LGAMMA,LOG,LOG2,LOG10,ARCOS,ARSIN,ATAN,COSH,SINH,TANH,TAN,%
4849       POISSON,PROBBETA,PROBBNML,PROBCHI,PROBF,PROBGAM,PROBHYPYR,%
4850       PROBNEGB,PROBNORM,PROBT,BETAINV,CINV,FINV,GAMINV,PROBIT,TINV,CSS,%
4851       CV,KURTOSIS,MEAN,NMISS,RANGE,SKEWNESS,STD,STDERR,SUM,USS,NORMAL,%
4852       RANBIN,RANCAU,RANEXP,RANGAM,RANNOR,RANPOI,RANTBL,RANTRI,RANUNI,%
4853       UNIFORM,IF,THEN,ELSE,WHILE,UNTIL,DROP,KEEP,LABEL,DEFAULT,ARRAY,%
4854       MERGE,CARDS,CARDS4,PUT,SET,UPDATE,ABORT,DELETE,DISPLAY,LIST,%
4855       LOSTCARD,MISSING,STOP,WHERE,ARRAY,DROP,KEEP,WINDOW,LENGTH,RENAME,%
4856       RETAIN,MEANS,UNIVARIATE,SUMMARY,TABULATE,CORR,FREQ,FOOTNOTE,NOTE,%
4857       SHOW},%
4858     otherkeywords={!,!=,~, $,*,\&,_,/,<,>=,<,>},%
4859     morestring=[d]'%
4860   }[keywords,comments,strings,procnames]%
4861 </lang3>

```

## 2.77 TeX

I extracted the data from `plain.tex`, `latex.ltx`, and `size10.clo`. Dr. Peter Leibner reported that some keywords are missing and also added a couple.

```

4862 <*lang3>
4863 \lst@definelanguage[AllaTeX]{TeX}[LaTeX]{TeX}%
4864   {moretexcs={AtBeginDocument,AtBeginDvi,AtEndDocument,AtEndOfClass,%
4865     AtEndOfPackage,ClassError,ClassInfo,ClassWarning,%
4866     ClassWarningNoLine,CurrentOption,DeclareErrorFont,%
4867     DeclareFixedFont,DeclareFontEncoding,DeclareFontEncodingDefaults,%
4868     DeclareFontFamily,DeclareFontShape,DeclareFontSubstitution,%
4869     DeclareMathAccent,DeclareMathAlphabet,DeclareMathAlphabet,%

```

```

4870 DeclareMathDelimiter,DeclareMathRadical,DeclareMathSizes,%
4871 DeclareMathSymbol,DeclareMathVersion,DeclareOldFontCommand,%
4872 DeclareOption,DeclarePreloadSizes,DeclareRobustCommand,%
4873 DeclareSizeFunction,DeclareSymbolFont,DeclareSymbolFontAlphabet,%
4874 DeclareTextAccent,DeclareTextAccentDefault,DeclareTextCommand,%
4875 DeclareTextCommandDefault,DeclareTextComposite,%
4876 DeclareTextCompositeCommand,DeclareTextFontCommand,%
4877 DeclareTextSymbol,DeclareTextSymbolDefault,ExecuteOptions,%
4878 GenericError,GenericInfo,GenericWarning,IfFileExists,%
4879 InputIfFileExists,LoadClass,LoadClassWithOptions,MessageBreak,%
4880 OptionNotUsed,PackageError,PackageInfo,PackageWarning,%
4881 PackageWarningNoLine,PassOptionsToClass,PassOptionsToPackage,%
4882 ProcessOptionsProvidesClass,ProvidesFile,ProvidesFile,%
4883 ProvidesPackage,ProvideTextCommand,RequirePackage,%
4884 RequirePackageWithOptions,SetMathAlphabet,SetSymbolFont,%
4885 TextSymbolUnavailable,UseTextAccent,UseTextSymbol},%
4886 morekeywords={array,center,displaymath,document,enumerate,eqnarray,%
4887 equation,flushleft,flushright,itemize,list,lrbox,math,minipage,%
4888 picture,sloppypar,tabbing,tabular,trivlist,verbatim}%
4889 }%

