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.

Contents

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

54 ⟨*config⟩
```

We mainly define default dialects.

```
55 \ProvidesFile{listings.cfg}[2014/09/06 1.5e listings configuration]
56 \def\lstlanguagefiles
57     {lstlang0.sty,lstlang1.sty,lstlang2.sty,lstlang3.sty}
58 \lstset{defaultdialect=[R/3 6.10]ABAP,
59         defaultdialect=[2005]Ada,
60         defaultdialect=[68]Algol,
61         defaultdialect=[gnu]Awk,
62         defaultdialect=[ANSI]C,
63         defaultdialect=[light]Caml,
64         defaultdialect=[1985]Cobol,
65         defaultdialect=[WinXP]command.com,
66         defaultdialect=[ISO]C++,
67         defaultdialect=[95]Fortran,
68         defaultdialect=[5.2]Mathematica,
69         defaultdialect=[OMG]OCL,
70         defaultdialect=[Standard]Pascal,
71         defaultdialect=[67]Simula,
72         defaultdialect=[plain]TeX,
73         defaultdialect=[97]VRML}
74 \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.

```
75 \lstalias[6.1]{ABAP}[R/3 6.10]{ABAP}
76 \lstalias[3.1]{ABAP}[R/3 3.1C]{ABAP}
77 \lstalias[4.6]{ABAP}[R/3 4.6C]{ABAP}
```

4

78 ⟨/config⟩

79 ⟨+lang1⟩\ProvidesFile{lstlang1.sty}
80 ⟨+lang2⟩\ProvidesFile{lstlang2.sty}
81 ⟨+lang3⟩\ProvidesFile{lstlang3.sty}
82 ⟨+acm-prf⟩\ProvidesFile{listings-acm.prf}
83 ⟨+bash-prf⟩\ProvidesFile{listings-bash.prf}
84 ⟨+fortran-prf⟩\ProvidesFile{listings-fortran.prf}
85 ⟨+lua-prf⟩\ProvidesFile{listings-lua.prf}
86 ⟨+python-prf⟩\ProvidesFile{listings-python.prf}
87 ⟨-config⟩   [2014/09/06 1.5e listings language file]

2   Language drivers

2.1   Abap

Knut Lickert added support for Abap.[1]

88 ⟨∗lang2⟩

89 %%
90 %% Abap definition by Knut Lickert
91 %%

There are some other new commands in release 6.10. They will follow later, but up to now I don't work with 6.10.

92 \lst@definelanguage[R/3 6.10]{ABAP}[R/3 4.6C]{ABAP}%
93   {morekeywords={try,endtry},%
94   }[keywords,comments,strings]

95 \lst@definelanguage[R/3 4.6C]{ABAP}[R/3 3.1]{ABAP}%
96   {morekeywords={method,ref,class,create,object,%
97   methods,endmethod,private,protected,public,section,%
98   catch,system-exceptions,endcatch,%
99   },%
100   moreprocnamekeys={class},%
101   literate={->}{{$\rightarrow$}}1{=>}{{$\Rightarrow$}}1,%
102   }[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.

103 \lst@definelanguage[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.

104 \lst@definelanguage[R/2 5.0]{ABAP}%
105   {sensitive=f,%
106   procnamekeys={report,program,form,function,module},%
107   morekeywords={*,add,after,alias,analyzer,and,append,appending,area,assign,at,%

---

[1]In this section 'I' is Knut Lickert.

5

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

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

```
137 \lst@definelanguage[R/2 4.3]{ABAP}[R/2 5.0]{ABAP}%
138   {deletekeywords={function,importing,exporting,changing,exceptions,%
139        raise,raising}%
140   }[keywords,comments,strings]
141 ⟨/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.

```
142 ⟨∗lang2⟩
143 %%
144 %% ACM and ACMscript definition
145 %% (c) 2013 Stefan Pinnow
146 %%
147 \lst@definelanguage{ACM}{
```

```
148    morekeywords={
149      abs,After,acos,And,As,asin,atan,At,Call,Compatibility,Connect,cos,cosh,%
150      Create,Delay,Difference,Do,Else,ElseIf,End,EndFor,EndIf,EndParallel,%
151      EndState,EndSwitch,EndText,EndWith,exp,External,Fixed,For,ForEach,Free,%
152      Global,Hidden,If,Implementation,In,Initial,Input,InterSection,%
153      IntegerSet,Invoke,Is,Language,Library,Link,Log10,LogE,Max,Min,Model,Of,%
154      Once,Options,Output,Parallel,Parameter,Pause,Port,Print,Private,%
155      Procedure,Product,Ramp,Repeat,Restart,Return,Round,Runs,Sigma,sin,sinh,%
156      Size,SnapShot,sqr,sqrt,SRamp,State,Stream,StringSet,Structure,Switch,%
157      SubRoutine,SymDiff,tan,tanh,Task,Text,Time,Then,Truncate,Union,Until,%
158      Uses,Variable,Wait,When,With,WithIn,WorkSpace%
159    },%
160    sensitive=false,%
161    morecomment=[l]{//},%
162    morecomment=[s]{/*}{*/},%
163    string=[b]{"},%
164 }[keywords,comments,strings]%
```

165 ⟨/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.

166 ⟨*lang2⟩

```
167 \lst@definelanguage{ACMscript}[]{VBScript}{%
168    morekeywords={%
169      ElseIf,False,In,Resume,True%
170    },%
171    deletekeywords={%
172      Abs,Array,Clear,CreateObject,CStr,Err,ForReading,ForWriting,%
173      OpenTextFile,Replace,WriteLine%
174    }%
175 }[keywords,comments,strings]%
```

176 ⟨/lang2⟩

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

177 ⟨*acm-prf⟩

```
178 \usepackage[rgb, x11names]{xcolor}
179
180 \definecolor{Comments}{rgb}{0.00,0.50,0.00}
181 \definecolor{KeyWords}{rgb}{0.00,0.00,0.63}
182 \definecolor{Strings}{rgb}{0.84,0.00,0.00}
183
184 \lstdefinestyle{ACM}{%
185    basicstyle=\scriptsize\ttfamily,%
186    keywordstyle=\color{KeyWords},%
187    showstringspaces=false,%
188    identifierstyle=\color{black},%
189    commentstyle=\color{Comments},%
```

```
190   stringstyle=\color{Strings},%
191   frame=shadowbox,%                % for ACM-Code scrartcl commented out
192 %   frame=l,%                      % line on the left side
193   rulesepcolor=\color{black},%
194   numbers=left,%                   % left
195   firstnumber=1,%
196   stepnumber=5,%
197   columns=fixed,%                  % to prevent inserting spaces
198   fontadjust=true,%
199   basewidth=0.5em,%
200   captionpos=t,%
201   abovecaptionskip=\smallskipamount,% same amount as default
202   belowcaptionskip=\smallskipamount,% in caption package
203 }%
```

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

204 ⟨/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.

205 ⟨∗lang1⟩

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

217 ⟨/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.

218 ⟨∗lang1⟩

```
219 %%
220 %% Ada 95 definition (c) Torsten Neuer
221 %%
222 %% Ada 2005 definition (c) 2006 Santiago Urue\~{n}a Pascual
223 %%                            <Santiago.Uruena@upm.es>
224 %%
225 \lst@definelanguage[2005]{Ada}[95]{Ada}%
226   {morekeywords={interface,overriding,synchronized}}%

227 \lst@definelanguage[95]{Ada}[83]{Ada}%
228   {morekeywords={abstract,aliased,protected,requeue,tagged,until}}%

229 \lst@definelanguage[83]{Ada}%
230   {morekeywords={abort,abs,accept,access,all,and,array,at,begin,body,%
231       case,constant,declare,delay,delta,digits,do,else,elsif,end,entry,%
232       exception,exit,for,function,generic,goto,if,in,is,limited,loop,%
233       mod,new,not,null,of,or,others,out,package,pragma,private,%
234       procedure,raise,range,record,rem,renames,return,reverse,select,%
235       separate,subtype,task,terminate,then,type,use,when,while,with,%
236       xor},%
237   sensitive=f,%
238   morecomment=[l]--,%
239   morestring=[m]",% percent not defined as stringizer so far
240   morestring=[m]'%
241   }[keywords,comments,strings]%

242 ⟨/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 ¢.

```
243 ⟨*lang3⟩

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

```
255    morecomment=[s]{\#}{\#},%
256    keywordcomment={co,comment}%
257   }[keywords,comments,keywordcomments]%

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

2.6   Assembler

Credits go to Michael Franke.

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

Credits go to Andrew Zabolotny.

```
284 ⟨∗lang3⟩
285 %%
286 %% x86masm definition (c) 2002 Andrew Zabolotny
287 %%
288 \lst@definelanguage[x86masm]{Assembler}%
289   {morekeywords={al,ah,ax,eax,bl,bh,bx,ebx,cl,ch,cx,ecx,dl,dh,dx,edx,%
290       si,esi,di,edi,bp,ebp,sp,esp,cs,ds,es,ss,fs,gs,cr0,cr1,cr2,cr3,%
291       db0,db1,db2,db3,db4,db5,db6,db7,tr0,tr1,tr2,tr3,tr4,tr5,tr6,tr7,%
292       st,aaa,aad,aam,aas,adc,add,and,arpl,bound,bsf,bsr,bswap,bt,btc,%
293       btr,bts,call,cbw,cdq,clc,cld,cli,clts,cmc,cmp,cmps,cmpsb,cmpsw,%
294       cmpsd,cmpxchg,cwd,cwde,daa,das,dec,div,enter,hlt,idiv,imul,in,%
295       inc,ins,int,into,invd,invlpg,iret,ja,jae,jb,jbe,jc,jcxz,jecxz,%
296       je,jg,jge,jl,jle,jna,jnae,jnb,jnbe,jnc,jne,jng,jnge,jnl,jnle,%
297       jno,jnp,jns,jnz,jo,jp,jpe,jpo,js,jz,jmp,lahf,lar,lea,leave,lgdt,%
```

```
298        lidt,lldt,lmsw,lock,lods,lodsb,lodsw,lodsd,loop,loopz,loopnz,%
299        loope,loopne,lds,les,lfs,lgs,lss,lsl,ltr,mov,movs,movsb,movsw,%
300        movsd,movsx,movzx,mul,neg,nop,not,or,out,outs,pop,popa,popad,%
301        popf,popfd,push,pusha,pushad,pushf,pushfd,rcl,rcr,rep,repe,%
302        repne,repz,repnz,ret,retf,rol,ror,sahf,sal,sar,sbb,scas,seta,%
303        setae,setb,setbe,setc,sete,setg,setge,setl,setle,setna,setnae,%
304        setnb,setnbe,setnc,setne,setng,setnge,setnl,setnle,setno,setnp,%
305        setns,setnz,seto,setp,setpe,setpo,sets,setz,sgdt,shl,shld,shr,%
306        shrd,sidt,sldt,smsw,stc,std,sti,stos,stosb,stosw,stosd,str,sub,%
307        test,verr,verw,wait,wbinvd,xadd,xchg,xlatb,xor,fabs,fadd,fbld,%
308        fbstp,fchs,fclex,fcom,fcos,fdecstp,fdiv,fdivr,ffree,fiadd,ficom,%
309        fidiv,fidivr,fild,fimul,fincstp,finit,fist,fisub,fisubr,fld,fld1,%
310        fldl2e,fldl2t,fldlg2,fldln2,fldpi,fldz,fldcw,fldenv,fmul,fnop,%
311        fpatan,fprem,fprem1,fptan,frndint,frstor,fsave,fscale,fsetpm,%
312        fsin,fsincos,fsqrt,fst,fstcw,fstenv,fstsw,fsub,fsubr,ftst,fucom,%
313        fwait,fxam,fxch,fxtract,fyl2x,fyl2xp1,f2xm1},%
314    morekeywords=[2]{.align,.alpha,assume,byte,code,comm,comment,.const,%
315        .cref,.data,.data?,db,dd,df,dosseg,dq,dt,dw,dword,else,end,endif,%
316        endm,endp,ends,eq,equ,.err,.err1,.err2,.errb,.errdef,.errdif,%
317        .erre,.erridn,.errnb,.errndef,.errnz,event,exitm,extrn,far,%
318        .fardata,.fardata?,fword,ge,group,gt,high,if,if1,if2,ifb,ifdef,%
319        ifdif,ife,ifidn,ifnb,ifndef,include,includelib,irp,irpc,label,%
320        .lall,le,length,.lfcond,.list,local,low,lt,macro,mask,mod,.model,%
321        name,ne,near,offset,org,out,page,proc,ptr,public,purge,qword,.%
322        radix,record,rept,.sall,seg,segment,.seq,.sfcond,short,size,%
323        .stack,struc,subttl,tbyte,.tfcond,this,title,type,.type,width,%
324        word,.xall,.xcref,.xlist},%
325    alsoletter=.,alsodigit=?,%
326    sensitive=f,%
327    morestring=[b]",%
328    morestring=[b]',%
329    morecomment=[l];%
330    }[keywords,comments,strings]
331 ⟨/lang3⟩
```

2.7 Awk

Thanks to Dr. Christoph Giess for providing these definitions.

```
332 ⟨∗lang1⟩
333 %%
334 %% awk definitions (c) Christoph Giess
335 %%
336 \lst@definelanguage[gnu]{Awk}[POSIX]{Awk}%
337   {morekeywords={and,asort,bindtextdomain,compl,dcgettext,gensub,%
338       lshift,mktime,or,rshift,strftime,strtonum,systime,xor,extension}%
339   }%

340 \lst@definelanguage[POSIX]{Awk}%
341   {keywords={BEGIN,END,close,getline,next,nextfile,print,printf,%
342       system,fflush,atan2,cos,exp,int,log,rand,sin,sqrt,srand,gsub,%
```

```
343     index,length,match,split,sprintf,strtonum,sub,substr,tolower,%
344     toupper,if,while,do,for,break,continue,delete,exit,function,%
345     return},%
346   sensitive,%
347   morecomment=[l]\#,%
348   morecomment=[l]//,%
349   morecomment=[s]{/*}{*/},%
350   morestring=[b]"%
351  }[keywords,comments,strings]%
352 ⟨/lang1⟩
```

2.8   Basic

Credits go to Robert Frank.

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

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

```
438        DropDown,EditProperty,EnterCell,EnterFocus,Event,ExitFocus,%
439        Expand,FootnoteActivated,FootnoteSelected,FootnoteUpdated,%
440        GotFocus,HeadClick,InfoMessage,Initialize,IniProperties,%
441        ItemActivated,ItemAdded,ItemCheck,ItemClick,ItemReloaded,%
442        ItemRemoved,ItemRenamed,ItemSeletected,KeyDown,KeyPress,KeyUp,%
443        LeaveCell,LegendActivated,LegendSelected,LegendUpdated,%
444        LinkClose,LinkError,LinkNotify,LinkOpen,Load,LostFocus,%
445        MouseDown,MouseMove,MouseUp,NodeClick,ObjectMove,%
446        OLECompleteDrag,OLEDragDrop,OLEDragOver,OLEGiveFeedback,%
447        OLESetData,OLEStartDrag,OnAddNew,OnComm,Paint,PanelClick,%
448        PanelDblClick,PathChange,PatternChange,PlotActivated,%
449        PlotSelected,PlotUpdated,PointActivated,PointLabelActivated,%
450        PointLabelSelected,PointLabelUpdated,PointSelected,%
451        PointUpdated,PowerQuerySuspend,PowerResume,PowerStatusChanged,%
452        PowerSuspend,QueryChangeConfig,QueryComplete,QueryCompleted,%
453        QueryTimeout,QueryUnload,ReadProperties,Reposition,%
454        RequestChangeFileName,RequestWriteFile,Resize,ResultsChanged,%
455        RowColChange,RowCurrencyChange,RowResize,RowStatusChanged,%
456        SelChange,SelectionChanged,SendComplete,SendProgress,%
457        SeriesActivated,SeriesSelected,SeriesUpdated,SettingChanged,%
458        SplitChange,StateChanged,StatusUpdate,SysColorsChanged,%
459        Terminate,TimeChanged,TitleActivated,TitleSelected,%
460        TitleActivated,UnboundAddData,UnboundDeleteRow,%
461        UnboundGetRelativeBookmark,UnboundReadData,UnboundWriteData,%
462        Unload,UpClick,Updated,Validate,ValidationError,WillAssociate,%
463        WillChangeData,WillDissociate,WillExecute,WillUpdateRows,%
464        WithEvents,WriteProperties},% VB-events
465    morekeywords=[4]{AppActivate,Base,Beep,Call,Case,ChDir,ChDrive,%
466        Const,Declare,DefBool,DefByte,DefCur,DefDate,DefDbl,DefDec,%
467        DefInt,DefLng,DefObj,DefSng,DefStr,Deftype,DefVar,DeleteSetting,%
468        Dim,Do,Else,ElseIf,End,Enum,Erase,Event,Exit,Explicit,FileCopy,%
469        For,ForEach,Friend,Function,Get,GoSub,GoTo,If,Implements,Kill,%
470        Let,LineInput,Lock,Lset,MkDir,Name,Next,OnError,On,Option,%
471        Private,Property,Public,Put,RaiseEvent,Randomize,ReDim,Rem,%
472        Reset,Resume,Return,RmDir,Rset,SavePicture,SaveSetting,%
473        SendKeys,SetAttr,Static,Sub,Then,Type,Unlock,Wend,While,Width,%
474        With,Write},% statements
475    sensitive=false,%
476    keywordcomment=rem,%
477    MoreSelectCharTable=\def\lst@BeginKC@{% chmod
478        \lst@ResetToken
479        \lst@BeginComment\lst@GPmode{{\lst@commentstyle}%
480                    \lst@Lmodetrue\lst@modetrue}\@empty},%
481    morecomment=[l]{'},%
482    morecomment=[s]{/*}{*/},%
483    morestring=[b]",%
484    }[keywords,comments,strings,keywordcomments]
485 ⟨/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

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

2.10   Corba IDL

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

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

15