4890 \lst@definelanguage[LaTeX]{TeX}[common]{TeX}%
4891 {moretexcs={a,AA,aa,addcontentsline,addpenalty,addtocontents,%
4892 addtocounter,addtolength,addtoversion,addvspace,alph,Alph,and,%
4893 arabic,array,arraycolsep,arrayrulewidth,arraystretch,author,%
4894 baselinestretch,begin,bezier,bfseries,bibcite,bibdata,bibitem,%
4895 bibliography,bibliographystyle,bibstyle,bigskip,boldmath,%
4896 botfigrule,bottomfraction,Box,caption,center,CheckCommand,circle,%
4897 citation,cite,cleardoublepage,clearpage,cline,columnsep,%
4898 columnseprule,columnwidth,contentsline,dashbox,date,dblfigrule,%
4899 dblfloatpagefraction,dblfloatsep,dbltextfloatsep,dbltopfraction,%
4900 defaultscriptratio,defaultscriptscriptratio,depth,Diamond,%
4901 displaymath,document,documentclass,documentstyle,doublerulesep,%
4902 em,emph,endarray,endcenter,endeddisplaymath,endeddocument,%
4903 endenumerate,endeqnarray,endequation,endflushleft,endflushright,%
4904 enditemize,endlist,endlrbox,endmath,endminipage,endpicture,%
4905 endsloppypar,endtabbing,endtabular,endtrivlist,endverbatim,%
4906 enlargethispage,ensuremath,enumerate,eqnarray,equation,%
4907 evensidemargin,extracolsep,fbox,fboxrule,fboxsep,filecontents,%
4908 fill,floatpagefraction,floatsep,flushbottom,flushleft,flushright,%
4909 fnsymbol,fontencoding,fontfamily,fontseries,fontshape,fontsize,%
4910 fontsubfuzz,footnotemark,footnotesep,footnotetext,footskip,frac,%
4911 frame,framebox,fussy,glossary,headheight,headsep,height,hline,%
4912 hspace,I,include,includeonly,index,inputlineno,intextsep,%
4913 itemindent,itemize,itemsep,iterate,itshape,Join,kill,label,%
4914 labelsep,labelwidth,LaTeX,LaTeXe,leadsto,lefteqn,leftmargin,%
4915 leftmargini,leftmarginii,leftmarginiii,leftmarginiv,leftmarginv,%
4916 leftmarginvi,leftmark,lhd,lim,linebreak,linespread,linethickness,%
4917 linewidth,list,listfiles,listfiles,listparindent,lrbox,%
4918 makeatletter,makeatother,makebox,makeglossary,makeindex,%

```

```

4919 makelabel,MakeLowercase,MakeUppercase,marginpar,marginparpush,%
4920 marginparsep,marginparwidth,markboth,markright,math,mathbf,%
4921 mathellipsis,mathgroup,mathit,mathrm,mathsf,mathsterling,mathtt,%
4922 mathunderscore,mathversion,mbox,mdseries,mho,minipage,%
4923 multicolumn,multiput,NeedsTeXFormat,newcommand,newcounter,%
4924 newenvironment,newfont,newhelp,newlabel,newlength,newline,%
4925 newmathalphabet,newpage,newsavebox,newtheorem,nobreakspace,%
4926 nobreakspace,nocite,nocorr,nocorrlist,nofiles,nolinebreak,%
4927 nonumber,nopagebreak,normalcolor,normalfont,normalmarginpar,%
4928 numberline,obeycr,oddsidemargin,oldstylenums,onecolumn,oval,%
4929 pagebreak,pagenumbering,pageref,pagestyle,paperheight,paperwidth,%
4930 paragraphmark,parbox,parsep,partopsep,picture,poptabs,pounds,%
4931 protect,pushtabs,put,qbezier,qbeziermax,r,raggedleft,raisebox,%
4932 ref,refstepcounter,renewcommand,renewenvironment,restorecr,%
4933 reversemarginpar,rhd,rightmargin,rightmark,rmfamily,roman,Roman,%
4934 rootbox,rule,samepage,sbox,scshape,secdef,section,sectionmark,%
4935 selectfont,setcounter,settodepth,settoheight,settowidth,ssfamly,%
4936 shortstack,showoutput,showoverfull,sloppy,sloppypar,slshape,%
4937 smallskip,sqsubset,sqsupset,SS,stackrel,stepcounter,stop,stretch,%
4938 subparagraphmark,subsectionmark,subsubsectionmark,sum,%
4939 suppressfloats,symbol,tabbing,tabbingsep,tabcolsep,tabular,%
4940 tabularnewline,textasciicircum,textasciitilde,textbackslash,%
4941 textbar,textbf,textbraceleft,textbraceright,textbullet,%
4942 textcircled,textcompwordmark,texdagger,texdaggerdbl,texdollar,%
4943 textellipsis,temdash,extenddash,teTeXclamdown,teXfloatsep,%
4944 textfraction,textgreater,textheight,teXit,teXless,teXmd,%
4945 textnormal,teXparagraph,teXperiodcentered,teXquestiondown,%
4946 textquotedblleft,teXquotedblright,teXquoteleft,teXquoteright,%
4947 textregistered,teXrm,teXsc,teXsection,teXsf,teXsl,%
4948 textsterling,teXsuperscript,teXtrademark,teXtt,teXunderscore,%
4949 textup,teXvisiblespace,teXwidth,thanks,the footnote,thempfn,%
4950 thempfn,thempfootnote,the page,the page,thicklines,thinlines,%
4951 thispagestyle,title,today,topfigrule,topfraction,topmargin,%
4952 topsep,totalheight,tracingfonts,trivlist,ttfamily,twocolumn,%
4953 typein,typeout,unboldmath,unitlength,unlhd,unrhd,upshape,usebox,%
4954 usecounter,usefont,usepackage,value,vector,verb,verbatim,vline,%
4955 vspace,width,%
4956 normalsize,small,footnotesize,scriptsize,tiny,large,Large,LARGE,%
4957 huge,Huge}%
4958 }%

4959 \lst@definlanguage[plain]{TeX}[common]{TeX}%
4960 {moretexcs={advancepageno,beginsection,bf,bffam,bye,cal,cleartabs,%
4961 columns,dosupereject,endinsert,equalign,equalignno,fiverm,fivebf,%
4962 fivei,fivesy,folio,footline,hang,headline,it,itemitem,itfam,%
4963 lequalignno,magnification,makefootline,makeheadline,midinsert,mit,%
4964 mscount,nopagenumbers,normalbottom,of,oldstyle,pagebody,%
4965 pagecontents,pageinsert,pageno,plainoutput,preloaded,proclaim,rm,%
4966 settabs,sevenbf,seveni,sevency,sevenrm,sl,slfam,supereject,%
4967 tabalign,tabs,tabsdone,tabsyet,tenbf,tenex,teni,tenit,tenrm,%

```

```

4968      tensl,tensy,tentt,textindent,topglue,topins,topinsert,tt,ttfam,%
4969      ttraggedright,vfootnote}%
4970  }%

```

The following language is only a helper.

```

4971 \lst@definelanguage[common]{TeX}[primitive]{TeX}
4972 {moretexcs={active,acute,ae,AE,aleph,allocationnumber,allowbreak,%
4973      alpha,amalg,angle,approx,arccos,arcsin,arctan,arg,arrowvert,%
4974      Arrowvert,ast,asyp,b,backslash,bar,beta,bgroup,big,Big,bigbreak,%
4975      bigcap,bigcirc,bigcup,bigg,Bigg,biggl,Biggl,biggm,Biggm,bigr,%
4976      Biggr,bigl,Bigl,bigm,Bigm,bigodot,bigoplus,bigotimes,bigr,Bigr,%
4977      bigskip,bigskipamount,bigsqcup,bigtriangledown,bigtriangleup,%
4978      biguplus,bigvee,bigwedge,bmod,bordermatrix,bot,bowtie,brace,%
4979      braceld,bracelu,bracerd,braceru,bracevert,brack,break,breve,%
4980      buildrel,bullet,c,cap,cases,cdot,cdotp,cdots,centering,%
4981      centerline,check,chi,choose,circ,clubsuit,colon,cong,coprod,%
4982      copyright,cos,cosh,cot,coth,csc,cup,d,dag,dagger,dashv,ddag,%
4983      ddagger,ddot,ddots,deg,delta,Delta,det,diamond,diamondsuit,dim,%
4984      displaylines,div,do,dospecials,dot,doteq,dotfill,dots,downarrow,%
4985      Downarrow,downbracefill,egroup,eject,ell,empty,emptyset,endgraf,%
4986      endline,enskip,enspace,epsilon,equiv,eta,exists,exp,filbreak,%
4987      flat,fmtname,fmtversion,footins,footnote,footnoterule,forall,%
4988      frenchspacing,frown,gamma,Gamma,gcd,ge,geq,gets,gg,goodbreak,%
4989      grave,H,hath,hbar,heartsuit,hglue,hideskip,hidewidth,hom,%
4990      hookleftarrow,hookrightarrow,hphantom,hrulefill,i,ialign,iff,Im,%
4991      imath,in,inf,infty,int,interdisplaylinepenalty,%
4992      interfootnotelinepenalty,intop,iota,item,j,jmath,joinrel,jot,%
4993      kappa,ker,l,L,lambda,Lambda,land,langle,lbrace,lbrack,lceil,%
4994      ldotp,ldots,le,leavevmode,leftarrow,Leftarrow,leftarrowfill,%
4995      leftharpoondown,leftharpoonup,leftline,leftrightharrow,%
4996      Leftrightarrow,leq,lfloor,lg,lggroup,lhook,lim,liminf,limsup,line,%
4997      ll,llap,lmoustache,ln,lnot,log,longleftarrow,Longleftarrow,%
4998      longleftrightarrow,Longleftrightarrow,longmapsto,longrightarrow,%
4999      Longrightarrow,loop,lor,lq,magstep,magstep,magstephalf,mapsto,%
5000      mapstochar,mathhexbox,mathpalette,mathstrut,matrix,max,maxdimen,%
5001      medbreak,medskip,medskipamount,mid,min,models,mp,mu,multispan,%
5002      nabla,narrower,natural,ne,nearrow,neg,negthinspace,neq,newbox,%
5003      newcount,newdimen,newfam,newif,newinsert,newlanguage,newmuskip,%
5004      newread,newskip,newtoks,newwrite,next,ni,nobreak,nointerlineskip,%
5005      nonfrenchspacing,normalbaselines,normalbaselineskip,%
5006      normallineskip,normallineskiplimit,not,notin,nu,null,nwarrow,o,O,%
5007      oalign,obeylines,obeyspaces,odot,oe,OE,offinterlineskip,oint,%
5008      ointop,omega,Omega,ominus,oalign,openup,oplus,oslash,otimes,%
5009      overbrace,overleftarrow,overrightarrow,owns,P,parallel,partial,%
5010      perp,phantom,phi,Phi,pi,Pi,pm,pmatrix,pmod,Pr,prec,preceq,prime,%
5011      prod,propto,psi,Psi,qquad,quad,raggedbottom,raggedright,rangle,%
5012      rbrace,rbrack,rceil,Re,relbar,Relbar,removelastskip,repeat,%
5013      rfloor,rgroup,rho,rhook,rightarrow,Rightarrow,rightarrowfill,%
5014      rightharpoondown,rightharpoonup,rightleftharpoons,rightline,rlap,%
5015      rmoustache,root,rq,S,sb,searrow,sec,setminus,sharp,showhyphens,%

```