```
524    }[keywords,comments,strings,directives]%
525 ⟨/lang2⟩
```

2.11   C, C++, et al

```
526 ⟨*lang1⟩
```

Michael Fiedler provided the following list of new introduced keywords for C++11.
```
527 \lst@definelanguage[11]{C++}[ISO]{C++}%
528    {morekeywords={alignas,alignof,char16_t,char32_t,constexpr,%
529        decltype,noexcept,nullptr,static_assert,thread_local},%
530    }%
```

Michael Piefel suggested some more changes and added GNU C++. For compatibility the 'ANSI' language is defined in terms of ISO.
```
531 \lst@definelanguage[ANSI]{C++}[ISO]{C++}{}%
```

Michael Piefel suggested some more changes and added GNU C++.
```
532 \lst@definelanguage[GNU]{C++}[ISO]{C++}%
533    {morekeywords={__attribute__,__extension__,__restrict,__restrict__,%
534        typeof,__typeof__},%
535    }%
536 \lst@definelanguage[Visual]{C++}[ISO]{C++}%
537    {morekeywords={__asm,__based,__cdecl,__declspec,dllexport,%
538        dllimport,__except,__fastcall,__finally,__inline,__int8,__int16,%
539        __int32,__int64,naked,__stdcall,thread,__try,__leave},%
540    }%
541 \lst@definelanguage[ISO]{C++}[ANSI]{C}%
542    {morekeywords={and,and_eq,asm,bad_cast,bad_typeid,bitand,bitor,bool,%
543        catch,class,compl,const_cast,delete,dynamic_cast,explicit,export,%
544        false,friend,inline,mutable,namespace,new,not,not_eq,operator,or,%
545        or_eq,private,protected,public,reinterpret_cast,static_cast,%
546        template,this,throw,true,try,typeid,type_info,typename,using,%
547        virtual,wchar_t,xor,xor_eq},%
548    }%
549 ⟨/lang1⟩
```

Objective-C is due to Detlev Dröge.
```
550 ⟨*lang1⟩
551 %%
552 %% Objective-C definition (c) 1997 Detlev Droege
553 %%
554 \lst@definelanguage[Objective]{C}[ANSI]{C}
555    {morekeywords={bycopy,id,in,inout,oneway,out,self,super,%
556        @class,@defs,@encode,@end,@implementation,@interface,@private,%
557        @protected,@protocol,@public,@selector},%
558     moredirectives={import}%
559    }%
560 ⟨/lang1⟩
```

Jörg Viermann provided the keywords for Handel-C.

561 ⟨∗lang1⟩

562 %%
563 %% Handel-C definition, refer http://www.celoxica.com
564 %%
565 \lst@definelanguage[Handel]{C}[ANSI]{C}
566   {morekeywords={assert,chan,chanin,chanout,clock,delay,expr,external,%
567   external_divide,family,ifselect,in,inline,interface,internal,%
568   internal_divid,intwidth,let,macro,mpram,par,part,prialt,proc,ram,%
569   releasesema,reset,rom,select,sema,set,seq,shared,signal,try,%
570   reset,trysema,typeof,undefined,width,with,wom},%
571   }%

572 ⟨/lang1⟩

573 ⟨∗lang1⟩

574 \lst@definelanguage[ANSI]{C}%
575   {morekeywords={auto,break,case,char,const,continue,default,do,double,%
576   else,enum,extern,float,for,goto,if,int,long,register,return,%
577   short,signed,sizeof,static,struct,switch,typedef,union,unsigned,%
578   void,volatile,while},%
579   sensitive,%
580   morecomment=[s]{/*}{*/},%
581   morecomment=[l]//,% nonstandard
582   morestring=[b]",%
583   morestring=[b]',%
584   moredelim=*[directive]\#,%
585   moredirectives={define,elif,else,endif,error,if,ifdef,ifndef,line,%
586   include,pragma,undef,warning}%
587   }[keywords,comments,strings,directives]%

588 ⟨/lang1⟩

589 ⟨∗lang1⟩

Thanks go to Martin Brodbeck.

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

17

```
605    morecomment=[l]//,%
606    morestring=[b]"
607  }[keywords,comments,strings]%
```

608 ⟨/lang1⟩

2.12   Caml and Objective Caml

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

609 ⟨*lang2⟩

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

634 ⟨/lang2⟩

2.13   Common Intermediate Language

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

635 ⟨*lang3⟩

```
636 \lstdefinelanguage{CIL}%
637   {morekeywords=[1]{assembly,beforefieldinit,class,default,cdecl,cil,corflags,%
638                   culture,custom,data,entrypoint,fastcall,field,file,%
639                   hidebysig,hash,il,imagebase,locals,managed,marshall,%
640                   maxstack,mresource,method,module,namespace,publickey,%
641                   stdcall,subsystem,thiscall,unmanaged,vararg,ver,vtfixup,%
```

```
642                        % types
643                         bool,char,float32,float64,int,int8,int16,int32,%
644                         int64,method,native,object,string,modopt,modreq,pinned,%
645                         typedref,valuetype,unsigned,void,%
646                        % defining types
647                         abstract,ansi,auto,autochar,beforefieldinit,boxed,class,%
648                         explicit,extends,implements,interface,famandassem,family,%
649                         famorassem,inherits,nested,override,pack,private,property,%
650                         public,rtspecialname,sealed,sequential,serializable,size,%
651                         specialname,static,unicode,%
652                        % postfix
653                         algorithm,alignment,extern,init,from,nometadata,with},%
654   morekeywords=[2]{add,and,arglist,beq,bge,bgt,ble,blt,bne,br,break,brfalse,%
655                         brtrue,call,calli,ceq,cgt,ckfinite,clt,conv,cpblk,div,%
656                         dup,endfilter,endfinally,initblk,jmp,ldarg,ldarga,ldc,%
657                         ldftn,ldind,ldloc,ldloca,ldnull,leave,localloc,mul,neg,%
658                         nop,not,or,pop,rem,ret,shl,shr,starg,stind,stloc,sub,%
659                         switch,xor,%
660                        % prefix
661                         tail,unaligned,volatile,%
662                        % postfix
663                         un,s,ovf,%
664                        % object
665                         box,callvirt,castclass,cpobj,cctor,ctor,initobj,isinst,%
666                         ldelem,ldelema,ldfld,ldflda,ldlen,ldobj,ldsfld,ldsflda,%
667                         ldstr,ldtoken,ldvirtftn,mkrefany,newarr,newobj,refanytype,%
668                         refanyval,rethrow,sizeof,stelem,stfld,stobj,stsfld,throw,%
669                         unbox},%
670   sensitive=true,%
671   morecomment=[l]{//},%
672   morestring=[b]"%
673 }[keywords,comments,strings]%

674 ⟨/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.

```
675 ⟨*lang2⟩

676 \lst@definelanguage[ibm]{Cobol}[1985]{Cobol}%
677   {morekeywords={ADDRESS,BEGINNING,COMP-3,COMP-4,COMPUTATIONAL,%
678       COMPUTATIONAL-3,COMPUTATIONAL-4,DISPLAY-1,EGCS,EJECT,ENDING,%
679       ENTRY,GOBACK,ID,MORE-LABELS,NULL,NULLS,PASSWORD,RECORDING,%
680       RETURN-CODE,SERVICE,SKIP1,SKIP2,SKIP3,SORT-CONTROL,SORT-RETURN,%
681       SUPPRESS,TITLE,WHEN-COMPILED},%
682   }%
```

```
683 \lst@definelanguage[1985]{Cobol}[1974]{Cobol}%
684   {morekeywords={ALPHABET,ALPHABETIC-LOWER,ALPHABETIC-UPPER,%
685       ALPHANUMERIC,ALPHANUMERIC-EDITED,ANY,CLASS,COMMON,CONTENT,%
686       CONTINUE,DAY-OF-WEEK,END-ADD,END-CALL,END-COMPUTE,END-DELETE,%
687       END-DIVIDE,END-EVALUATE,END-IF,END-MULTIPLY,END-PERFORM,END-READ,%
688       END-RECEIVE,END-RETURN,END-REWRITE,END-SEARCH,END-START,%
689       END-STRING,END-SUBTRACT,END-UNSTRING,END-WRITE,EVALUATE,EXTERNAL,%
690       FALSE,GLOBAL,INITIALIZE,NUMERIC-EDITED,ORDER,OTHER,%
691       PACKED-DECIMAL,PADDING,PURGE,REFERENCE,RELOAD,REPLACE,STANDARD-1,%
692       STANDARD-2,TEST,THEN,TRUE},%
693   }%
694 \lst@definelanguage[1974]{Cobol}%
695   {morekeywords={ACCEPT,ACCESS,ADD,ADVANCING,AFTER,ALL,ALPHABETIC,ALSO,%
696       ALTER,ALTERNATE,AND,ARE,AREA,AREAS,ASCENDING,ASSIGN,AT,AUTHOR,%
697       BEFORE,BINARY,BLANK,BLOCK,BOTTOM,BY,CALL,CANCEL,CD,CF,CH,%
698       CHARACTER,CHARACTERS,CLOCK-UNITS,CLOSE,COBOL,CODE,CODE-SET,%
699       COLLATING,COLUMN,COMMA,COMMUNICATION,COMP,COMPUTE,CONFIGURATION,%
700       CONTAINS,CONTROL,CONTROLS,CONVERTING,COPY,CORR,CORRESPONDING,%
701       COUNT,CURRENCY,DATA,DATE,DATE-COMPILED,DATE-WRITTEN,DAY,DE,%
702       DEBUG-CONTENTS,DEGUB-ITEM,DEBUG-LINE,DEBUG-NAME,DEBUG-SUB1,%
703       DEBUG-SUB2,DEBUG-SUB3,DEBUGGING,DECIMAL-POINT,DECLARATIVES,%
704       DELETE,DELIMITED,DELIMITER,DEPENDING,DESCENDING,DESTINATION,%
705       DETAIL,DISABLE,DISPLAY,DIVIDE,DIVISION,DOWN,DUPLICATES,DYNAMIC,%
706       EGI,ELSE,EMI,ENABLE,END,END-OF-PAGE,ENTER,ENVIRONMENT,EOP,EQUAL,%
707       ERROR,ESI,EVERY,EXCEPTION,EXIT,EXTEND,FD,FILE,FILE-CONTROL,%
708       FILLER,FINAL,FIRST,FOOTING,FOR,FROM,GENERATE,GIVING,GO,GREATER,%
709       GROUP,HEADING,HIGH-VALUE,HIGH-VALUES,I-O,I-O-CONTROL,%
710       IDENTIFICATION,IF,IN,INDEX,INDEXED,INDICATE,INITIAL,INITIATE,%
711       INPUT,INPUT-OUTPUT,INSPECT,INSTALLATION,INTO,INVALID,IS,JUST,%
712       JUSTIFIED,KEY,LABEL,LAST,LEADING,LEFT,LENGTH,LESS,LIMIT,LIMITS,%
713       LINAGE,LINAGE-COUNTER,LINE,LINE-COUNTER,LINES,LINKAGE,LOCK,%
714       LOW-VALUE,LOW-VALUES,MEMORY,MERGE,MESSAGE,MODE,MODULES,MOVE,%
715       MULTIPLE,MULTIPLY,NATIVE,NEGATIVE,NEXT,NO,NOT,NUMBER,NUMERIC,%
716       OBJECT-COMPUTER,OCCURS,OF,OFF,OMITTED,ON,OPEN,OPTIONAL,OR,%
717       ORGANIZATION,OUTPUT,OVERFLOW,PAGE,PAGE-COUNTER,PERFORM,PF,PH,PIC,%
718       PICTURE,PLUS,POINTER,POSITION,PRINTING,POSITIVE,PRINTING,%
719       PROCEDURE,PROCEDURES,PROCEED,PROGRAM,PROGRAM-ID,QUEUE,QUOTE,%
720       QUOTES,RANDOM,RD,READ,RECEIVE,RECORD,RECORDING,RECORDS,REDEFINES,%
721       REEL,REFERENCES,RELATIVE,RELEASE,REMAINDER,REMOVAL,RENAMES,%
722       REPLACING,REPORT,REPORTING,REPORTS,RERUN,RESERVE,RESET,RETURN,%
723       REVERSED,REWIND,REWRITE,RF,RH,RIGHT,ROUNDED,RUN,SAME,SD,SEARCH,%
724       SECTION,SECURITY,SEGMENT,SEGMENT-LIMIT,SELECT,SEND,SENTENCE,%
725       SEPARATE,SEQUENCE,SEQUENTIAL,SET,SIGN,SIZE,SORT,SORT-MERGE,%
726       SOURCE,SOURCE-COMPUTER,SPACE,SPACES,SPECIAL-NAMES,STANDARD,START,%
727       STATUS,STOP,STRING,SUB-QUEUE-1,SUB-QUEUE-2,SUB-QUEUE-3,SUBTRACT,%
728       SUM,SYMBOLIC,SYNC,SYNCHRONIZED,TABLE,TALLYING,TAPE,TERMINAL,%
729       TERMINATE,TEXT,THAN,THROUGH,THRU,TIME,TIMES,TO,TOP,TRAILING,TYPE,%
730       UNIT,UNSTRING,UNTIL,UP,UPON,USAGE,USE,USING,VALUE,VALUES,VARYING,%
731       WHEN,WITH,WORDS,WORKING-STORAGE,WRITE,ZERO,ZEROES,ZEROS},%
```

```
732    alsodigit=-,%
733    sensitive=f,% ???
734    morecomment=[f][commentstyle][6]*,%
735    morestring=[d]"% ??? doubled
736    }[keywords,comments,strings]%
```

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

737 ⟨/lang2⟩

2.15   Comal 80

The data is from

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

738 ⟨∗lang3⟩

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

748 ⟨/lang3⟩

2.16   COMMAND.COM Batch Files

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

749 ⟨∗lang3⟩

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

```
763    morecomment=[l]{reM},%
764    morecomment=[l]{rEm},%
765    morecomment=[l]{rEM},%
766    morecomment=[l]{Rem},%
767    morecomment=[l]{ReM},%
768    morecomment=[l]{REm},%
769    morecomment=[l]{REM},%
770    morestring=[d]"%
771 }[keywords,comments,strings]%

772 ⟨/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.

```
773 ⟨*lang3⟩

774 \lst@definelanguage{Comsol}%
775    {morekeywords={%
776        adaption,arc1,arc2,arrayr,assemble,asseminit,beziercurve2,block2,%
777        block3,bsplinecurve2,bsplinecurve3,bsplinesurf3,bypassplot,cardg,%
778        ccoeffgroup,chamfer,checkgeom,circ1,circ2,coeff2cell,comsol,%
779        cone2,cone3,Contents,createhexes,createprisms,createquads,csgbl2,%
780        csgbl3,csgcmpbz,csgimplbz,csginitaux,csginitnr,csgproputil,%
781        csgrbconv,csgunique3,csguniquep,csgversion,csgvvovl,curve2,%
782        curve3,cylinder2,cylinder3,dat2str,defastget,display,drawgetobj,%
783        drawreobj,drawsetobj,dst,duplicate,dxflayers,dxfread,dxfwrite,%
784        econe2,econe3,eigloop,elcconstr,elcplbnd,elcplextr,elcplproj,%
785        elcplscalar,elempty,elemreobj,eleqc,eleqw,elevate,elgeom,ellip1,%
786        ellip2,ellipsoid2,ellipsoid3,ellipsoidgen_fl23,elmat,elovar,%
787        elpconstr,elshape,elvar,elvarm,embed,extrude,face3,faceprim3,%
788        fastsetop,fem2jxfem,femblocksu,femdiff,femeig,femexport,femgui,%
789        femimport,femiter,femlab,femlin,femmesh,femmeshexp,femnlin,%
790        femplot,femsfun,femsim,femsimlowlevel,femsimserver,femsol,%
791        femsolver,femstate,femstruct,femtime,femwave,festyle,fieldnames,%
792        fillet,fl1d,fl2d,fl3d,flaction,flafun,flappconvert,flappobj,%
793        flaxisequal,flbase,flbinary,flc1hs,flc2hs,flcanpnt,flcell2draw,%
794        flclear,flcolorbar,flcompact,flconeplot,flcontour2mesh,%
795        flcontour2meshaux,flconvreact,flconvreact1d,flconvreact2d,%
796        flconvreact3d,flcyl,fldc1hs,fldc2hs,fldegree,fldegreer3,%
797        fldegreet3,fldimvarsget,fldisp,fldraw2cell,fldrawnow,fldsmhs,%
798        fldsmsign,flevalmat,flexch,flexchprop,flfastgeom,flform,flgc,%
799        flgcbo,flgdconv,flgeom2cellstr,flgeomadj,flgeomarcize,flgeomec,%
800        flgeomed,flgeomepol,flgeomes,flgeomfc,flgeomfd,flgeomfdp,%
801        flgeomff1,flgeomff2,flgeomfn,flgeomfs,flgeomgetlocalsys,%
802        flgeominit,flgeominitprop,flgeomitransform,flgeomloft,flgeommesh,%
```