```

5016 sigma,Sigma,sim,simeq,sin,sinh,skew,slash,smallbreak,smallint,%
5017 smallskip,smallskipamount,smash,smile,sp,space,spadesuit,sqcap,%
5018 sqcup,sqrt,sqsubseq,sqsupseq,ss,star,strut,structbox,subset,%
5019 subseq,succ,succq,sum,sup,supset,supseq,surd,swarrow,t,tan,%
5020 tanh,tau,TeX,theta,Theta,thinspace,tilde,times,to,top,trackingall,%
5021 triangle,triangleleft,triangleright,u,underbar,underbrace,%
5022 uparrow,Uparrow,upbracefill,updownarrow,Updownarrow,uplus,%
5023 upsi,Upsilon,v,varepsilon,varphi,varpi,varrho,varsigma,%
5024 vartheta,vdash,vdots,vec,vee,vert,Vert,vglue,vphantom,wedge,%
5025 widehat,widetilde,wlog,wp,wr,xi,Xi,zeta}%
5026 }%

```

Herbert Voss pointed to a typo: the  $\TeX$  primitive is `lineskiplimit` instead of `lineskiplimits`.

```

5027 \lst@definlanguage[primitive]{TeX}%
5028 {moretexcs={above,abovedisplayshortskip,abovedisplayskip,aftergroup,%
5029 abovewithdelims,accent,adjdemerits,advance,afterassignment,atop,%
5030 atopwithdelims,badness,baselineskip,batchmode,begingroup,%
5031 belowdisplayshortskip,belowdisplayskip,binoppenalty,botmark,box,%
5032 boxmaxdepth,brokenpenalty,catcode,char,chardef,cleaders,closein,%
5033 closeout,clubpenalty,copy,count,countdef,cr,crcr,csname,day,%
5034 deadcycles,def,defaultshyphenchar,defaultskewchar,delcode,%
5035 delimiter,delimiterfactor,delimitershortfall,dimen,dimendef,%
5036 discretionary,displayindent,displaylimits,displaystyle,%
5037 displaywidowpenalty,displaywidth,divide,doublehyphendemerits,dp,%
5038 edef,else,emergencystretch,end,endcsname,endgroup,endinginput,%
5039 endlchar,eqno,errhelp,errmessage,errorcontextlines,%
5040 errorstopmode,escapechar,everycr,everydisplay,everyhbox,everyjob,%
5041 everymath,everypar,everyvbox,exhyphenpenalty,expandafter,fam,fi,%
5042 finalhyphendemerits,firstmark,floatingpenalty,font,fontdimen,%
5043 fontname,futurelet,gdef,global,globaldefs,halign,hangafter,%
5044 hangindent,hbadness,hbox,hfil,hfill,hfilneg,hfuzz,hoffset,%
5045 holdinginserts,hrule,hsize,hskip,hss,ht,hyphenation,hyphenchar,%
5046 hyphenpenalty,if,ifcase,ifcat,ifdim,ifeof,iffalse,ifhbox,ifhmode,%
5047 ifinner,ifmmode,ifnum,ifodd,iftrue,ifvbox,ifvmode,ifvoid,ifx,%
5048 ignorespaces,immediate,indent,input,insert,insertpenalties,%
5049 interlinepenalty,jobname,kern,language,lastbox,lastkern,%
5050 lastpenalty,lastskip,lccode,leaders,left,lefthyphenmin,leftskip,%
5051 leqno,let,limits,linepenalty,lineskip,lineskiplimit,long,%
5052 looseness,lower,lowercase,mag,mark,mathaccent,mathbin,mathchar,%
5053 mathchardef,mathchoice,mathclose,mathcode,mathinner,mathop,%
5054 mathopen,mathord,mathpunct,mathrel,mathsurround,maxdeadcycles,%
5055 maxdepth,meaning,medmuskip,message,mkern,month,movelf,%
5056 moveright,mskip,multiply,muskip,muskipdef,newlinechar,noalign,%
5057 noboundary,noexpand,noindent,nolimits,nonscript,nonstopmode,%
5058 nulldelimiterspace,nullfont,number,omit,openin,openout,or,outer,%
5059 output,outputpenalty,over,overfullrule,overline,overwithdelims,%
5060 pagedepth,pagefillstretch,pagefillstretch,pagefilstretch,%
5061 pagegoal,pageshrink,pagewidth,pagetotal,par,parfillskip,%
5062 parindent,parshape,parskip,patterns,pausing,penalty,%

```