```
803        flgeomnbs,flgeomnes,flgeomnmr,flgeomnv,flgeompsinv,flgeomrmsing,%
804        flgeomrotp,flgeomsd,flgeomsdim,flgeomse,flgeomsf2,flgeomspm,%
805        flgeomtransform,flgeomud,flgeomvtx,flgetdraw,flheat,flheat1d,%
806        flheat2d,flheat3d,flhelmholtz,flhelmholtz1d,flhelmholtz2d,%
807        flhelmholtz3d,flim2curve,flinterp1,fliscont,flismember,%
808        flisnumeric,fljaction,fllaplace,fllaplace1d,fllaplace2d,%
809        fllaplace3d,flload,flloadfl,flloadmatfile,flloadmfile,%
810        fllobj2cellstr,flmakeevalstr,flmapsoljac,flmat2str,flmatch,%
811        flmesh2spline,flmesh2splineaux,flml65setup,flngdof,flnull,%
812        flnullorth,flpde,flpdeac,flpdec,flpdec1d,flpdec2d,flpdec3d,%
813        flpdedc,flpdedc2d,flpdedc3d,flpdedf,flpdedf1d,flpdedf2d,%
814        flpdedf3d,flpdees,flpdees2d,flpdees3d,flpdeg,flpdeg1d,flpdeg2d,%
815        flpdeg3d,flpdeht,flpdeht1d,flpdeht2d,flpdeht3d,flpdems,flpdems2d,%
816        flpdems3d,flpdens,flpdens2d,flpdens3d,flpdepn,flpdeps,flpdesm3d,%
817        flpdew,flpdew1d,flpdew2d,flpdew3d,flpdewb,flpdewb1d,flpdewb2d,%
818        flpdewb3d,flpdewc,flpdewc1d,flpdewc2d,flpdewc3d,flpdewe,%
819        flpdewe3d,flpdewp,flpdewp2d,flpdewp3d,flplot,flpoisson,%
820        flpoisson1d,flpoisson2d,flpoisson3d,flpric2,flpric3,flreobj,%
821        flreport,flresolvepath,flsave,flschrodinger,flschrodinger1d,%
822        flschrodinger2d,flschrodinger3d,flsde,flsdp,flsdt,flsetalpha,%
823        flsetdraw,flsmhs,flsmsign,flspnull,fltherm_cond1,fltrg,flversion,%
824        flversions,flverver,flwave,flwave1d,flwave2d,flwave3d,%
825        flwriteghist,formstr,gdsread,gencyl2,gencyl3,genextrude,%
826        genextrudeaux,geom,geom0,geom0get,geom1,geom1get,geom2,geom2get,%
827        geom3,geom3get,geom3j2m,geom3m2j,geomaddlblmargin,geomanalyze,%
828        geomarrayr,geomassign,geomcoerce,geomcomp,geomconnect,geomcopy,%
829        geomcsg,geomdel,geomedit,geomexport,geomfile,geomget,%
830        geomgetlabels,geomgetwrkpln,geomimport,geominfo,geominfoaux,%
831        geomlblplot,geomload,geomnumparse,geomobject,geomparse,geomplot,%
832        geomplot1,geomplot2,geomplot3,geomposition,geomproputil,%
833        geomreconstruct,geomreobj,geomserver,geomspline,geomsurf,%
834        geomupdate,get,getfemgeom,getisocurve,getjptr,getmesh,getsdim,%
835        getvmatrixexch,handlesolnumstr,helix1,helix2,helix3,hexahedron2,%
836        hexahedron3,histfrommat,idst,igesread,importplotdata,isempty,%
837        isfield,isfunc,isscript,javaclass,jproputil,jptr2geom,jptrgeom1,%
838        jptrgeom1_fl23,jptrgeom2,jptrgeom2_fl23,jptrgeom3,jptrgeom3_fl23,%
839        keiter,line1,line2,loadobj,loft,matlabinterpdata,mesh2geom,%
840        meshassign,meshcaseadd,meshcasedel,meshcaseutil,meshcheck,%
841        meshembed,meshenrich,meshenrich1,meshenrich2,meshenrich3,%
842        meshexport,meshextend,meshextrude,meshget,meshimport,meshinit,%
843        meshintegrate,meshmap,meshoptim,meshparse,meshplot,meshplot1,%
844        meshplot2,meshplot3,meshplotproputil,meshpoi,meshproputil,%
845        meshptplot,meshqual,meshrefine,meshrevolve,meshsmooth,%
846        meshsmooth2,meshsweep,meshvolume,minus,mirror,mkreflparams,%
847        mmsolve,modetype,move,moveglobalfields,mphproputil,mtimes,%
848        multiphysics,mypostinterp,notscript,onlyelsconstr,outassign,%
849        paramgeom,pde2draw,pde2equ,pde2fem,pde2geom,pdeblxpd,plus,point1,%
850        point2,point3,poisson,poly1,poly2,postanim,postapplysettings,%
851        postarrow,postarrowbnd,postcolorbar,postcont,postcontdomind,%
852        postcoord,postcopyprop,postcrossplot,postdistrprops,posteval,%
```

```
853        postflow,postfnd,postgeomplot,postgetfem,postgetstylecolor,%
854        postglobaleval,postglobalplot,postgp,postinit,postint,postinterp,%
855        postiso,postlin,postmakecontcol,postmax,postmaxmin,postmin,%
856        postmkcontbar,postmknormexpr,postmovie,postnewplot,%
857        postoldmaxminprops,postpd2pm,postplot,postplotconstants,%
858        postpm2pd,postprinc,postprincbnd,postprocgui,postproputil,%
859        postslice,postsurf,posttet,posttitle,print2file,pyramid2,%
860        pyramid3,rect1,rect2,restorefields,revolve,rmfield,rotate,%
861        rotmatrix,scale,serialize,set,setmesh,sh2str,sharg_2_5,shbub,%
862        shdisc,shdiv,shherm,shlag,shvec,simplecoerce,simreobj,slblocks,%
863        solassign,solid0,solid1,solid2,solid3,solidprim3,solproputil,%
864        solsize,solveraddcases,sphere2,sphere3,spiceimport,splineaux,%
865        split,splittoprim,square1,square2,stlread,submode,submodes,%
866        subsasgn,subsref,tangent,taucs,tetrahedron2,tetrahedron3,%
867        tobsplines,torus2,torus3,transform,update,updateassoc,%
868        updateassocinfo,updatefem,updateguistruct,updateobj,vrmlread,%
869        xmeshinfo,xmeshinit},%
870     sensitive=false,%
871     morecomment=[l]\%,%
872     morestring=[m]'%
873   }[keywords,comments,strings]%

874 ⟨/lang3⟩
```

2.18   bash, csh, and sh

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

```
875 ⟨*lang1⟩

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

Thanks to Riccardo Murri for the following two definitions. Scott Pakin pointed out some missing keywords (`elif`, `in` for `sh`, `caller`, `compopt`, `coproc`, `dirs`, `help`, `mapfile`, `readarray` for `bash`) to the current maintainer. The `sh` list of keywords was checkead against the "Manual of the Bourne Shell on Version 7", found at http://www.in-ulm.de/~mascheck/bourne/v7/, last visited on 2014/09/06.

```
889 %%
```

```
890 %% bash,sh definition (c) 2003 Riccardo Murri <riccardo.murri@gmx.it>
891 %%
892 \lst@definelanguage{bash}[]{sh}%
893   {morekeywords={alias,bg,bind,builtin,caller,command,compgen,compopt,%
894      complete,coproc,declare,disown,dirs,enable,fc,fg,help,history,%
895      jobs,let,local,logout,mapfile,printf,pushd,popd,readarray,select,%
896      set,suspend,shopt,source,times,type,typeset,ulimit,unalias,wait},%
897   }%
898 \lst@definelanguage{sh}%
899   {morekeywords={awk,break,case,cat,cd,continue,do,done,echo,elif,else,%
900      env,esac,eval,exec,exit,export,expr,false,fi,for,function,getopts,%
901      hash,history,if,in,kill,login,newgrp,nice,nohup,ps,pwd,read,%
902      readonly,return,set,sed,shift,test,then,times,trap,true,type,%
903      ulimit,umask,unset,until,wait,while},%
904   morecomment=[l]\#,%
905   morestring=[d]"%
906   }[keywords,comments,strings]%
907 ⟨/lang1⟩
```

Jobst Hoffmann copied the definition of a style for printing Fortran code to a style for printing shell programs:

```
908 ⟨*bash-prf⟩

909 \usepackage[rgb, x11names]{xcolor}

910

911 % common settings
912 \lstset{%
913   frame=tlb,%          the frame is open on the right side
914   resetmargins=false,%
915   rulesepcolor=\color{black},%
916   numbers=left,%              % left
917   numberstyle=\tiny,%
918   numbersep=5pt,%
919   firstnumber=1,%
920   stepnumber=5,%
921   columns=fixed,%              % to prevent inserting spaces
922   fontadjust=true,%
923   keepspaces=true,%
924   basewidth=0.5em,%
925   captionpos=t,%
926   abovecaptionskip=\smallskipamount,% same amount as default
927   belowcaptionskip=\smallskipamount,% in caption package
928 }
929 % settings for colored printing
930 \lstdefinestyle{bash}{%
931   backgroundcolor=\color{yellow!10},%
932   basicstyle=\small\ttfamily,%
933   identifierstyle=\color{black},%
934   keywordstyle=\color{blue},%
935   keywordstyle={[2]\color{cyan}},%
936   keywordstyle={[3]\color{olive}},%
```

25

```
937   stringstyle=\color{teal},%
938   commentstyle=\itshape\color{orange},%
939 }%
940 % settings for back and white printing
941 \lstdefinestyle{bashbw}{%
942   backgroundcolor={},%
943   basicstyle=\small\ttfamily,%
944   identifierstyle={},%
945   keywordstyle=\bfseries,%
946   stringstyle=\itshape,%
947   commentstyle=\slshape,%
948   rulesepcolor=\color{black},%
949 }%
```

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

950 ⟨/bash-prf⟩

2.19   Delphi

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

951 ⟨∗lang2⟩

```
952 \lst@definelanguage{Delphi}%
953   {morekeywords={and,as,asm,array,begin,case,class,const,constructor,%
954       destructor,div,do,downto,else,end,except,exports,file,finally,%
955       for,function,goto,if,implementation,in,inherited,inline,%
956       initialization,interface,is,label,library,mod,nil,not,object,of,%
957       or,packed,procedure,program,property,raise,record,repeat,set,%
958       shl,shr,string,then,to,try,type,unit,until,uses,var,while,with,%
959       xor,%
960       absolute,abstract,assembler,at,cdecl,default,dynamic,export,%
961       external,far,forward,index,name,near,nodefault,on,override,%
962       private,protected,public,published,read,resident,storedDir,%
963       virtual,write},%
964    morendkeywords={Abs,AddExitProc,Addr,AllocMem,AnsiCompareStr,%
965       AnsiCompareText,AnsiLowerCase,AnsiUpperCase,Append,AppendStr,%
966       ArcTan,AssignCrt,Assigned,AssignFile,BlockRead,BlockWrite,Break,%
967       ChangeFileExt,ChDir,Chr,CloseFile,ClrEol,ClrScr,Concat,Continue,%
968       Copy,Cos,CSeg,CursorTo,Date,DateTimeToFileDate,DateTimeToStr,%
969       DateTimeToString,DateToStr,DayOfWeek,Dec,DecodeDate,DecodeTime,%
970       Delete,DeleteFile,DiskFree,DiskSize,Dispose,DisposeStr,%
971       DoneWinCrt,DSeg,EncodeDate,EncodeTime,Eof,Eoln,Erase,Exclude,%
972       Exit,Exp,ExpandFileName,ExtractFileExt,ExtractFileName,%
973       ExtractFilePath,FileAge,FileClose,FileDateToDateTime,FileExists,%
974       FileGetAttr,FileGetDate,FileOpen,FilePos,FileRead,FileSearch,%
975       FileSeek,FileSetAttr,FileSetDate,FileSize,FillChar,FindClose,%
976       FindFirst,FindNext,FloatToDecimal,FloatToStrF,FloatToStr,%
977       FloatToText,FloatToTextFmt,Flush,FmtLoadStr,FmtStr,Format,%
```

```
978        FormatBuf,FormatDateTime,FormatFloat,Frac,Free,FreeMem,GetDir,%
979        GetMem,GotoXY,Halt,Hi,High,Inc,Include,InitWinCrt,Insert,Int,%
980        IntToHex,IntToStr,IOResult,IsValidIdent,KeyPressed,Length,Ln,Lo,%
981        LoadStr,Low,LowerCase,MaxAvail,MemAvail,MkDir,Move,New,NewStr,%
982        Now,Odd,Ofs,Ord,ParamCount,ParamStr,Pi,Pos,Pred,Ptr,Random,%
983        Randomize,Read,ReadBuf,ReadKey,Readln,ReAllocMem,Rename,%
984        RenameFile,Reset,Rewrite,RmDir,Round,RunError,ScrollTo,Seek,%
985        SeekEof,SeekEoln,Seg,SetTextBuf,Sin,SizeOf,SPtr,Sqr,Sqrt,SSeg,%
986        Str,StrCat,StrComp,StrCopy,StrDispose,StrECopy,StrEnd,StrFmt,%
987        StrLCat,StrIComp,StrLComp,StrLCopy,StrLen,StrLFmt,StrLIComp,%
988        StrLower,StrMove,StrNew,StrPas,StrPCopy,StrPos,StrScan,StrRScan,%
989        StrToDate,StrToDateTime,StrToFloat,StrToInt,StrToIntDef,%
990        StrToTime,StrUpper,Succ,Swap,TextToFloat,Time,TimeToStr,%
991        TrackCursor,Trunc,Truncate,TypeOf,UpCase,UpperCase,Val,WhereX,%
992        WhereY,Write,WriteBuf,WriteChar,Writeln},%
993     sensitive=f,%
994     morecomment=[s]{(*}{*)},%
995     morecomment=[s]{\{}{\}},%
996     morecomment=[l]{//},% 2001 Christian Gudrian
997     morestring=[d]'%
998    }[keywords,comments,strings]%

999 ⟨/lang2⟩
```

2.20 Eiffel

Data is from

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

```
1000 ⟨*lang2⟩

1001 \lst@definelanguage{Eiffel}%
1002    {morekeywords={alias,all,and,as,BIT,BOOLEAN,CHARACTER,check,class,%
1003        creation,Current,debug,deferred,do,DOUBLE,else,elseif,end,%
1004        ensure,expanded,export,external,false,feature,from,frozen,if,%
1005        implies,indexing,infix,inherit,inspect,INTEGER,invariant,is,%
1006        like,local,loop,NONE,not,obsolete,old,once,or,POINTER,prefix,%
1007        REAL,redefine,rename,require,rescue,Result,retry,select,%
1008        separate,STRING,strip,then,true,undefine,unique,until,variant,%
1009        when,xor},%
1010     sensitive,%
1011     morecomment=[l]--,%
1012     morestring=[d]",%
1013    }[keywords,comments,strings]%
```

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

```
1014 ⟨/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.

1015 ⟨∗lang3⟩

```
1016 \lst@definelanguage{Elan}%
1017   {morekeywords={ABS,AND,BOOL,CAND,CASE,CAT,COLUMNS,CONCR,CONJ,CONST,%
1018       COR,DECR,DEFINES,DET,DIV,DOWNTO,ELIF,ELSE,END,ENDIF,ENDOP,%
1019       ENDPACKET,ENDPROC,ENDREP,ENDSELECT,FALSE,FI,FILE,FOR,FROM,IF,%
1020       INCR,INT,INV,LEAVE,LENGTH,LET,MOD,NOT,OF,OP,OR,OTHERWISE,PACKET,%
1021       PROC,REAL,REP,REPEAT,ROW,ROWS,SELECT,SIGN,STRUCT,SUB,TEXT,THEN,%
1022       TRANSP,TRUE,TYPE,UNTIL,UPTO,VAR,WHILE,WITH,XOR,%
1023       maxint,sign,abs,min,max,random,initializerandom,subtext,code,%
1024       replace,text,laenge,pos,compress,change,maxreal,smallreal,floor,%
1025       pi,e,ln,log2,log10,sqrt,exp,tan,tand,sin,sind,cos,cosd,arctan,%
1026       arctand,int,real,lastconversionok,put,putline,line,page,get,%
1027       getline,input,output,sequentialfile,maxlinelaenge,reset,eof,%
1028       close,complexzero,complexone,complexi,complex,realpart,imagpart,%
1029       dphi,phi,vector,norm,replace,matrix,idn,row,column,sub,%
1030       replacerow,replacecolumn,replaceelement,transp,errorsstop,stop},%
1031    sensitive,%
1032    morestring=[d]"%
1033   }[keywords,strings]%
```

1034 ⟨/lang3⟩

2.22 Erlang

Thanks to Daniel Gazard.

1035 ⟨∗lang3⟩

```
1036 %%
1037 %% Erlang definition (c) 2003 Daniel Gazard
1038 %%
1039 \lst@definelanguage{erlang}%
1040   {morekeywords={abs,after,and,apply,atom,atom_to_list,band,binary,%
1041       binary_to_list,binary_to_term,bor,bsl,bsr,bxor,case,catch,%
1042       date,div,element,erase,end,exit,export,float,float_to_list,%
1043       get,halt,hash,hd,if,info,import,integer,integer_to_list,%
1044       length,link,list,list_to_atom,list_to_float,list_to_integer,%
1045       list_to_tuple,module,node,nodes,now,of,or,pid,port,ports,%
1046       processes,put,receive,reference,register,registered,rem,%
1047       round,self,setelement,size,spawn,throw,time,tl,trace,trunc,%
1048       tuple,tuple_to_list,unlink,unregister,whereis,error,false,%
1049       infinity,nil,ok,true,undefined,when},%
1050    otherkeywords={->,!,[,],\{,\}},%
1051    morecomment=[l]\%,%
1052    morestring=[b]",%
```

```
1053    morestring=[b]'%
1054    }[keywords,comments,strings]%
```

1055 ⟨/lang3⟩

2.23 Euphoria

Detlef Reimers sent me the language definition.

1056 ⟨*lang2⟩

```
1057 %%
1058 %% Euphoria definition (c) 1998 Detlef Reimers
1059 %%
1060 \lst@definelanguage{Euphoria}%
1061 % for Euphoria 2.0, Rapid Deployment Software, Kanada
1062    {morekeywords={abort,and,and_bits,append,arctan,atom,by,call,%
1063        call_proc,call_func,c_proc,c_func,clear_screen,close,%
1064        command_line,compare,constant,cos,do,date,else,elsif,end,exit,%
1065        find,floor,for,function,getc,getenv,get_key,gets,global,%
1066        get_pixel,if,include,integer,length,log,match,machine_func,%
1067        machine_proc,mem_copy,mem_set,not,not_bits,or,object,open,%
1068        or_bits,procedure,puts,position,prepend,print,printf,power,peek,%
1069        poke,pixel,poke4,peek4s,peek4u,return,rand,repeat,remainder,%
1070        routine_id,sequence,sqrt,sin,system,sprintf,then,type,to,time,%
1071        trace,tan,while,with,without,xor,xor_bits},%
1072    sensitive,%
1073    morecomment=[l]--,%
1074    morestring=[d]',%
1075    morestring=[d]"%
1076    }[keywords,comments,strings]%
```

1077 ⟨/lang2⟩

2.24 Fortran

Took things from

- KARL HANS MÜLLER: **Fortran 77: Programmierungsanleitung**; 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.

1078 ⟨*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.

```
1079 \lst@definelanguage[08]{Fortran}[03]{Fortran}{%
1080   morekeywords={ALL, BLOCK, CODIMENSION, CONCURRENT, CONTIGUOUS, CRITICAL,%
1081     ERROR, LOCK, SUBMODULE, SYNC, UNLOCK},%
```

New procedures in Fortran 2008:

```
1082     morekeywords=[3]{ACOSH,ASINH,ATANH,ATOMIC_DEFINE,ATOMIC_REF,BESSEL_J0,%
1083       BESSEL_J1,BESSEL_JN,BESSEL_Y0,BESSEL_Y1,BESSEL_YN,BGE,BGT,BLE,BLT,%
1084       C_SIZEOF,COMPILER_OPTIONS,COMPILER_VERSION,DSHIFTL,DSHIFTR,ERF,ERFC,%
1085       ERFC_SCALED,EXECUTE_COMMAND_LINE,GAMMA,HYPOT,IALL,IANY,IMAGE_INDEX,%
1086       IPARITY,LCOBOUND,LEADZ,LOG_GAMMA,MASKL,MASKR,MERGE_BITS,NORM2,%
1087       NUM_IMAGES,PARITY,POPCNT,POPPAR,SHIFTA,SHIFTL,SHIFTR,STORAGE_SIZE,%
1088       THIS_IMAGE,TRAILZ,UCOBOUND}%
1089 }%
```

Fortran 2003 introduces the following keywords:

```
1090 \lst@definelanguage[03]{Fortran}[95]{Fortran}{%
1091   morekeywords={ABSTRACT, ASSOCIATE, ASYNCHRONOUS, BIND, CLASS, DEFERRED,%
1092     ENUM, ENUMERATOR, EXTENDS, FINAL, FLUSH, GENERIC, IMPORT,%
1093     NON_OVERRIDABLE, NOPASS, PASS, PROTECTED, VALUE, VOLATILE, WAIT},%
```

These are new options/specifiers:

```
1094     morekeywords=[2]{DECIMAL,ENCODING,IOMSG,ROUND},% corrected NML from NMT
```

And also some new procedures:

```
1095     morekeywords=[3]{C_ASSOCIATED,C_F_POINTER,C_F_PROCPOINTER,C_FUNLOC,%
1096     C_LOC,COMMAND_ARGUMENT_COUNT,EXTENDS_TYPE_OF,GET_COMMAND,GET_COMMAND_ARGUMENT,%
1097     GET_ENVIRONMENT_VARIABLE,IS_IOSTAT_END,MOVE_ALLOC,NEW_LINE,SAME_TYPE_AS,%
1098     SELECTED_CHAR_KIND}%
1099 }%
```

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

```
1100 \lst@definelanguage[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.

```
1101 \lst@definelanguage[95]{Fortran}[77]{Fortran}%
1102   {deletekeywords=SAVE,%
1103     morekeywords={ALLOCATABLE,ALLOCATE,ASSIGNMENT,CASE,%
1104       CONTAINS,CYCLE,DEALLOCATE,DEFAULT,EXIT,INCLUDE,IN,NONE,%
1105       OUT,INTENT,INTERFACE,MODULE,NAMELIST,%
1106       NULLIFY,ONLY,OPERATOR,OPTIONAL,OUT,POINTER,PRIVATE,%
1107       PUBLIC,RECURSIVE,RESULT,SELECT,SEQUENCE,%
1108       TARGET,USE,WHERE,WHILE,BLOCKDATA,DOUBLEPRECISION,%
1109       ENDBLOCKDATA,ENDFILE,ENDFUNCTION,ENDINTERFACE,%
1110       ENDMODULE,ENDPROGRAM,ENDSELECT,ENDSUBROUTINE,ENDTYPE,ENDWHERE,%
1111       INOUT,SELECTCASE,%
```

Theses keys were missing from the 1.4 version of listings:

```
1112       ELEMENTAL, ELSEWHERE, FORALL, PURE},%
```

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

```
1113    morekeywords=[2]{ACTION,ADVANCE,DELIM,IOLENGTH,LEN,NAME,%
1114       NML,PAD,POSITION,READWRITE,SIZE,STAT},% corrected NML from NMT
```

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

```
1115    morekeywords=[3]{ADJUSTL,ADJUSTR,ALL,ALLOCATED,ANY,ASSOCIATED,BIT_SIZE,%
1116       BTEST,CEILING,COUNT,CPU_TIME,CSHIFT,DATE_AND_TIME,DIGITS,DOT_PRODUCT,%
1117       EOSHIFT,EPSILON,EXPONENT,FLOOR,FRACTION,HUGE,IACHAR,IAND,IBCLR,
1118       IBITS,IBSET,ICHAR,IEOR,IOR,ISHFT,ISHFTC,KIND,LBOUND,LEN_TRIM,% left out LOGICAL
1119       MATMUL,MAXEXPONENT,MAXLOC,MAXVAL,MERGE,MINEXPONENT,MINLOC,MINVAL,%
1120       MODULO,MVBITS,NEAREST,NOT,NULL,PACK,PRECISION,PRESENT,PRODUCT,%
1121       RADIX,RANDOM_NUMBER,RANDOM_SEED,RANGE,RANK,REPEAT,RESHAPE,RRSPACING,%
1122       SCALE,SCAN,SELECTED_INT_KIND,SELECTED_REAL_KIND,SET_EXPONENT,SHAPE,%
1123       SINH,SIZE,SPACING,SPREAD,SUM,SYSTEM_CLOCK,TINY,TRANSFER,TRANSPOSE,%
1124       TRIM,UBOUND,UNPACK,VERIFY},%
1125    deletecomment=[f],% no fixed comment line: 1998 Magne Rudshaug
1126    morecomment=[l]!%
1127    }%
```

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').

```
1128 \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.

```
1129    {morekeywords={ASSIGN,BACKSPACE,CALL,CHARACTER,%
1130       CLOSE,COMMON,COMPLEX,CONTINUE,DATA,DIMENSION,DO,DOUBLE,%
1131       ELSE,ELSEIF,END,ENDIF,ENDDO,ENTRY,EQUIVALENCE,EXTERNAL,%
1132       FILE,FORMAT,FUNCTION,GO,TO,GOTO,IF,IMPLICIT,%
1133       INQUIRE,INTEGER,INTRINSIC,LOGICAL,%
1134       OPEN,PARAMETER,PAUSE,PRECISION,PRINT,PROGRAM,READ,REAL,%
1135       RETURN,REWIND,STOP,SUBROUTINE,THEN,%
1136       WRITE,SAVE},%
1137    morekeywords=[2]{ACCESS,BLANK,BLOCK,DIRECT,EOF,ERR,EXIST,%
1138       FMT,FORM,FORMATTED,IOSTAT,NAMED,NEXTREC,NUMBER,OPENED,%
1139       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!)

```
1140    morekeywords=[3]{INT,DBLE,CMPLX,ICHAR,CHAR,AINT,ANINT,% left out real
1141       NINT,ABS,MOD,SIGN,DIM,DPROD,MAX,MIN,AIMAG,CONJG,SQRT,EXP,LOG,%
1142       LOG10,SIN,COS,TAN,ASIN,ACOS,ATAN,ATAN2,SINH,COSH,TANH,LGE,LLE,LLT,%
1143       LEN,INDEX},%
```

And here is the last list: fortran operators:

```
1144    morekeywords=[4]{AND,EQ,EQV,FALSE,GE,GT,OR,LE,LT,NE,NEQV,NOT,TRUE},%
1145    sensitive=f,%% not Fortran-77 standard, but allowed in Fortran-95 %%
1146    morecomment=[f]*,%
```

```
1147    morecomment=[f]C,%
1148    morecomment=[f]c,%
1149    morestring=[d]",%% not Fortran-77 standard, but allowed in Fortran-95 %%
1150    morestring=[d]'%
1151  }[keywords,comments,strings]%
```

1152 ⟨/lang1⟩

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

1153 ⟨∗fortran-prf⟩

```
1154 \usepackage[rgb, x11names]{xcolor}
1155
1156 % common settings
1157 \lstset{%
1158    frame=tlb,%        the frame is open on the right side
1159    resetmargins=false,%
1160    rulesepcolor=\color{black},%
1161    numbers=left,%              % left
1162    numberstyle=\tiny,%
1163    numbersep=5pt,%
1164    firstnumber=1,%
1165    stepnumber=5,%
1166    columns=fixed,%             % to prevent inserting spaces
1167    fontadjust=true,%
1168    keepspaces=true,%
1169    basewidth=0.5em,%
1170    captionpos=t,%
1171    abovecaptionskip=\smallskipamount,% same amount as default
1172    belowcaptionskip=\smallskipamount,% in caption package
1173 }
1174 % settings for colored printing
1175 \lstdefinestyle{fortran}{%
1176    backgroundcolor=\color{yellow!10},%
1177    basicstyle=\small\ttfamily,%
1178    identifierstyle=\color{black},%
1179    keywordstyle=\color{blue},%
1180    keywordstyle={[2]\color{cyan}},%
1181    keywordstyle={[3]\color{olive}},%
1182    stringstyle=\color{teal},%
1183    commentstyle=\itshape\color{orange},%
1184 }%
1185 % settings for back and white printing
1186 \lstdefinestyle{fortranbw}{%
1187    backgroundcolor={},%
1188    basicstyle=\small\ttfamily,%
1189    identifierstyle={},%
1190    keywordstyle=\bfseries,%
1191    stringstyle=\itshape,%
1192    commentstyle=\slshape,%
1193    rulesepcolor=\color{black},%
```

1194 `}%`

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

1195 ⟨/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.

1196 ⟨∗lang2⟩

```
1197 %%
1198 %% GAP definition
1199 %% (c) 2013 Heiko Oberdiek
1200 %%
1201 \lst@definelanguage{GAP}{%
1202   morekeywords={%
1203     Assert,Info,IsBound,QUIT,%
1204     TryNextMethod,Unbind,and,break,%
1205     continue,do,elif,%
1206     else,end,false,fi,for,%
1207     function,if,in,local,%
1208     mod,not,od,or,%
1209     quit,rec,repeat,return,%
1210     then,true,until,while%
1211   },%
1212   sensitive,%
1213   morecomment=[l]\#,%
1214   morestring=[b]",%
1215   morestring=[b]',%
1216 }[keywords,comments,strings]
```

1217 ⟨/lang2⟩

2.26   Guarded Command Language (GCL)

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

1218 ⟨∗lang2⟩

```
1219 %%
1220 %% Guarded Command Language (GCL)  definition
1221 %% (c) 2002 Mark van Eijk
1222 %%
1223 \lst@definelanguage{GCL}%
1224   {morekeywords={const,con,var,array,of,skip,if,fi,do,od,div,mod},%
1225   literate={|[}{\ensuremath{|\hskip -0.1em[}}2%
1226          {]|}{\ensuremath{]\hskip -0.1em|}}2%
```

```
1227    {[]}{\ensuremath{[\hskip -0.1em]}}2%
1228    {->}{\ensuremath{\rightarrow}~}2%
1229    {==}{\ensuremath{\equiv}~}2%
1230    {>=}{\ensuremath{\geq}~}2%
1231    {<=}{\ensuremath{\leq}~}2%
1232    {/\\}{\ensuremath{\land}~}2%
1233    {\\/}{\ensuremath{\lor}~}2%
1234    {!}{\ensuremath{\lnot}}1%
1235    {!=}{\ensuremath{\neq}~}2%
1236    {max}{\ensuremath{\uparrow}}1%
1237    {min}{\ensuremath{\downarrow}}1,%
1238   sensitive=f,%
1239   morecomment=[s]{\{}{\}},%
1240   morestring=[d]'%
1241   }[keywords,comments,strings]%
1242 ⟨/lang2⟩
```

2.27   Gnuplot

Thanks to Dr. Christoph Giess for providing this definition.

```
1243 ⟨*lang2⟩
1244 %%
1245 %% gnuplot definition (c) Christoph Giess
1246 %%
1247 \lst@definelanguage{Gnuplot}%
1248   {keywords={abs,acos,acosh,arg,asin,asinh,atan,atan2,atanh,besj0,%
1249        besj1,besy0,besy1,ceil,cos,cosh,erf,erfc,exp,floor,gamma,ibeta,%
1250        inverf,igamma,imag,invnorm,int,lgamma,log,log10,norm,rand,real,%
1251        sgn,sin,sinh,sqrt,tan,tanh,column,tm_hour,tm_mday,tm_min,tm_mon,%
1252        tm_sec,tm_wday,tm_yday,tm_year,valid,cd,call,clear,exit,fit,%
1253        help,if,load,pause,plot,print,pwd,quit,replot,reread,reset,save,%
1254        set,show,shell,splot,test,update,angles,arrow,autoscale,border,%
1255        boxwidth,clabel,clip,cntrparam,contour,data,dgrid3d,dummy,%
1256        format,function,functions,grid,hidden3d,isosamples,key,keytitle,%
1257        label,logscale,mapping,offsets,output,parametric,pointsize,%
1258        polar,rrange,samples,size,style,surface,terminal,tics,time,%
1259        timefmt,title,trange,urange,variables,view,vrange,xdata,xlabel,%
1260        xmargin,xrange,xtics,mxtics,mytics,xdtics,xmtics,xzeroaxis,%
1261        ydata,ylabel,yrange,ytics,ydtics,ymtics,yzeroaxis,zdata,zero,%
1262        zeroaxis,zlabel,zrange,ztics,zdtics,zmtics,timefm,using,title,%
1263        with,index,every,thru,smooth},%
1264   sensitive,%
1265   comment=[l]\#,%
1266   morestring=[b]",%
1267   morestring=[b]',%
1268   }[keywords,comments,strings]%
1269 ⟨/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).