```

5063 postdisplaypenalty,predisplaypenalty,predisplaysize,pretolerance,%
5064 prevdepth,prevgraf,radical,raise,read,relax,relpenalty,right,%
5065 righthyphenmin,rightskip,romannumeral,scriptfont,%
5066 scriptscriptfont,scriptscriptstyle,scriptspace,scriptstyle,%
5067 scrollmode,setbox,setlanguage,sfcode,shipout,show,showbox,%
5068 showboxbreadth,showboxdepth,showlists,showthe,skewchar,skip,%
5069 skipdef,spacefactor,spaceskip,span,special,splitbotmark,%
5070 splitfirstmark,splitmaxdepth,splittopskip,string,tabskip,%
5071 textfont,textstyle,the,thickmuskip,thinmuskip,time,toks,toksdef,%
5072 tolerance,topmark,topskip,tracingcommands,tracinglostchars,%
5073 tracingmacros,tracingonline,tracingoutput,tracingpages,%
5074 tracingparagraphs,tracingrestores,tracingstats,uccode,uchyph,%
5075 underline,unhbox,unhcopy,unkern,unpenalty,unskip,unvbox,unvcopy,%
5076 uppercase,vadjust,valign,vbadness,vbox,vcenter,vfil,vfill,%
5077 vfilneg,vfuzz,voffset,vrule,vsize,vskip,vsplit,vss,vtop,wd,%
5078 widowpenalty,write,xdef,xleaders,xspaceskip,year},%
5079 sensitive,%
5080 alsoother={0123456789$_},%$ to make Emacs fontlocking happy
5081 morecomment=[l]\%%
5082 }[keywords,tex,comments]%
5083 </lang3>

```

## 2.78 VBScript

Sonja Weidmann VBScript sent me this language definition.

```

5084 <*lang2>
5085 %%
5086 %% VBScript definition (c) 2000 Sonja Weidmann
5087 %%
5088 \lst@definlanguage{VBScript}%
5089 {morekeywords={Call,Case,Const,Dim,Do,Each,Else,End,Erase,Error,Exit,%
5090 Explicit,For,Function,If,Loop,Next,On,Option,Private,Public,%
5091 Randomize,ReDim,Rem,Select,Set,Sub,Then,Wend,While,Abs,Array,Asc,%
5092 Atn,CBool,CByte,CCur,CDate,CDBl,Chr,CInt,CLng,Cos,CreateObject,%
5093 CSng,CStr,Date,DateAdd,DateDiff,DatePart,DateSerial,DateValue,%
5094 Day,Exp,Filter,Fix,FormatCurrency,FormatDateTime,FormatNumber,%
5095 FormatPercent,GetObject,Hex,Hour,InputBox,InStr,InStrRev,Int,%
5096 IsArray,IsDate,IsEmpty,IsNull,IsNumeric,IsObject,Join,LBound,%
5097 LCase,Left,Len,LoadPicture,Log,LTrim,Mid,Minute,Month,MonthName,%
5098 MsgBox,Now,Oct,Replace,RGB,Right,Rnd,Round,RTrim,ScriptEngine,%
5099 ScriptEngineBuildVersion,ScriptEngineMajorVersion,%
5100 ScriptEngineMinorVersion,Second,Sgn,Sin,Space,Split,Sqr,StrComp,%
5101 StrReverse,String,Tan,Time,TimeSerial,TimeValue,Trim,TypeName,%
5102 UBound,UCase,VarType,Weekday,WeekdayName,Year, And,Eqv,Imp,Is,%
5103 Mod,Not,Or,Xor,Add,BuildPath,Clear,Close,Copy,CopyFile,%
5104 CopyFolder,CreateFolder,CreateTextFile,Delete,DeleteFile,%
5105 DeleteFolder,Dictionary,Drive,DriveExists,Drives,Err,Exists,File,%
5106 FileExists,FileSystemObject,Files,Folder,FolderExists,Folders,%

```

```

5107     GetAbsolutePathName,GetBaseName,GetDrive,GetDriveName,%
5108     GetExtensionName,GetFile,GetFileName,GetFolder,%
5109     GetParentFolderName,GetSpecialFolder,GetTempName,Items,Keys,Move,%
5110     MoveFile,MoveFolder,OpenAsTextStream,OpenTextFile,Raise,Read,%
5111     ReadAll,ReadLine,Remove,RemoveAll,Skip,SkipLine,TextStream,Write,%
5112     WriteBlankLines,WriteLine,Alias,Archive,CDROM,Compressed,%
5113     Directory,Fixed,ForAppending,ForReading,ForWriting,Hidden,Normal,%
5114     RAMDisk,ReadOnly,Remote,Removable,System,SystemFolder,%
5115     TemporaryFolder,TristateFalse,TristateTrue,TristateUseDefault,%
5116     Unknown,Volume,WindowsFolder,vbAbortRetryIgnore,%
5117     vbApplicationModal,vbArray,vbBinaryCompare,vbBlack,vbBlue,%
5118     vbBoolean,vbByte,vbCr,vbCrLf,vbCritical,vbCurrency,vbCyan,%
5119     vbDataObject,vbDate,vbDecimal,vbDefaultButton1,vbDefaultButton2,%
5120     vbDefaultButton3,vbDefaultButton4,vbDouble,vbEmpty,vbError,%
5121     vbExclamation,vbFirstFourDays,vbFirstFullWeek,vbFirstJan1,%
5122     vbFormFeed,vbFriday,vbGeneralDate,vbGreen,vbInformation,%
5123     vbInteger,vbLf,vbLong,vbLongDate,vbLongTime,vbMagenta,vbMonday,%
5124     vbNewLine,vbNull,vbNullChar,vbNullString,vbOKC,ancel,vbOKOnly,%
5125     vbObject,vbObjectError,vbQuestion,vbRed,vbRetryCancel,vbSaturday,%
5126     vbShortDate,vbShortTime,vbSingle,vbString,vbSunday,vbSystemModal,%
5127     vbTab,vbTextCompare,vbThursday,vbTuesday,vbUseSystem,%
5128     vbUseSystemDayOfWeek,vbVariant,vbVerticalTab,vbWednesday,vbWhite,%
5129     vbYellow,vbYesNo,vbYesNoCancel},%
5130     sensitive=f,%
5131     morecomment=[l]',%
5132     morestring=[d]"%
5133 }[keywords,comments,strings]%
5134 </lang2>

```

## 2.79 Verilog

Thanks to Cameron H. G. Wright for providing the definition. After a bug report by George M. Georgiou I changed the declaration of directives to use normal keywords.