```
1270 ⟨∗lang2⟩

1271 %%
1272 %% http://gretl.sourceforge.net/gretl-help/cmdref.html
1273 %% (c) 2013 Ignacio D\'iaz-Emparanza
1274 %%
1275 \lst@definelanguage{hansl}{%
1276   % $-variables are internal functions in hansl
1277   keywordsprefix ={\$},
1278   morekeywords={ % hansl commands:
1279     add,adf,anova,append,ar,ar1,%
1280     arbond,arch,arima,biprobit,boxplot,break,%
1281     catch,chow,clear,coeffsum,coint,coint2,%
1282     corr,corrgm,cusum,data,dataset,debug,%
1283     delete,diff,difftest,discrete,dpanel,dummify,%
1284     duration,elif,else,end,endif,endloop,%
1285     eqnprint,equation,estimate,fcast,foreign,fractint,%
1286     freq,function,garch,genr,gmm,gnuplot,%
1287     graphpg,hausman,heckit,help,hsk,hurst,%
1288     if,include,info,intreg,join,kalman,%
1289     kpss,labels,lad,lags,ldiff,leverage,%
1290     levinlin,logistic,logit,logs,loop,mahal,%
1291     makepkg,markers,meantest,mle,modeltab,modprint,%
1292     modtest,mpols,negbin,nls,normtest,nulldata,%
1293     ols,omit,open,orthdev,outfile,panel,%
1294     pca,pergm,poisson,print,printf,probit,%
1295     pvalue,qlrtest,qqplot,quantreg,quit,rename,%
1296     reset,restrict,rmplot,run,runs,scatters,%
1297     sdiff,set,setinfo,setobs,setmiss,shell,%
1298     smpl,spearman,sprintf,square,sscanf,store,%
1299     summary,system,tabprint,textplot,tobit,tsls,%
1300     var,varlist,vartest,vecm,vif,wls,%
1301     xcorrgm,xtab,scalar,series,matrix,string},%
1302   morekeywords=[2]{ %  Functions
1303     abs,acos,acosh,aggregate,argname,%
1304     asin,asinh,atan,atanh,atof,%
1305     bessel,BFGSmax,bkfilt,boxcox,bwfilt,%
1306     cdemean,cdf,cdiv,ceil,cholesky,%
1307     chowlin,cmult,cnorm,colname,colnames,%
1308     cols,corr,corrgm,cos,cosh,%
1309     cov,critical,cum,deseas,det,%
1310     diag,diagcat,diff,digamma,dnorm,%
1311     dsort,dummify,eigengen,eigensym,eigsolve,%
1312     epochday,errmsg,exp,fcstats,fdjac,%
1313     fft,ffti,filter,firstobs,fixname,%
1314     floor,fracdiff,gammafun,getenv,getline,%
```

```
1315    ghk,gini,ginv,halton,hdprod,%
1316    hpfilt,I,imaxc,imaxr,imhof,%
1317    iminc,iminr,inbundle,infnorm,inlist,%
1318    int,inv,invcdf,invmills,invpd,%
1319    irf,irr,isconst,isnan,isnull,%
1320    isodate,iwishart,kdensity,kfilter,ksimul,%
1321    ksmooth,kurtosis,lags,lastobs,ldet,%
1322    ldiff,lincomb,ljungbox,lngamma,log,%
1323    log10,log2,loess,logistic,lower,%
1324    lrvar,max,maxc,maxr,mcorr,%
1325    mcov,mcovg,mean,meanc,meanr,%
1326    median,mexp,min,minc,minr,%
1327    missing,misszero,mlag,mnormal,mols,%
1328    monthlen,movavg,mpols,mrandgen,mread,%
1329    mreverse,mrls,mshape,msortby,muniform,%
1330    mwrite,mxtab,nadarwat,nelem,ngetenv,%
1331    nobs,normal,npv,NRmax,nullspace,%
1332    obs,obslabel,obsnum,ok,onenorm,%
1333    ones,orthdev,pdf,pergm,pmax,%
1334    pmean,pmin,pnobs,polroots,polyfit,%
1335    princomp,prodc,prodr,psd,psdroot,%
1336    pshrink,psum,pvalue,pxsum,qform,%
1337    qnorm,qrdecomp,quadtable,quantile,randgen,%
1338    randgen1,randint,rank,ranking,rcond,%
1339    readfile,regsub,remove,replace,resample,%
1340    round,rownames,rows,sd,sdc,%
1341    sdiff,selifc,selifr,seq,setnote,%
1342    simann,sin,sinh,skewness,sort,%
1343    sortby,sqrt,sscanf,sst,strlen,%
1344    strncmp,strsplit,strstr,strstrip,strsub,%
1345    sum,sumall,sumc,sumr,svd,%
1346    tan,tanh,toepsolv,tolower,toupper,%
1347    tr,transp,trimr,typestr,uniform,%
1348    uniq,unvech,upper,urcpval,values,%
1349    var,varname,varnum,varsimul,vec,%
1350    vech,weekday,wmean,wsd,wvar,%
1351    xmax,xmin,xpx,zeromiss,zeros,%
1352    },%
1353    sensitive=t,%
1354    morecomment=[l]{\#},%
1355    morecomment=[s]{/*}{*/},%
1356    morestring=[b]{"}}%
1357 \lstalias{gretl}{hansl}

1358 ⟨/lang2⟩
```

2.29   Haskell

Thanks to Peter Bartke for providing the new definition.

```
1359 ⟨*lang2⟩
```

```
1360 %%
1361 %% Haskell98 as implemented in Hugs98. See http://www.haskell.org
1362 %% All keywords from Prelude and Standard Libraries
1363 %% (c) 1999 Peter Bartke
1364 %%
1365 \lst@definelanguage{Haskell}%
1366   {otherkeywords={=>},%
1367    morekeywords={abstype,if,then,else,case,class,data,default,deriving,%
1368        hiding,if,in,infix,infixl,infixr,import,instance,let,module,%
1369        newtype,of,qualified,type,where,do,AbsoluteSeek,AppendMode,%
1370        Array,BlockBuffering,Bool,BufferMode,Char,Complex,Double,Either,%
1371        FilePath,Float,Int,Integer,IO,IOError,Ix,LineBuffering,Maybe,%
1372        Ordering,NoBuffering,ReadMode,ReadWriteMode,ReadS,RelativeSeek,%
1373        SeekFromEnd,SeekMode,ShowS,StdGen,String,Void,Bounded,Enum,Eq,%
1374        Eval,ExitCode,exitFailure,exitSuccess,Floating,Fractional,%
1375        Functor,Handle,HandlePosn,IOMode,Integral,List,Monad,MonadPlus,%
1376        MonadZero,Num,Numeric,Ord,Random,RandomGen,Ratio,Rational,Read,%
1377        Real,RealFloat,RealFrac,Show,System,Prelude,EQ,False,GT,Just,%
1378        Left,LT,Nothing,Right,WriteMode,True,abs,accum,accumArray,%
1379        accumulate,acos,acosh,all,and,any,ap,appendFile,applyM,%
1380        approxRational,array,asTypeOf,asin,asinh,assocs,atan,atan2,atanh,%
1381        bounds,bracket,bracket_,break,catch,catMaybes,ceiling,chr,cis,%
1382        compare,concat,concatMap,conjugate,const,cos,cosh,curry,cycle,%
1383        decodeFloat,delete,deleteBy,deleteFirstsBy,denominator,%
1384        digitToInt,div,divMod,drop,dropWhile,either,elem,elems,elemIndex,%
1385        elemIndices,encodeFloat,enumFrom,enumFromThen,enumFromThenTo,%
1386        enumFromTo,error,even,exitFailure,exitWith,exp,exponent,fail,%
1387        filter,filterM,find,findIndex,findIndices,flip,floatDigits,%
1388        floatRadix,floatRange,floatToDigits,floor,foldl,foldM,foldl1,%
1389        foldr,foldr1,fromDouble,fromEnum,fromInt,fromInteger,%
1390        fromIntegral,fromJust,fromMaybe,fromRat,fromRational,%
1391        fromRealFrac,fst,gcd,genericLength,genericTake,genericDrop,%
1392        genericSplitAt,genericIndex,genericReplicate,getArgs,getChar,%
1393        getContents,getEnv,getLine,getProgName,getStdGen,getStdRandom,%
1394        group,groupBy,guard,hClose,hFileSize,hFlush,hGetBuffering,%
1395        hGetChar,hGetContents,hGetLine,hGetPosn,hIsClosed,hIsEOF,hIsOpen,%
1396        hIsReadable,hIsSeekable,hIsWritable,hLookAhead,hPutChar,hPutStr,%
1397        hPutStrLn,hPrint,hReady,hSeek,hSetBuffering,hSetPosn,head,%
1398        hugsIsEOF,hugsHIsEOF,hugsIsSearchErr,hugsIsNameErr,%
1399        hugsIsWriteErr,id,ioError,imagPart,index,indices,init,inits,%
1400        inRange,insert,insertBy,interact,intersect,intersectBy,%
1401        intersperse,intToDigit,ioeGetErrorString,ioeGetFileName,%
1402        ioeGetHandle,isAlreadyExistsError,isAlreadyInUseError,isAlpha,%
1403        isAlphaNum,isAscii,isControl,isDenormalized,isDoesNotExistError,%
1404        isDigit,isEOF,isEOFError,isFullError,isHexDigit,isIEEE,%
1405        isIllegalOperation,isInfinite,isJust,isLower,isNaN,%
1406        isNegativeZero,isNothing,isOctDigit,isPermissionError,isPrefixOf,%
1407        isPrint,isSpace,isSuffixOf,isUpper,isUserError,iterate,ixmap,%
1408        join,last,lcm,length,lex,lexDigits,lexLitChar,liftM,liftM2,%
1409        liftM3,liftM4,liftM5,lines,listArray,listToMaybe,log,logBase,%
```

```
1410        lookup,magnitude,makePolar,map,mapAccumL,mapAccumR,mapAndUnzipM,%
1411        mapM,mapM_,mapMaybe,max,maxBound,maximum,maximumBy,maybe,%
1412        maybeToList,min,minBound,minimum,minimumBy,mkPolar,mkStdGen,%
1413        mplus,mod,msum,mzero,negate,next,newStdGen,not,notElem,nub,nubBy,%
1414        null,numerator,odd,openFile,or,ord,otherwise,partition,phase,pi,%
1415        polar,pred,print,product,properFraction,putChar,putStr,putStrLn,%
1416        quot,quotRem,random,randomIO,randomR,randomRIO,randomRs,randoms,%
1417        rangeSize,read,readDec,readFile,readFloat,readHex,readInt,readIO,%
1418        readList,readLitChar,readLn,readParen,readOct,readSigned,reads,%
1419        readsPrec,realPart,realToFrac,recip,rem,repeat,replicate,return,%
1420        reverse,round,scaleFloat,scanl,scanl1,scanr,scanr1,seq,sequence,%
1421        sequence_,setStdGen,show,showChar,showEFloat,showFFloat,%
1422        showFloat,showGFloat,showInt,showList,showLitChar,showParen,%
1423        showSigned,showString,shows,showsPrec,significand,signum,sin,%
1424        sinh,snd,sort,sortBy,span,split,splitAt,sqrt,stderr,stdin,stdout,%
1425        strict,subtract,succ,sum,system,tail,tails,take,takeWhile,tan,%
1426        tanh,toEnum,toInt,toInteger,toLower,toRational,toUpper,transpose,%
1427        truncate,try,uncurry,undefined,unfoldr,union,unionBy,unless,%
1428        unlines,until,unwords,unzip,unzip3,unzip4,unzip5,unzip6,unzip7,%
1429        userError,when,words,writeFile,zero,zip,zip3,zip4,zip5,zip6,zip7,%
1430        zipWith,zipWithM,zipWithM_,zipWith3,zipWith4,zipWith5,zipWith6,%
1431        zipWith7},%
1432      sensitive,%
1433      morecomment=[l]--,%
1434      morecomment=[n]{\{-}{-\}},%
1435      morestring=[b]"%
1436    }[keywords,comments,strings]%

1437 ⟨/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.

1438 ⟨∗lang1⟩

```
1439 \lst@definelanguage{HTML}%
1440    {morekeywords={A,ABBR,ACRONYM,ADDRESS,APPLET,AREA,B,BASE,BASEFONT,%
1441        BDO,BIG,BLOCKQUOTE,BODY,BR,BUTTON,CAPTION,CENTER,CITE,CODE,COL,%
1442        COLGROUP,DD,DEL,DFN,DIR,DIV,DL,DOCTYPE,DT,EM,FIELDSET,FONT,FORM,%
1443        FRAME,FRAMESET,HEAD,HR,H1,H2,H3,H4,H5,H6,HTML,I,IFRAME,IMG,INPUT,%
1444        INS,ISINDEX,KBD,LABEL,LEGEND,LH,LI,LINK,LISTING,MAP,META,MENU,%
1445        NOFRAMES,NOSCRIPT,OBJECT,OPTGROUP,OPTION,P,PARAM,PLAINTEXT,PRE,%
1446        OL,Q,S,SAMP,SCRIPT,SELECT,SMALL,SPAN,STRIKE,STRING,STRONG,STYLE,%
1447        SUB,SUP,TABLE,TBODY,TD,TEXTAREA,TFOOT,TH,THEAD,TITLE,TR,TT,U,UL,%
1448        VAR,XMP,%
1449        accesskey,action,align,alink,alt,archive,axis,background,bgcolor,%
1450        border,cellpadding,cellspacing,charset,checked,cite,class,classid,%
1451        code,codebase,codetype,color,cols,colspan,content,coords,data,%
1452        datetime,defer,disabled,dir,event,error,for,frameborder,headers,%
```

```
1453        height,href,hreflang,hspace,http-equiv,id,ismap,label,lang,link,%
1454        longdesc,marginwidth,marginheight,maxlength,media,method,multiple,%
1455        name,nohref,noresize,noshade,nowrap,onblur,onchange,onclick,%
1456        ondblclick,onfocus,onkeydown,onkeypress,onkeyup,onload,onmousedown,%
1457        profile,readonly,onmousemove,onmouseout,onmouseover,onmouseup,%
1458        onselect,onunload,rel,rev,rows,rowspan,scheme,scope,scrolling,%
1459        selected,shape,size,src,standby,style,tabindex,text,title,type,%
1460        units,usemap,valign,value,valuetype,vlink,vspace,width,xmlns},%
1461    tag=**[s]<>,%
1462    sensitive=f,%
1463    morestring=[d]",% ??? doubled
```

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

```
1464    MoreSelectCharTable=%
1465        \lst@CArgX--\relax\lst@DefDelimB{}{}%
1466            {\ifnum\lst@mode=\lst@tagmode\else
1467                \expandafter\@gobblethree
1468             \fi}%
1469            \lst@BeginComment\lst@commentmode{{\lst@commentstyle}}%
1470        \lst@CArgX--\relax\lst@DefDelimE{}{}{}%
1471            \lst@EndComment\lst@commentmode
1472    }[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.

```
1473 ⟨/lang1⟩
```

2.31   IDL

The definition is from Jürgen Heim.

```
1474 ⟨*lang2⟩
```

```
1475 %%
1476 %% IDL definition (c) 1998 Juergen Heim
1477 %%
1478 \lst@definelanguage{IDL}%
1479    {morekeywords={and,begin,case,common,do,else,end,endcase,endelse,%
1480        endfor,endif,endrep,endwhile,eq,for,function,ge,goto,gt,if,le,lt,%
1481        mod,ne,not,of,on_ioerror,or,pro,repeat,return,then,until,while,%
1482        xor,on_error,openw,openr,openu,print,printf,printu,plot,read,%
1483        readf,readu,writeu,stop},%
1484    sensitive=f,%
1485    morecomment=[l];,%
1486    morestring=[d]'%
1487    }[keywords,comments,strings]%
```

```
1488 ⟨/lang2⟩
```

2.32 Inform

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

```
1489 ⟨∗lang2⟩

1490 %%
1491 %% Inform definition (c) 2003 Jonathan Sauer
1492 %%
1493 \lst@definelanguage{inform}{%
1494     % Language keywords
1495     morekeywords={breakdo,else,false,for,has,hasnt,if,%
1496                 in,indirect,jump,notin,nothing,NULL,objectloop,ofclass,%
1497                 private,property,provides,return,rfalse,rtrue,self,string,%
1498                 switch,to,true,until,while,with,%
1499                 creature,held,multiexcept,multiheld,multiinside,noun,number,%
1500                 scope,topic},%
1501     %
1502     % Inform functions
1503     morekeywords=[2]{box,child,children,font,give,inversion,metaclass,move,%
1504                 new_line,parent,print,print_ret,read,remove,restore,sibling,%
1505                 save,spaces,quit,style,bold,underline,reverse,roman remaining,%
1506                 create,destroy,recreate,copy},%
1507     %
1508     % Inform definitions
1509     morekeywords=[3]{Attribute,Array,Class,Constant,Default,End,Endif,Extend,%
1510                 Global,Ifdef,Iffalse,Ifndef,Ifnot,Iftrue,Include,Object,%
1511                 Property,Verb,Release,Serial,Statusline},%
1512     %
1513     % Library attributes
1514     morekeywords=[4]{absent,animate,clothing,concealed,container,door,edible,%
1515                 enterable,female,general,light,lockable locked,male,moved,%
1516                 neuter,on,open,openable,pluralname,proper,scenery,scored,%
1517                 static,supporter,switchable,talkable,transparent,visited,%
1518                 workflag,worn},%
1519     %
1520     % Library properties
1521     morekeywords=[5]{n_to,s_to,e_to,w_to,ne_to,nw_to,se_to,sw_to,in_to,%
1522                 out_to,u_to,d_to,add_to_scope,after,article,articles,before,%
1523                 cant_go,capacity,daemon,describe,description,door_dir,door_to,%
1524                 each_turn,found_in,grammar,initial,inside_description,invent,%
1525                 life,list_together,name number,orders,parse_name,plural,%
1526                 react_after,react_before,short_name,short_name_indef,time_left,%
1527                 time_out,when_closed,when_open,when_on,when_off,%
1528                 with_key},%
1529     %
1530     % Library routines
1531     morekeywords=[6]{Achieved,AfterRoutines,AllowPushDir,Banner,ChangePlayer,%
1532                 CommonAncestor,DictionaryLookup,GetGNAOfObject,HasLightSource,%
1533                 IndirectlyContains,IsSeeThrough,Locale,LoopOverScope,LTI_Insert,%
```