```

5135 <*lang3>
5136 %%
5137 %% Verilog definition (c) 2003 Cameron H. G. Wright <c.h.g.wright@ieee.org>
5138 %% Based on the IEEE 1364-2001 Verilog HDL standard
5139 %% Ref: S. Palnitkar, "Verilog HDL: A Guide to Digital Design and Synthesis,"
5140 %% Prentice Hall, 2003. ISBN: 0-13-044911-3
5141 %%
5142 \lst@definlanguage{Verilog}%
5143 {morekeywords={% reserved keywords
5144     always,and,assign,automatic,begin,buf,bufif0,bufif1,case,casex,%
5145     casez,cell,cmos,config,deassign,default,defparam,design,disable,%
5146     edge,else,end,endcase,endconfig,endfunction,endgenerate,%
5147     endmodule,endprimitive,endspecify,endtable,endtask,event,for,%
5148     force,forever,fork,function,generate,genvar,highz0,highz1,if,%

```

```

5149     ifnone,incdir,include,initial,inout,input,instance,integer,join,%
5150     large,liblist,library,localparam,macromodule,medium,module,nand,%
5151     negedge,nmos,nor,noshowcancelled,not,notif0,notif1,or,output,%
5152     parameter,pmos,posedge,primitive,pull0,pull1,pulldown,pullup,%
5153     pulsestyle_onevent,pulsestyle_ondetect,rcmos,real,realtime,reg,%
5154     release,repeat,rnmos,rpmos,rtran,rtranif0,rtranif1,scalared,%
5155     showcancelled,signed,small,specify,specparam,strong0,strong1,%
5156     supply0,supply1,table,task,time,tran,tranif0,tranif1,tri,tri0,%
5157     tri1,triand,trior,trioreg,unsigned,use,vectored,wait,wand,weak0,%
5158     weak1,while,wire,wor,xnor,xor},%
5159     morekeywords=[2]{% system tasks and functions
5160         $bitstoreal,$countdrivers,$display,$fclose,$fdisplay,$fmonitor,%
5161         $fopen,$fstrobe,$fwrite,$finish,$getpattern,$history,$incsave,%
5162         $input,$itor,$key,$list,$log,$monitor,$monitoroff,$monitoron,%
5163         $nokey},%
5164     morekeywords=[3]{% compiler directives
5165         'accelerate','autoexpand_vectornets','celldefine','default_nettype,%
5166         'define','else','elsif','endcelldefine','endif','endprotect,%
5167         'endprotected','expand_vectornets','ifdef','ifndef','include,%
5168         'no_accelerate','noexpand_vectornets','noremove_gatenames,%
5169         'nounconnected_drive','protect','protected','remove_gatenames,%
5170         'remove_netnames','resetall','timescale','unconnected_drive'},%
5171     alsoletter='\',%
5172     sensitive,%
5173     morecomment=[s]{/*}{*/},%
5174     morecomment=[l]//,% nonstandard
5175     morestring=[b]"%"
5176 }[keywords,comments,strings]%
5177 </lang3>

```

## 2.80 VHDL

This language is due to Kai WollenweberVHDL. I've done conversion to version 0.19 only. Gaurav Aggarwal reported that VHDL is case insensitive and Arnaud Tisseranddded three keywords.

```

5178 <*lang1>
5179 %%
5180 %% VHDL definition (c) 1997 Kai Wollenweber
5181 %%
5182 \lst@definelanguage{VHDL}%
5183 {morekeywords={ALL,ARCHITECTURE,ABS,AND,ASSERT,ARRAY,AFTER,ALIAS,%
5184     ACCESS,ATTRIBUTE,BEGIN,BODY,BUS,BLOCK,BUFFER,CONSTANT,CASE,%
5185     COMPONENT,CONFIGURATION,DOWNT0,ELSE,ELSIF,END,ENTITY,EXIT,%
5186     FUNCTION,FOR,FILE,GENERIC,GENERATE,GUARDED,GROUP,IF,IN,INOUT,IS,%
5187     INERTIAL,IMPURE,LIBRARY,LOOP,LABEL,LITERAL,LINKAGE,MAP,MOD,NOT,%
5188     NOR,NAND,NULL,NEXT,NEW,OUT,OF,OR,OTHERS,ON,OPEN,PROCESS,PORT,%
5189     PACKAGE,PURE,PROCEDURE,POSTPONED,RANGE,REM,ROL,ROR,REPORT,RECORD,%
5190     RETURN,REGISTER,REJECT,SIGNAL,SUBTYPE,SLL,SRL,SLA,SRA,SEVERITY,%

```