```
1534                 MoveFloatingObjects,NextWord,NextWordStopped,NounDomain,%
1535                 ObjectIsUntouchable OffersLight,ParseToken,PlaceInScope,PlayerTo,%
1536                 PronounNotice,PronounValue,ScopeWithin,SetPronoun,SetTime,%
1537                 StartDaemon,StartTimer,StopDaemon,StopTimer,TestScope,TryNumber,%
1538                 UnsignedCompare,WordAddress,WordInProperty,WordLength,%
1539                 WriteListFrom,YesOrNo},%
1540     %
1541     % Library,entry points
1542     morekeywords=[7]{AfterLife,AfterPrompt,Amusing,BeforeParsing,ChooseObjects,%
1543                 DarkToDark,DeathMessage,GamePostRoutine GamePreRoutine,%
1544                 Initialise,InScope,LookRoutine,NewRoom,ParseNoun,ParseNumber,%
1545                 ParserError,PrintRank,PrintTaskName,PrintVerb,TimePasses,%
1546                 UnknownVerb},%
1547     %
1548     % Library constants
1549     morekeywords=[8]{NEWLINE_BIT,INDENT_BIT,FULLINV_BIT,ENGLISH_BIT,RECURSE_BIT,%
1550                 ALWAYS_BIT,TERSE_BIT,PARTINV_BIT,DEFART_BIT,WORKFLAG_BIT,%
1551                 ISARE_BIT,CONCEAL_BIT},%
1552     %
1553     % Library,meta actions
1554     morekeywords=[9]{Pronouns,Quit,Restart,Restore,Save,Verify,ScriptOn,ScriptOff,%
1555                 NotifyOn,NotifyOff,Places,Objects,Score,FullScore,Version,LMode1,%
1556                 LMode2,Lmode3},%
1557     %
1558     % Library,main actions
1559     morekeywords=[10]{Close,Disrobe,Drop,Eat,Empty,EmptyT,Enter,Examine,Exit,GetOff,%
1560                 Give,Go,GoIn,Insert,Inv,InvTall,InvWide,Lock,Look,Open,PutOn,Remove,%
1561                 Search,Show,SwitchOff,SwitchOn,Take,Transfer,Unlock VagueGo,%
1562                 Wear},%
1563     %
1564     % Library,stub actions
1565     morekeywords=[11]{Answer,Ask,AskFor,Attack,Blow,Burn,Buy,Climb,Consult,Cut,Dig,%
1566                 Drink,Fill,Jump,JumpOver,Kiss,Listen,LookUnder,Mild,No,Pray,Pull,%
1567                 Push,PushDir,Rub,Set,SetTo,Sing,Sleep,Smell,,Sleep,Smell,Sorry,%
1568                 Squeeze,Strong,Swim,Swing,Taste,Tell,Think,ThrowAt,Tie,Touch,Turn,%
1569                 Wait,Wake,WakeOther,Wave,WaveHands,Yes},%
1570     %
1571     otherkeywords={->,-->},%
1572     sensitive=false,%
1573     morestring=[d]{"},%
1574     morecomment=[l]{!}%
1575   }[keywords,comments,strings]%
1576 ⟨/lang2⟩
```

2.33   Java and other JVM based languages

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

```
1577 ⟨*lang1⟩
```

```
1578 %%
1579 %% AspectJ definition (c) Robert Wenner
1580 %%
1581 \lst@definelanguage[AspectJ]{Java}[]{Java}%
1582   {morekeywords={%
1583       adviceexecution,after,args,around,aspect,aspectOf,before,%
1584       call,cflow,cflowbelow,%
1585 % declare error,declare parents,declare precedence,
1586 % declare soft,declare warning,
1587       execution,get,handler,if,initialization,issingleton,pointcut,%
1588       percflow,percflowbelow,perthis,pertarget,preinitialization,%
1589       privileged,proceed,returning,set,staticinitialization,strictfp,%
1590       target,this,thisEnclosingJoinPoint,thisJoinPoint,throwing,%
1591       within,withincode},%
1592   MoreSelectCharTable=%
1593     \lst@DefSaveDef{'.}\lst@umdot{\lst@umdot\global\let\lst@derefop\@empty}%
1594     \ifx\lst@derefinstalled\@empty\else
1595       \global\let\lst@derefinstalled\@empty
1596 \lst@AddToHook{Output}%
1597 {\lst@ifkeywords
1598     \ifx\lst@derefop\@empty
1599       \global\let\lst@derefop\relax
1600       \ifx\lst@thestyle\lst@gkeywords@sty
1601         \ifx\lst@currstyle\relax
1602           \let\lst@thestyle\lst@identifierstyle
1603         \else
1604           \let\lst@thestyle\lst@currstyle
1605         \fi
1606       \fi
1607     \fi
1608 \fi}
1609 \lst@AddToHook{BOL}{\global\let\lst@derefop\relax}%
1610 \lst@AddTo\lst@ProcessSpace{\global\let\lst@derefop\relax}%
1611     \fi
1612   }%
1613 ⟨/lang1⟩
```

Got data from `http://java.sun.com`.

```
1614 ⟨*lang1⟩
1615 \lst@definelanguage{Java}%
1616   {morekeywords={abstract,boolean,break,byte,case,catch,char,class,%
1617       const,continue,default,do,double,else,extends,false,final,%
1618       finally,float,for,goto,if,implements,import,instanceof,int,%
1619       interface,label,long,native,new,null,package,private,protected,%
1620       public,return,short,static,super,switch,synchronized,this,throw,%
1621       throws,transient,true,try,void,volatile,while},%
1622   sensitive,%
1623   morecomment=[l]//,%
1624   morecomment=[s]{/*}{*/},%
```

```
1625    morestring=[b]",%
1626    morestring=[b]',%
1627  }[keywords,comments,strings]%
```

Herbert Voss added the keyword `label`.

```
1628 ⟨/lang1⟩
```

Martine Gautier made the following contribution.

```
1629 ⟨*lang1⟩

1630 %%
1631 %% ByteCodeJava definition (c) 2004 Martine Gautier
1632 %%
1633 \lst@definelanguage{JVMIS}%
1634  {morekeywords={aaload,astore,aconst_null,aload,aload_0,aload_1,%
1635      aload_2,aload_3,anewarray,areturn,arraylength,astore,astore_0,%
1636      astore_1,astore_2,astore_3,athrow,baload,bastore,bipush,caload,%
1637      castore,checkcast,d2f,d2i,d2l,dadd,daload,dastore,dcmpg,dcmpl,%
1638      dconst_0,dconst_1,ddiv,dload,dload_0,dload_1,dload_2,dload_3,%
1639      dmul,dneg,drem,dreturn,dstore,dstore_0,dstore_1,dstore_2,%
1640      dstore_3,dsub,dup,dup_x1,dup_x2,dup2,dup2_x1,dup2_x2,f2d,%
1641      f2i,f2l,fadd,faload,fastore,fcmpg,fcmpl,fconst_0,fconst_1,%
1642      fconst_2,fdiv,fload,fload_0,fload_1,fload_2,fload_3,fmul,%
1643      fneg,frem,freturn,fstore,fstore_0,fstore_1,fstore_2,fstore_3,%
1644      fsub,getfield,getstatic,goto,goto_w,i2b,i2c,i2d,i2f,i2l,i2s,%
1645      iadd,iaload,iand,iastore,iconst_0,iconst_1,iconst_2,iconst_3,%
1646      iconst_4,iconst_5,idiv,if_acmpeq,if_acmpne,if_icmpeq,if_icmpne,%
1647      if_icmplt,if_cmpge,if_cmpgt,if_cmple,ifeq,ifne,iflt,ifge,ifgt,%
1648      ifle,ifnonnull,ifnull,iinc,iload,iload_0,iload_1,iload_2,%
1649      iload_3,imul,ineg,instanceof,invokeinterface,invokespecial,%
1650      invokestatic,invokevirtual,ior,irem,ireturn,ishl,ishr,istore,%
1651      istore_0,istore_1,istore_2,istore_3,isub,iushr,ixor,jsr,jsr_w,%
1652      l2d,l2f,l2i,ladd,laload,land,lastore,lcmp,lconst_0,lconst_1,%
1653      ldc,ldc_w,ldc2_w,ldiv,lload,lload_0,lload_1,lload_2,lload_3,%
1654      lmul,lneg,lookupswitch,lor,lrem,lreturn,lshl,lshr,lstore,%
1655      lstore_0,lstore_1,lstore_2,lstore_3,lsub,lushr,lxor,%
1656      monitorenter,monitorexit,multianewarray,new,newarray,nop,pop,%
1657      pop2,putfield,putstatic,ret,return,saload,sastore,sipush,swap,%
1658      tableswitch,wide,limit,locals,stack},%
1659  }[keywords]%

1660 ⟨/lang1⟩
```

2.33.1   Scala

Bastian Germann asked to include the Scala definition provided by Frank Teubler (2009). Here it is:

```
1661 ⟨*lang3⟩

1662 \lst@definelanguage{Scala}%
1663  {morekeywords={abstract,case,catch,class,def,%
1664    do,else,extends,false,final,finally,%
```

43

```
1665    for,if,implicit,import,lazy,match,mixin,%
1666    new,null,object,override,package,%
1667    private,protected,requires,return,sealed,%
1668    super,this,trait,true,try,%
1669    type,val,var,while,with,yield},%+
1670 % otherkeywords={_,:,:,=,=>,<<:,<\%,>:,\#,@},%
1671 otherkeywords={=,=>,<-,<\%,<:,>:,\#,@},%
1672    sensitive,%
1673    morecomment=[l]//,%
1674    morecomment=[n]{/*}{*/},%
1675    morestring=[b]",%
1676    morestring=[b]',%
1677    morestring=[b]""",%
1678    }[keywords,comments,strings]%

1679 ⟨/lang3⟩
```

2.34   ksh

Thanks to Jeffrey Ratcliffe for this language definition.

```
1680 ⟨∗lang3⟩
```

```
1681 \lst@definelanguage{ksh}
1682    {morekeywords={alias,awk,cat,echo,else,elif,fi,exec,exit,%
1683        for,in,do,done,select,case,esac,while,until,function,%
1684        time,export,cd,eval,fc,fg,kill,let,pwd,read,return,rm,%
1685        glob,goto,history,if,logout,nice,nohup,onintr,repeat,sed,%
1686        set,setenv,shift,source,switch,then,umask,unalias,%
1687        unset,wait,@,env,argv,child,home,ignoreeof,noclobber,%
1688        noglob,nomatch,path,prompt,shell,status,verbose,print,printf,%
1689        sqrt,BEGIN,END},%
1690    morecomment=[l]\#,%
1691    morestring=[d]",%
1692    morestring=[d]',%
1693    morestring=[d]'%
1694    }[keywords,comments,strings]%
1695 %    \begin{macrocode}
1696 ⟨/lang3⟩
```

Herbert Voss suggested to add the string delimiter '.

2.35   Lingo

Thanks to Mark Schade for this language definition.

```
1697 ⟨∗lang3⟩
```

```
1698 \lst@definelanguage{Lingo}
1699    {morekeywords={abort,after,and,before,do,down,halt,me,new,not,of,%
1700        on,or,otherwise,pass,put,result,return,set,tell,the,then,to,with,%
1701        repeat,while,case,if,else,true,false,global,property,\_global,\_key,%
1702        \_mouse,\_movie,\_player,\_sound,\_system,abbr,abbrev,abbreviated,abs,%
```

```
1703    actionsenabled,activateapplication,activatewindow,active3drenderer,%
1704    activecastlib,activewindow,actorlist,add,addat,addbackdrop,addcamera,%
1705    addchild,addmodifier,addoverlay,addprop,addtoworld,addvertex,alert,%
1706    alerthook,alignment,allowcustomcaching,allowgraphicmenu,allowsavelocal,%
1707    allowtransportcontrol,allowvolumecontrol,allowzooming,alphathreshold,%
1708    ambient,ambientcolor,ancestor,angle,anglebetween,animationenabled,%
1709    antialias,antialiasthreshold,append,applicationname,applicationpath,%
1710    appminimize,atan,attenuation,attributevalue,auto,autoblend,automask,%
1711    autotab,axisangle,back,backcolor,backdrop,backgroundcolor,backspace,%
1712    beep,beepon,beginrecording,beginsprite,beveldepth,beveltype,bgcolor,%
1713    bias,bitand,bitmap,bitmapsizes,bitnot,bitor,bitrate,bitspersample,%
1714    bitxor,blend,blendconstant,blendconstantlist,blendfactor,blendfunction,%
1715    blendfunctionlist,blendlevel,blendrange,blendsource,blendsourcelist,%
1716    blendtime,bone,bonesplayer,border,both,bottom,bottomcap,bottomradius,%
1717    bottomspacing,boundary,boundingsphere,box,boxdropshadow,boxtype,%
1718    breakconnection,breakloop,brightness,broadcastprops,browsername,%
1719    buffersize,build,buttonsenabled,buttonstyle,buttontype,bytesstreamed,%
1720    boolean,cachedocverify,cachesize,call,callancestor,camera,cameracount,%
1721    cameraposition,camerarotation,cancelidleload,castlib,castlibnum,%
1722    castmemberlist,center,centerregpoint,centerstage,changearea,channelcount,%
1723    char,characterset,charpostoloc,chars,charspacing,chartonum,%
1724    checkboxaccess,checkboxtype,checkmark,checknetmessages,child,chunksize,%
1725    clearatrender,clearcache,clearerror,clearframe,clearglobals,clearvalue,%
1726    clickloc,clickmode,clickon,clone,clonedeep,clonemodelfromcastmember,%
1727    clonemotionfromcastmember,close,closed,closewindow,closexlib,collision,%
1728    collisiondata,collisionnormal,color,world,colorbuffer,colorbufferdepth,%
1729    colordepth,colorlist,colorrange,colors,colorsteps,commanddown,comments,%
1730    compressed,connecttonetserver,constrainh,constraint,constrainv,,%
1731    continue,controldown,controller,copypixels,copyrightinfo,copyto,%
1732    copytoclipboard,cos,count,cpuhogticks,creaseangle,creases,[contains],%
1733    createfolder,createmask,creatematte,creationdate,creator,crop,cross,%
1734    crossproduct,cuepassed,cuepointnames,cuepointtimes,currentloopstate,%
1735    currentspritenum,currenttime,cursor,cursorsize,curve,cylinder,ate,day,%
1736    deactivateapplication,deactivatewindow,debug,debugplaybackenabled,%
1737    decaymode,defaultrect,defaultrectmode,delay,delete,deleteall,deleteat,%
1738    deletecamera,deletefolder,deleteframe,deletegroup,deletelight,%
1739    deletemodel,deletemodelresource,deletemotion,deleteone,deleteprop,%
1740    deleteshader,deletetexture,deletevertex,density,depth,depthbufferdepth,%
1741    desktoprectlist,diffuse,diffusecolor,diffuselightmap,%
1742    digitalvideotimescale,digitalvideotype,direction,directionalcolor,%
1743    directionalpreset,directtostage,disableimagingtransformation,displayface,%
1744    displaymode,distanceto,distribution,dither,done,doneparsing,dot,%
1745    dotproduct,doubleclick,downloadnetthing,drag,draw,drawrect,dropshadow,%
1746    duplicate,duplicateframe,duration,editable,editshortcutsenabled,%
1747    elapsedtime,emissive,emitter,empty,emulatemultibuttonmouse,enabled,%
1748    enablehotspot,end,endangle,endcolor,endframe,endrecording,endsprite,%
1749    endtime,enter,enterframe,environment,erase,error,eventpassmode,%
1750    exchange,exists,exit,exitframe,exitlock,exp,externalevent,%
1751    externalparamcount,externalparamname,externalparamvalue,extractalpha,%
1752    extrude3d,face,fadein,fadeout,fadeto,far,field,fieldofview,filename,%
```

```
1753    fill,fillcolor,fillcycles,filldirection,filled,fillmode,filloffset,%
1754    fillscale,findempty,findlabel,findpos,findposnear,finishidleload,%
1755    firstindent,fixedlinespace,fixedrate,fixstagesize,flashrect,flashtostage,%
1756    flat,fliph,flipv,float,floatp,floatprecision,flush,flushinputevents,%
1757    fog,folderchar,font,fontsize,fontstyle,forecolor,forget,frame,%
1758    framecount,framelabel,framepalette,framerate,frameready,framescript,%
1759    framesound1,framesound2,framestohms,frametempo,frametransition,freeblock,%
1760    freebytes,fromcastmember,fromimageobject,front,frontwindow,%
1761    generatenormals,getaprop,getat,getbehaviordescription,getbehaviortooltip,%
1762    getboneid,geterror,geterrorstring,gethardwareinfo,gethotspotrect,getlast,%
1763    getlatestnetid,getnetaddresscookie,getneterrorstring,getnetmessage,%
1764    getnetoutgoingbytes,getnettext,getnormalized,getnthfilenameinfolder,%
1765    getnumberwaitingnetmessages,getone,getpeerconnectionlist,getpixel,%
1766    getplaylist,getpos,getpref,getprop,getpropat,getpropertydescriptionlist,%
1767    getrendererservices,getstreamstatus,gettemppath,getworldtransform,globals,%
1768    glossmap,go,gotoframe,gotonetmovie,gotonetpage,gradienttype,gravity,%
1769    group,handler,handlers,height,heightvertices,high,highlightpercentage,%
1770    highlightstrength,hilite,hither,hittest,hmstoframes,hold,hotspot,html,%
1771    hyperlink,hyperlinkclicked,hyperlinkrange,hyperlinks,hyperlinkstate,%
1772    id3tags,identity,idle,idlehandlerperiod,idleloaddone,idleloadmode,%
1773    idleloadperiod,idleloadtag,idlereadchunksize,ilk,image,imagecompression,%
1774    imageenabled,imagequality,immovable,importfileinto,inflate,ink,inker,%
1775    inlineimeenabled,insertbackdrop,insertframe,insertoverlay,inside,%
1776    installmenu,instance,integer,integerp,interface,interpolate,%
1777    interpolateto,intersect,index,interval,inverse,invert,invertmask,%
1778    isbusy,isinworld,isoktoattach,ispastcuepoint,item,itemdelimiter,kerning,%
1779    kerningthreshold,key,keyboardfocussprite,keycode,keydown,keydownscript,%
1780    keyframeplayer,keypressed,keyup,keyupscript,label,labellist,last,%
1781    lastchannel,lastclick,lastevent,lastframe,lastkey,lastroll,left,%
1782    leftindent,length,lengthvertices,level,lifetime,light,line,linearlist,%
1783    linecolor,linecount,linedirection,lineheight,lineoffset,linepostolocv,%
1784    linesize,linkas,linked,list,listp,loaded,loadfile,loc,loch,locked,%
1785    locktranslation,loctocharpos,locv,locvtolinepos,locz,lod,log,long,%
1786    loop,loopcount,loopendtime,loopsremaining,loopstarttime,machinetype,%
1787    magnitude,map,mapImageToStage,mapmembertostage,mapstagetomember,margin,%
1788    marker,markerlist,mask,max,maxinteger,maxspeed,mci,media,mediaready,%
1789    member,membernum,members,memorysize,menu,mesh,meshdeform,milliseconds,%
1790    min,minspeed,modal,mode,model,modela,modelb,modelresource,%
1791    modelsunderloc,modelsunderray,modelunderloc,modified,modifiedby,%
1792    modifieddate,modifier,modifiers,month,mostrecentcuepoint,motion,%
1793    mousechar,mousedown,mousedownscript,mouseenter,mouseh,mouseitem,%
1794    mouseleave,mouselevel,mouseline,mouseloc,mousemember,mouseoverbutton,%
1795    mouseup,mouseupoutside,mouseupscript,mousev,mousewithin,mouseword,move,%
1796    moveablesprite,movetoback,movetofront,movevertex,movevertexhandle,%
1797    movewindow,movie,movieaboutinfo,moviecopyrightinfo,moviefilefreesize,%
1798    moviefilesize,moviefileversion,movieimagecompression,movieimagequality,%
1799    moviename,moviepath,movierate,movietime,moviextralist,mpeglayer,%
1800    multiply,multisound,name,near,nearfiltering,neighbor,netabort,netdone,%
1801    neterror,netlastmoddate,netmime,netpresent,netstatus,nettextresult,%
1802    netthrottleticks,newcamera,newcurve,newgroup,newlight,newmesh,newmodel,%
```

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```
1803        newmodelresource,newmotion,newshader,newtexture,next,none,normalize,%
1804        normallist,normals,nothing,notify,nudge,number,numchannels,%
1805        numparticles,numsegments,numtochar,objectp,offset,open,openresfile,%
1806        openwindow,openxlib,optiondown,organizationname,originalfont,originh,%
1807        originmode,originpoint,originv,orthoheight,overlay,pageheight,palette,%
1808        palettemapping,paletteref,paletteindex,pan,paragraph,param,paramcount,%
1809        parent,parsestring,particle,pasteclipboardinto,path,pathname,%
1810        pathstrength,pattern,pause,pausedatstart,pausestate,percentplayed,%
1811        percentstreamed,period,perpendicularto,persistent,pi,picture,picturep,%
1812        plane,platform,play,playbackmode,playfile,playing,playlist,playnext,%
1813        playrate,point,pointat,pointatorientation,pointinhyperlink,%
1814        pointofcontact,pointtochar,pointtoitem,pointtoline,pointtoparagraph,%
1815        pointtoword,position,positionreset,posterframe,postnettext,power,%
1816        preferred3drenderer,preload,preloadbuffer,preloadeventabort,preloadmember,%
1817        preloadmode,preloadmovie,preloadnetthing,preloadram,preloadtime,%
1818        premultiply,prepareframe,preparemovie,prerotate,prescale,pretranslate,%
1819        previous,primitives,printfrom,productversion,projection,projectionangle,%
1820        propList,proxyserver,pttohotspotid,puppet,puppetpalette,puppetsound,%
1821        puppetsprite,puppettempo,puppettransition,purgepriority,%
1822        qtregisteraccesskey,qtunregisteraccesskey,quad,quality,queue,quit,quote,%
1823        radius,ramneeded,random,randomseed,randomvector,rateshift,rawnew,read,%
1824        readvalue,recordfont,rect,ref,reflectionmap,reflectivity,region,%
1825        registerforevent,registerscript,regpoint,regpointvertex,removebackdrop,%
1826        removefromworld,removelast,removemodifier,removeoverlay,rename,renderer,%
1827        rendererdevicelist,renderformat,renderstyle,resetworld,resizewindow,%
1828        resolution,resolve,resolvea,resolveb,resource,restart,resume,%
1829        reverttoworlddefaults,rewind,rgb,rgba4444,rgba5550,rgba5551,rgba5650,%
1830        rgba8880,rgba8888,right,rightindent,rightmousedown,rightmouseup,%
1831        rollover,romanlingo,rootlock,rootnode,rotate,rotation,rotationreset,%
1832        rtf,runmode,runpropertydialog,safeplayer,samplecount,samplerate,%
1833        samplesize,save,savedlocal,savemovie,scale,scalemode,score,scorecolor,%
1834        scoreselection,script,scriptexecutionstyle,scriptinstancelist,scriptlist,%
1835        scriptnum,scriptsenabled,scripttext,scripttype,scrollbyline,scrollbypage,%
1836        scrolltop,sds,searchcurrentfolder,searchpath,searchpaths,seconds,%
1837        selectedtext,selection,selend,selstart,sendallsprites,sendevent,%
1838        sendnetmessage,sendsprite,serialnumber,setalpha,setaprop,setat,%
1839        setcollisioncallback,setflashproperty,setnetbufferlimits,%
1840        setnetmessagehandler,setpixel,setplaylist,setpref,setprop,setscriptlist,%
1841        settrackenabled,setvariable,shader,shaderlist,shadowpercentage,%
1842        shadowstrength,shapetype,shiftdown,shininess,shockwave3d,short,%
1843        showglobals,showlocals,showprops,showresfile,showxlib,shutdown,%
1844        silhouettes,sin,size,sizerange,skew,sleep,smoothness,sort,sound,%
1845        soundbusy,soundchannel,sounddevice,sounddevicelist,soundenabled,%
1846        soundkeepdevice,soundlevel,soundmixmedia,source,sourcerect,space,%
1847        specular,specularcolor,specularlightmap,sphere,spotangle,spotdecay,%
1848        sprite,spritenum,spritespacetoworldspace,sqrt,stage,stagebottom,%
1849        stagecolor,stageleft,stageright,stagetoflash,stagetop,standard,%
1850        startangle,startframe,startmovie,starttime,starttimer,state,static,%
1851        status,stepframe,stilldown,stop,stopevent,stopmovie,stoptime,stream,%
1852        streammode,streamname,streamsize,streamstatus,string,stringp,%
```

```
1853      strokecolor,strokewidth,style,subdivision,sweep,swing,switchcolordepth,%
1854      symbol,symbolp,systemdate,tab,tabcount,tabs,tan,target,%
1855      tellstreamstatus,tension,text,texture,texturecoordinatelist,%
1856      texturecoordinates,texturelayer,texturelist,texturemember,texturemode,%
1857      texturemodelist,texturerenderformat,texturerepeat,texturerepeatlist,%
1858      texturetransform,texturetransformlist,texturetype,thumbnail,ticks,tilt,%
1859      time,timeout,timeouthandler,timeoutkeydown,timeoutlapsed,timeoutlength,%
1860      timeoutlist,timeoutmouse,timeoutplay,timeoutscript,timer,timescale,%
1861      title,titlevisible,toon,top,topcap,topradius,topspacing,trace,%
1862      traceload,tracelogfile,trackcount,trackenabled,tracknextkeytime,%
1863      tracknextsampletime,trackpreviouskeytime,trackprevioussampletime,%
1864      trackstarttime,trackstoptime,tracktext,tracktype,trails,transform,%
1865      transitiontype,translate,triggercallback,trimwhitespace,tunneldepth,%
1866      tweened,tweenmode,type,[transparent],union,unload,unloadmember,%
1867      unloadmovie,unregisterallevents,update,updateframe,updatelock,%
1868      updatemovieenabled,updatestage,url,usealpha,usediffusewithtexture,%
1869      usefastquads,usehypertextstyles,uselineoffset,userdata,username,value,%
1870      vector,version,vertex,vertexlist,vertices,video,videoforwindowspresent,%
1871      viewh,viewpoint,viewscale,viewv,visibility,visible,void,voidp,volume,%
1872      volumeinfo,wait,waitfornetconnection,warpmode,width,widthvertices,wind,%
1873      window,windowlist,windowpresent,windowtype,word,wordwrap,world,%
1874      worldposition,worldspacetospritespace,worldtransform,wraptransform,%
1875      wraptransformlist,write,writevalue,,xaxis,xtra,xtralist,xtras,,yaxis,%
1876      year,yon,zaxis,zoombox,zoomwindow,repeat,Conditional,Boolean,TypeDef,%
1877      Statement,Operator,String,Comment,Identifier,Special,x,y,z}
1878    sensitive=false,
1879    morecomment=[l]{--},
1880    morestring=[b]",
1881  }[keywords,comments,strings]%
1882 %    \begin{macrocode}
1883 ⟨/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 caaaar, ... functions. If anyone types them in, I'd like to get them.

```
1884 ⟨*lang2⟩

1885 \lst@definelanguage{Lisp}%
1886   {morekeywords={abort,abs,acons,acos,acosh,adjoin,alphanumericp,alter,%
1887      append,apply,apropos,aref,arrayp,ash,asin,asinh,assoc,atan,atanh,%
1888      atom,bit,boole,boundp,break,butlast,byte,catenate,ceiling,cerror,%
1889      char,character,characterp,choose,chunk,cis,close,clrhash,coerce,%
```

```
1890        collect,commonp,compile,complement,complex,complexp,concatenate,%
1891        conjugate,cons,consp,constantp,continue,cos,cosh,cotruncate,%
1892        count,delete,denominator,describe,directory,disassemble,%
1893        documentation,dpb,dribble,ed,eighth,elt,enclose,endp,eq,eql,%
1894        equal,equalp,error,eval,evalhook,evenp,every,exp,expand,export,%
1895        expt,fboundp,fceiling,fdefinition,ffloor,fifth,fill,find,first,%
1896        float,floatp,floor,fmakunbound,format,fourth,fround,ftruncate,%
1897        funcall,functionp,gatherer,gcd,generator,gensym,gentemp,get,getf,%
1898        gethash,identity,imagpart,import,inspect,integerp,intern,%
1899        intersection,tively,isqrt,keywordp,last,latch,lcm,ldb,ldiff,%
1900        length,list,listen,listp,load,log,logand,logbitp,logcount,logeqv,%
1901        logior,lognand,lognor,lognot,logtest,logxor,macroexpand,%
1902        makunbound,map,mapc,mapcan,mapcar,mapcon,maphash,mapl,maplist,%
1903        mask,max,member,merge,min,mingle,minusp,mismatch,mod,namestring,%
1904        nbutlast,nconc,nintersection,ninth,not,notany,notevery,nreconc,%
1905        nreverse,nsublis,nsubst,nth,nthcdr,null,numberp,numerator,nunion,%
1906        oddp,open,packagep,pairlis,pathname,pathnamep,phase,plusp,%
1907        position,positions,pprint,previous,princ,print,proclaim,provide,%
1908        random,rassoc,rational,rationalize,rationalp,read,readtablep,%
1909        realp,realpart,reduce,rem,remhash,remove,remprop,replace,require,%
1910        rest,revappend,reverse,room,round,rplaca,rplacd,sbit,scan,schar,%
1911        search,second,series,set,seventh,shadow,signal,signum,sin,sinh,%
1912        sixth,sleep,some,sort,split,sqrt,streamp,string,stringp,sublis,%
1913        subseq,subseries,subsetp,subst,substitute,subtypep,svref,sxhash,%
1914        symbolp,tailp,tan,tanh,tenth,terpri,third,truename,truncate,%
1915        typep,unexport,unintern,union,until,values,vector,vectorp,warn,%
1916        write,zerop,and,assert,case,ccase,cond,ctypecase,decf,declaim,%
1917        defclass,defconstant,defgeneric,defmacro,defmethod,defpackage,%
1918        defparameter,defsetf,defstruct,deftype,defun,defvar,do,dolist,%
1919        dotimes,ecase,encapsulated,etypecase,flet,formatter,gathering,%
1920        incf,iterate,labels,let,locally,loop,macrolet,mapping,or,pop,%
1921        producing,prog,psetf,psetq,push,pushnew,remf,return,rotatef,%
1922        setf,shiftf,step,time,trace,typecase,unless,untrace,when},%
1923      sensitive,% ???
1924      alsodigit=-,%
1925      morecomment=[l];,%
1926      morecomment=[s]{\#|}{|\#},% 1997 Aslak Raanes
1927      morestring=[b]"%
1928    }[keywords,comments,strings]%

1929 ⟨/lang2⟩

1930 ⟨*lang2⟩
```

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

```
1931 %%
1932 %% AutoLISP/VisualLISP - Stefan Lagotzki, info@lagotzki.de
1933 %%
1934 \lst@definelanguage[Auto]{Lisp}%
1935   {morekeywords={abs,acad_colordlg,acad_helpdlg,acad_strlsort,%
1936        action_tile,add_list,alert,alloc,and,angle,angtof,angtos,append,%
```

```
1937     apply,arx,arxload,arxunload,ascii,assoc,atan,atof,atoi,atom,%
1938     atoms-family,autoarxload,autoload,Boole,boundp,caddr,cadr,car,%
1939     cdr,chr,client_data_tile,close,command,cond,cons,cos,cvunit,%
1940     defun,defun-q,defun-q-list-ref,defun-q-list-set,dictadd,dictnext,%
1941     dictremove,dictrename,dictsearch,dimx_tile,dimy_tile,distance,%
1942     distof,done_dialog,end_image,end_list,entdel,entget,entlast,%
1943     entmake,entmakex,entmod,entnext,entsel,entupd,eq,equal,*error*,%
1944     eval,exit,exp,expand,expt,fill_image,findfile,fix,float,foreach,%
1945     function,gc,gcd,get_attr,get_tile,getangle,getcfg,getcname,%
1946     getcorner,getdist,getenv,getfiled,getint,getkword,getorient,%
1947     getpoint,getreal,getstring,getvar,graphscr,grclear,grdraw,grread,%
1948     grtext,grvecs,handent,help,if,initdia,initget,inters,itoa,lambda,%
1949     last,layoutlist,length,list,listp,load,load_dialog,log,logand,%
1950     logior,lsh,mapcar,max,mem,member,menucmd,menugroup,min,minusp,%
1951     mode_tile,namedobjdict,nentsel,nentselp,new_dialog,not,nth,%
1952     null,numberp,open,or,osnap,polar,prin1,princ,print,progn,prompt,%
1953     quit,quote,read,read-char,read-line,redraw,regapp,rem,repeat,%
1954     reverse,rtos,set,set_tile,setcfg,setenv,setfunhelp,setq,%
1955     setvar,setview,sin,slide_image,snvalid,sqrt,ssadd,ssdel,ssget,%
1956     ssgetfirst,sslength,ssmemb,ssname,ssnamex,sssetfirst,startapp,%
1957     start_dialog,start_image,start_list,strcase,strcat,strlen,subst,%
1958     substr,tablet,tblnext,tblobjname,tblsearch,term_dialog,terpri,%
1959     textbox,textpage,textscr,trace,trans,type,unload_dialog,untrace,%
1960     vector_image,ver,vl-acad-defun,vl-acad-undefun,vl-arx-import,%
1961     vl-bb-ref,vl-bb-set,vl-catch-all-apply,%
1962     vl-catch-all-error-message,vl-catch-all-error-p,vl-cmdf,vl-consp,%
1963     vl-directory-files,vl-doc-export,vl-doc-import,vl-doc-ref,%
1964     vl-doc-set,vl-every,vl-exit-with-error,vl-exit-with-value,%
1965     vl-file-copy,vl-file-delete,vl-file-directory-p,vl-file-rename,%
1966     vl-file-size,vl-file-systime,vl-filename-base,%
1967     vl-filename-directory,vl-filename-extension,vl-filename-mktemp,%
1968     vl-get-resource,vl-list*,vl-list->string,%
1969     vl-list-exported-functions,vl-list-length,vl-list-loaded-vlx,%
1970     vl-load-all,vl-load-com,vl-load-reactors,vl-member-if,%
1971     vl-member-if-not,vl-position,vl-prin1-to-string,%
1972     vl-princ-to-string,vl-propagate,vl-registry-delete,%
1973     vl-registry-descendents,vl-registry-read,vl-registry-write,%
1974     vl-remove,vl-remove-if,vl-remove-if-not,vl-some,vl-sort,%
1975     vl-sort-i,vl-string->list,vl-string-elt,vl-string-left-trim,%
1976     vl-string-mismatch,vl-string-position,vl-string-right-trim,%
1977     vl-string-search,vl-string-subst,vl-string-translate,%
1978     vl-string-trim,vl-symbol-name,vl-symbol-value,vl-symbolp,%
1979     vl-unload-vlx,vl-vbaload,vl-vbarun,vl-vlx-loaded-p,vlax-3D-point,%
1980     vlax-add-cmd,vlax-create-object,vlax-curve-getArea,%
1981     vlax-curve-getDistAtParam,vlax-curve-getDistAtPoint,%
1982     vlax-curve-getEndParam,vlax-curve-getEndPoint,%
1983     vlax-curve-getParamAtDist,vlax-curve-getParamAtPoint,%
1984     vlax-curve-getPointAtDist,vlax-curve-getPointAtParam,%
1985     vlax-curve-getStartParam,vlax-curve-getStartPoint,%
1986     vlax-curve-isClosed,vlax-curve-isPeriodic,vlax-curve-isPlanar,%
```