```

5191     SELECT, THEN, TYPE, TRANSPORT, TO, USE, UNITS, UNTIL, VARIABLE, WHEN, WAIT, %
5192     WHILE, XOR, XNOR, %
5193     DISCONNECT, ELIF, WITH}, % Arnaud Tisserand
5194     sensitive=f, % 1998 Gaurav Aggarwal
5195     morecomment=[l]--, %
5196     morestring=[d]{"}%
5197 }[keywords, comments, strings]%

```

The VHDL-AMS dialect has been added by Steffen Klupsch.

```

5198 %%
5199 %% VHDL-AMS definition (c) Steffen Klupsch
5200 %%
5201 \lst@definlanguage[AMS]{VHDL}[]{}{VHDL}%
5202 {morekeywords={ACROSS, ARRAY, BREAK, DISCONNECT, NATURE, NOISE, PORT, %
5203     PROCEDURAL, QUANTITY, SHARED, SPECTRUM, SUBNATURE, TERMINAL, THROUGH, %
5204     TOLERANCE, UNAFFECTED, UNITS}}
5205 </lang1>

```

## 2.81 VRML

This language is due to Oliver Baum VRML.

```

5206 <*lang2>
5207 %%
5208 %% VRML definition (c) 2001 Oliver Baum
5209 %%
5210 \lst@definlanguage[97]{VRML}
5211 {morekeywords={DEF, EXTERNPROTO, FALSE, IS, NULL, PROTO, ROUTE, TO, TRUE, USE, %
5212     eventIn, eventOut, exposedField, field, Introduction, Anchor, %
5213     Appearance, AudioClip, Background, Billboard, Box, Collision, Color, %
5214     ColorInterpolator, Cone, Coordinate, CoordinateInterpolator, %
5215     Cylinder, CylinderSensor, DirectionalLight, ElevationGrid, Extrusion, %
5216     Fog, FontStyle, Group, ImageTexture, IndexedFaceSet, IndexedLineSet, %
5217     Inline, LOD, Material, MovieTexture, NavigationInfo, Normal, %
5218     NormalInterpolator, OrientationInterpolator, PixelTexture, %
5219     PlaneSensor, PointLight, PointSet, PositionInterpolator, %
5220     ProximitySensor, ScalarInterpolator, Script, Shape, Sound, Sphere, %
5221     SphereSensor, SpotLight, Switch, Text, TextureCoordinate, %
5222     TextureTransform, TimeSensor, TouchSensor, Transform, Viewpoint, %
5223     VisibilitySensor, WorldInfo}, %
5224     morecomment=[l]\#, % bug: starts comment in the first column
5225     morestring=[b]"%
5226 }[keywords, comments, strings]
5227 </lang2>

```

## 2.82 XML et al

Bernhard Walle provided the following two definitions.

```

5228 <*lang1>

```

```

5229 \lst@definelanguage{XSLT}[] {XML}%
5230 {morekeywords={%
5231     % main elements
5232     xsl:stylesheet,xsl:transform,%
5233     % childs of the main element
5234     xsl:apply-imports,xsl:attribute-set,xsl:decimal-format,xsl:import,%
5235     xsl:include,xsl:key,xsl:namespace-alias,xsl:output,xsl:param,%
5236     xsl:preserve-space,xsl:strip-space,xsl:template,xsl:variable,%
5237     % 21 directives
5238     xsl:apply-imports,xsl:apply-templates,xsl:attribute,%
5239     xsl:call-template,xsl:choose,xsl:comment,xsl:copy,xsl:copy-of,%
5240     xsl:element,xsl:fallback,xsl:for-each,xsl:if,xsl:message,%
5241     xsl:number,xsl:otherwise,xsl:processing-instruction,xsl:text,%
5242     xsl:value-of,xsl:variable,xsl:when,xsl:with-param},%
5243     alsodigit={-},%
5244 }%

5245 \lst@definelanguage{Ant}[] {XML}%
5246 {morekeywords={%
5247     project,target,patternset,include,exclude,excludesfile,includesfile,filterset,%
5248     filter,filtersfile,libfileset,custom,classpath,fileset,none,depend,mapper,%
5249     filename,not,date,contains,selector,depth,or,and,present,majority,size,dirset,%
5250     filelist,pathelement,path,param,filterreader,extension,filterchain,linecontainsregexp,%
5251     regexp,classconstants,headfilter,tabstospaces,striplinebreaks,tailfilter,stripjavacomments
5252     expandproperties,linecontains,replacetokens,token,striplinecomments,comment,prefixlines,%
5253     classfileset,rootfileset,root,description,xmlcatalog,entity,dtd,substitution,%
5254     extensionSet,propertyfile,entry,vsscheckin,sql,transaction,cvspass,csc,%
5255     dirname,wlrun,wlclasspath,p4label,replaceregexp,get,jjtree,sleep,jarlib,%
5256     dependset,targetfileset,srcfileset,srcfilelist,targetfilelist,zip,zipgroupfileset,zipfiles
5257     patch,jspc,webapp,style,test,arg,jvmarg,sysproperty,testlet,env,tstamp,%
5258     format,unwar,vsshhistory,icontract,cvschangelog,user,p4submit,ccmcheckin,%
5259     p4change,bzip2,vssadd,javadoc,bottom,source,doctitle,header,excludepackage,bootclasspath,%
5260     doclet,taglet,packageset,sourcepath,link,footer,package,group,title,tag,%
5261     translate,signjar,vajload,vajproject,jarlib,extensionset,WsdlToDotnet,buildnumber,%
5262     jpcovmerge,tomcat,ejbjar,weblogictoplink,jboss,borland,weblogic,iplanet,jonas,%
5263     support,websphere,wasclasspath,war,manifest,attribute,section,metainf,lib,%
5264     classes,webinf,rename,sequential,serverdeploy,generic,property,move,%
5265     copydir,cccheckin,wljspc,fixcrlf,sosget,pathconvert,map,record,p4sync,exec,%
5266     p4edit,maudit,rulespath,searchpath,antlr,netrexxc,jpcovreport,reference,filters,%
5267     coveragepath,execon,targetfile,srcfile,ccmcheckout,ant,xmlvalidate,xslt,%
5268     iplanet,ccmcheckintask,gzip,native2ascii,starteam,ear,archives,input,%
5269     rmic,extdirs,compilerarg,checksum,mail,bcc,message,cc,to,from,loadfile,vsscheckout,%
5270     stylebook,soscheckin,mimemail,stlabel,gunzip,concat,cab,touch,parallel,splash,%
5271     antcall,cccheckout,typedef,p4have,xmlproperty,copy,tomcat,antstructure,ccmcreatetask,%
5272     rpm,delete,replace,replacefilter,replacetoken,replacevalue,mmetrics,waitfor,isfalse,%
5273     equals,available,filepath,os,filesmatch,istrue,isset,socket,http,uptodate,srcfiles,%
5274     untar,loadproperties,echoproperties,vajexport,stcheckout,bunzip2,copyfile,vsscreate,%
5275     ejbc,unjar,tomcat,wsdltodotnet,mkdir,condition,cvs,commandline,marker,argument,%
5276     tempfile,junitreport,report,taskdef,echo,ccupdate,java,renameext,vsslabel,basename,%
5277     javadoc2,vsscp,tar,tarfileset,tomcat,vajimport,setproxy,wlstop,p4counter,ilasm,%

```

```

5278     soscheckout,apply,ccuncheckout,jarlib,location,url,cvstagdiff,jlink,mergefiles,%
5279     addfiles,javacc,pvcs,pvcsproject,jarlib,options,depends,chmod,jar,sound,fail,%
5280     success,mparse,blgenclient,genkey,dname,javah,class,ccmreconfigure,unzip,javac,%
5281     src,p4add,soslabel,jpcoverage,triggers,method,vssget,deltree,ddcreator},
5282     deletekeywords={default},%
5283 }
5284 </lang1>

```

This is my first attempt to support XML. It is from 2000/07/18.

```

5285 <*lang1>
5286 \lst@definelanguage{XML}%
5287 {keywords={,CDATA,DOCTYPE,ATTLIST,termdef,ELEMENT,EMPTY,ANY,ID,%
5288     IDREF,IDREFS,ENTITY,ENTITIES,NMTOKEN,NMTOKENS,NOTATION,%
5289     INCLUDE,IGNORE,SYSTEM,PUBLIC,NDATA,PUBLIC,%
5290     PCDATA,REQUIRED,IMPLIED,FIXED,%%% preceded by #
5291     xml,xml:space,xml:lang,version,standalone,default,preserve},%
5292     alsoother=$,%
5293     alsoletter=:,%
5294     tag=**[s]<>,%
5295     morestring=[d]",% ??? doubled
5296     morestring=[d]',% ??? doubled
5297     MoreSelectCharTable=%
5298         \lst@CArgX--\relax\lst@DefDelimB{}{}%
5299         {\ifnum\lst@mode=\lst@tagmode\else
5300             \expandafter\@gobblethree
5301             \fi}%
5302         \lst@BeginComment\lst@commentmode{{\lst@commentstyle}}%
5303         \lst@CArgX--\relax\lst@DefDelimE{}{}{}%
5304         \lst@EndComment\lst@commentmode
5305         \lst@CArgX[CDATA[\relax\lst@CDef{}]%
5306         {\ifnum\lst@mode=\lst@tagmode
5307             \expandafter\lst@BeginCDATA
5308             \else \expandafter\lst@CArgEmpty
5309             \fi}%
5310         \@empty
5311         \lst@CArgX]]\relax\lst@CDef{}%
5312         {\ifnum\lst@mode=\lst@GPmode
5313             \expandafter\lst@EndComment
5314             \else \expandafter\lst@CArgEmpty
5315             \fi}%
5316         \@empty
5317     }[keywords,comments,strings,html]%

```

And after receiving a bug report from Michael Niedermair I converted the version 0.21 contents of MoreSelectCharTable to version 1.0.

```

5318 </lang1>

```