```
1987          vlax-curve-getClosestPointTo,%
1988          vlax-curve-getClosestPointToProjection,vlax-curve-getFirstDeriv,%
1989          vlax-curve-getSecondDeriv,vlax-dump-object,%
1990          vlax-ename->vla-object,vlax-erased-p,vlax-for,%
1991          vlax-get-acad-object,vlax-get-object,vlax-get-or-create-object,%
1992          vlax-get-property,vlax-import-type-library,vlax-invoke-method,%
1993          vlax-ldata-delete,vlax-ldata-get,vlax-ldata-list,vlax-ldata-put,%
1994          vlax-ldata-test,vlax-make-safearray,vlax-make-variant,%
1995          vlax-map-collection,vlax-method-applicable-p,%
1996          vlax-object-released-p,vlax-product-key,%
1997          vlax-property-available-p,vlax-put-property,vlax-read-enabled-p,%
1998          vlax-release-object,vlax-remove-cmd,vlax-safearray-fill,%
1999          vlax-safearray-get-dim,vlax-safearray-get-element,%
2000          vlax-safearray-get-l-bound,vlax-safearray-get-u-bound,%
2001          vlax-safearray-put-element,vlax-safearray-type,%
2002          vlax-safearray->list,vlax-tmatrix,vlax-typeinfo-available-p,%
2003          vlax-variant-change-type,vlax-variant-type,vlax-variant-value,%
2004          vlax-vla-object->ename,vlax-write-enabled-p,vlisp-compile,%
2005          vlr-acdb-reactor,vlr-add,vlr-added-p,vlr-beep-reaction,%
2006          vlr-command-reactor,vlr-current-reaction-name,vlr-data,%
2007          vlr-data-set,vlr-deepclone-reactor,vlr-docmanager-reactor,%
2008          vlr-dwg-reactor,vlr-dxf-reactor,vlr-editor-reactor,%
2009          vlr-insert-reactor,vlr-linker-reactor,vlr-lisp-reactor,%
2010          vlr-miscellaneous-reactor,vlr-mouse-reactor,vlr-notification,%
2011          vlr-object-reactor,vlr-owner-add,vlr-owner-remove,vlr-owners,%
2012          vlr-pers,vlr-pers-list,vlr-pers-p,vlr-pers-release,%
2013          vlr-reaction-names,vlr-reaction-set,vlr-reactions,vlr-reactors,%
2014          vlr-remove,vlr-remove-all,vlr-set-notification,%
2015          vlr-sysvar-reactor,vlr-toolbar-reactor,vlr-trace-reaction,%
2016          vlr-type,vlr-types,vlr-undo-reactor,vlr-wblock-reactor,%
2017          vlr-window-reactor,vlr-xref-reactor,vports,wcmatch,while,%
2018          write-char,write-line,xdroom,xdsize,zerop},%
2019     alsodigit=->,%
2020     otherkeywords={1+,1-},%
2021     sensitive=false,%
2022     morecomment=[l];,%
2023     morecomment=[l];;,%
2024     morestring=[b]"%
2025   }[keywords,comments,strings]%
2026 ⟨/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/.[2] The language provides

---

[2]In this section 'I' is Scott Pakin.

2027 ⟨∗lang3⟩

2028 \lst@definelanguage{LLVM}{%

2029   morekeywords={%

- Instructions

2030   ret,br,switch,indirectbr,invoke,resume,unreachable,%
2031   add,fadd,sub,fsub,mul,fmul,udiv,sdiv,fdiv,urem,srem,frem,%
2032   shl,lshr,ashr,and,or,xor,%
2033   extractelement,insertelement,shufflevector,%
2034   extractvalue,insertvalue,%
2035   alloca,load,store,fence,cmpxchg,atomicrmw,getelementptr,%
2036   trunc,zext,sext,fptrunc,fpext,fptoui,fptosi,uitofp,sitofp,ptrtoint,%
2037   inttoptr,bitcast,to,%
2038   icmp,fcmp,phi,select,call,va_arg,landingpad,%

- Atomic operations – some duplication with the above

2039   xchg,add,sub,and,nand,or,xor,max,min,umax,umin,%

- Comparisons

2040   eq,ne,ugt,uge,ult,ule,sgt,sge,slt,sle,%
2041   false,oeq,ogt,oge,olt,ole,one,ord,ueq,ugt,uge,ult,ule,une,uno,true,%

- Linkage types

2042   private,linker_private,linker_private_weak,linker_private_weak_def_auto,%
2043   internal,available_externally,linkonce,common,weak,appending,extern_weak,%
2044   linkonce_odr,weak_odr,external,dllimport,dllexport,%

- Function headers

2045   define,declare,%

- Parameter attributes

2046   zeroext,signext,inreg,byval,sret,noalias,nocapture,next,%

- Garbage collector names

2047   gc,%

- Function attributes

2048   address_safety,alignstack,alwaysinline,nonlazybind,inlinehint,naked,%
2049   noimplicitfloat,noinline,noredzone,noreturn,nounwind,optsize,readnone,%
2050   readonly,returns_twice,ssp,sspreq,uwtable,%

- Module-level inline assembly

2051   module,asm,%

- Data layout

2052   target,datalayout,%

- Inline assembler expressions

```
2053          sideeffect,alignstack,%
```

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

```
2054          nuw,nsw,exact,inbounds,unnamed_addr},%
2055        morekeywords=[2]{%
```

- Types

```
2056          i1,i2,i4,i8,i16,i32,i64,i128,i256,i512,i1024,% <-- Most common integers
2057          half,float,double,x86_fp80,fp128,ppc_fp128,x86mmx,%
2058          void,label,metadata},%
2059        alsoletter=.,%
2060        sensitive=false,%
2061        morecomment=[l];,%
2062        morestring=[b]"%
2063      }
```

```
2064 ⟨/lang3⟩
```

2.38   Logo

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

```
2065 ⟨*lang3⟩
```

```
2066 \lst@definelanguage{Logo}%
2067 % ??? {end,unix} also keywords
2068   {morekeywords={and,atan,arctan,both,break,bf,bl,butfirst,butlast,%
2069       cbreak, close,co,continue,cos,count,clearscreen,cs,debquit,%
2070       describe,diff,difference,ed,edit,either,emptyp,equalp,er,erase,%
2071       errpause,errquit,fifp,filefprint,fifty,fileftype,fip,fileprint,%
2072       fird,fileread,fity,filetype,fiwd,fileword,f,first,or,fp,fprint,%
2073       fput,fty,ftype,full,fullscreen,go,bye,goodbye,gprop,greaterp,%
2074       help,if,iff,iffalse,ift,iftrue,nth,item,keyp,llast,lessp,list,%
2075       local,lput,make,max,maximum,memberp,memtrace,min,minimum,namep,%
2076       not,numberp,oflush,openr,openread,openw,openwrite,op,output,%
2077       pause,plist,pots,pow,pprop,pps,pr,print,product,quotient,random,%
2078       rc,readchar,rl,readlist,remprop,repcount,repeat,request,rnd,run,%
2079       se,sentence,sentencep,setc,setcolor,setipause,setqpause,po,show,%
2080       sin,split,splitscreen,sqrt,stop,sum,test,text,textscreen,thing,%
2081       to,tone,top,toplevel,type,untrace,wait,word,wordp,yaccdebug,is,%
2082       mod,remainder,trace,zerop,back,bk,bto,btouch,fd,forward,fto,%
2083       ftouch,getpen,heading,hit,hitoot,ht,hideturtle,loff,lampoff,lon,%
2084       lampon,lt,left,lot,lotoot,lto,ltouch,penc,pencolor,pd,pendown,pe,%
2085       penerase,penmode,pu,penup,px,penreverse,rt,right,rto,rtouch,%
2086       scrunch,seth,setheading,setscrun,setscrunch,setxy,shownp,st,%
2087       showturtle,towardsxy,clean,wipeclean,xcor,ycor,tur,turtle,%
2088       display,dpy},%
2089     sensitive=f% ???
2090     }[keywords]%
```

53

2091 ⟨/lang3⟩

2.39   Lua

Stephan Hennig contributed the Lua keywords.

2092 ⟨∗lang2⟩

We begin with the keywords for Lua 5.0:

```
2093 %%
2094 %% Lua definitions (c) 2013 Stephan Hennig
2095 %%
2096 \lst@definelanguage[5.0]{Lua}{%
```

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

```
2097   alsoletter={.},%
```

The language definition knows

- language keywords

```
2098       morekeywords=[1]{%
2099         and, break, do, else, elseif, end, false, for, function, if, in,%
2100         local, nil, not, or, repeat, return, then, true, until, while,%
2101       },%
```

- the standard library identifiers

```
2102       morekeywords=[2]{%
```

  - coming from the base library

```
2103            _G, _LOADED, _REQUIREDNAME, _VERSION, LUA_PATH,%
2104            assert, collectgarbage, dofile, error, gcinfo, getfenv,%
2105            getmetatable, ipairs, loadfile, loadlib, loadstring, newproxy,%
2106            next, pairs, pcall, print, rawequal, rawget, rawset, require,%
2107            setfenv, setmetatable, tonumber, tostring, type, unpack, xpcall,%
```

  - coming from the coroutine library

```
2108            coroutine, coroutine.create, coroutine.resume,%
2109            coroutine.status, coroutine.wrap, coroutine.yield,%
```

  - the debug library

```
2110            _TRACEBACK, debug, debug.debug, debug.gethook, debug.getinfo,%
2111            debug.getlocal, debug.getupvalue, debug.sethook, debug.setlocal,%
2112            debug.setupvalue,debug.traceback,%
```

  - the io library

```
2113            io, io.close, io.flush, io.input, io.lines, io.open, io.output,%
2114            io.popen, io.read, io.stderr, io.stdin, io.stdout, io.tmpfile,%
2115            io.type, io.write,%
```

54

– the mathematical library

```
2116            __pow, math, math.abs, math.acos, math.asin, math.atan, math.atan2,%
2117            math.ceil, math.cos, math.deg, math.exp, math.floor, math.frexp,%
2118            math.ldexp, math.log, math.log10, math.max, math.min, math.mod,%
2119            math.pi, math.pow, math.rad, math.random, math.randomseed, math.sin,%
2120            math.sqrt, math.tan,%
```

  – the os library

```
2121            os, os.clock, os.date, os.difftime, os.execute, os.exit, os.getenv,%
2122            os.remove, os.rename, os.setlocale, os.time, os.tmpname,%
```

  – the string library

```
2123            string, string.byte, string.char, string.dump, string.find,%
2124            string.format, string.gfind, string.gsub, string.len, string.lower,%
2125            string.rep, string.sub, string.upper,%
```

  – the table library

```
2126            table, table.concat, table.foreach, table.foreachi, table.getn,%
2127            table.insert, table.remove, table.setn, table.sort,%
2128          },%
```

and some additional identifiers

```
2129    morekeywords=[2]{%
2130      _PROMPT, _PROMPT2, arg,%
2131    },%
```

These are the common language settings

```
2132    sensitive=true,%
2133    % single line comments
2134    morecomment=[l]{--},%
2135    % multi line comments
2136    morecomment=[s]{--[[}{]]},%
2137    % backslash escaped strings
2138    morestring=[b]",%
2139    morestring=[b]',%
2140    % multi line strings
2141    morestring=[s]{[[}{]]},%
2142  }[keywords,comments,strings]%
```

And here are the new definitions for Lua 5.1:

```
2143  \lst@definelanguage[5.1]{Lua}[5.0]{Lua}{%
```

There are some deletions

```
2144    deletekeywords=[2]{%
```

concerning

  • the base library

```
2145            _LOADED, _REQUIREDNAME, LUA_PATH, gcinfo, loadlib,%
```

- the debug library

```
2146        _TRACEBACK,%
```

- the mathematical library

```
2147        __pow, math.mod,%
```

- the string library

```
2148        string.gfind,%
```

- the table library

```
2149        table.foreach, table.foreachi, table.getn, table.setn,%
2150      },%
```

and some new identifiers in standard libraries like

```
2151  morekeywords=[2]{%
```

- the base library

```
2152        load, select,%
```

- coroutine library

```
2153        coroutine.running,%
```

- debug library

```
2154        debug.getfenv, debug.getmetatable, debug.getregistry, debug.setfenv,%
2155        debug.setmetatable,%
```

- the mathematical library

```
2156        math.cosh, math.fmod, math.huge, math.modf, math.sinh, math.tanh,%
```

- the package library which itself is new in Lua 5.1

```
2157        module, package, package.config, package.cpath, package.loaded,%
2158        package.loaders, package.loadlib, package.path, package.preload,%
2159        package.seeall,%
```

- the string library and

```
2160        string.gmatch, string.match, string.reverse,%
```

- the table library

```
2161        table.maxn,%
2162      },%
```

In Lua 5.1 long bracket comments were introduced also

```
2163    morecomment=[s]{--[[}{]]},%
2164    morecomment=[s]{--[=[}{]=]},%
2165    morecomment=[s]{--[==[}{]==]},%
2166    morecomment=[s]{--[===[}{]===]},%
2167    morecomment=[s]{--[====[}{]====]},%
2168    morecomment=[s]{--[=====[}{]=====]},%
2169    morecomment=[s]{--[======[}{]======]},%
2170    morecomment=[s]{--[=======[}{]=======]},%
2171    morecomment=[s]{--[========[}{]========]},%
2172    morecomment=[s]{--[=========[}{]=========]},%
```

as well as long bracket strings

```
2173    morestring=[s]{[[}{]]},%
2174    morestring=[s]{[=[}{]=]},%
2175    morestring=[s]{[==[}{]==]},%
2176    morestring=[s]{[===[}{]===]},%
2177    morestring=[s]{[====[}{]====]},%
2178    morestring=[s]{[=====[}{]=====]},%
2179    morestring=[s]{[======[}{]======]},%
2180    morestring=[s]{[=======[}{]=======]},%
2181    morestring=[s]{[========[}{]========]},%
2182    morestring=[s]{[=========[}{]=========]},%
2183  }[keywords,comments,strings]%
```

Lua 5.2 also has some changed features. These are

```
2184  \lst@definelanguage[5.2]{Lua}[5.1]{Lua}{%
```

- new language keywords

```
2185        morekeywords=[1]{%
2186          goto,%
2187        },%
```

- deleted identifiers from the standard libraries like

```
2188        deletekeywords=[2]{%
```

  - the base library

```
2189            getfenv, loadstring, module, newproxy, setfenv, unpack,%
```

  - the debug library

```
2190            debug.getfenv, debug.setfenv,%
```

  - the mathematical library

```
2191            math.log10,%
```

  - the package library and

```
2192            package.loaders, package.seeall,%
```

– the table library

```
2193              table.maxn,%
2194            },%
```

Again there are some new identifiers in the standard libraries

```
2195   morekeywords=[2]{%
```

like

- the base library

```
2196            rawlen,%
```

- the bit library

```
2197            bit32, bit32.arshift, bit32.band, bit32.bnot, bit32.bor,%
2198            bit32.btest, bit32.bxor, bit32.extract, bit32.lrotate,%
2199            bit32.lshift, bit32.replace, bit32.rrotate, bit32.rshift,%
```

- the debug library

```
2200            debug.getuservalue, debug.setuservalue, debug.upvalueid,%
2201            debug.upvaluejoin,%
```

- the package library

```
2202            package.searchers, package.searchpath,%
```

- the table library

```
2203            table.pack, table.unpack,%
2204          },%
```

There is a new additional identifier

```
2205   morekeywords=[2]{%
2206     _ENV,%
2207   },%
```

and labels are also new in Lua 5.2

```
2208   moredelim=[s][keywordstyle3]{::}{::},%
2209 }[keywords,comments,strings]%
```

```
2210 ⟨/lang2⟩
```

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

```
2211 ⟨∗lua-prf⟩
```

```
2212 \usepackage[rgb, x11names]{xcolor}
2213 \lstdefinestyle{Lua}{%
2214   language=[5.2]Lua,
2215   basicstyle=\ttfamily,
2216   columns=spaceflexible,
2217   keywordstyle=\bfseries\color{Blue4},% language keywords
2218   keywordstyle=[2]\bfseries\color{RoyalBlue3},% std. library identifiers
```

```
2219    keywordstyle=[3]\bfseries\color{Purple3},% labels
2220    stringstyle=\bfseries\color{Coral4},% strings
2221    commentstyle=\itshape\color{Green4},% comments
2222 }
```

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

```
2223 ⟨/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).

```
2224 ⟨*lang2⟩

2225 %%
2226 %% Make definitions (c) 2000 Rolf Niepraschk
2227 %%
2228 \lst@definelanguage[gnu]{make}%
2229    {morekeywords={SHELL,MAKE,MAKEFLAGS,$@,$\%,$<,$?,$^,$+,$*,%
2230        @,^,<,\%,+,?,*,% Markus Pahlow
2231        export,unexport,include,override,define,ifdef,ifneq,ifeq,else,%
2232        endif,vpath,subst,patsubst,strip,findstring,filter,filter-out,%
2233        sort,dir,notdir,suffix,basename,addsuffix,addprefix,join,word,%
2234        words,firstword,wildcard,shell,origin,foreach,%
2235        @D,@F,*D,*F,\%D,\%F,<D,<F,^D,^F,+D,+F,?D,?F,%
2236        AR,AS,CC,CXX,CO,CPP,FC,GET,LEX,PC,YACC,YACCR,MAKEINFO,TEXI2DVI,%
2237        WEAVE,CWEAVE,TANGLE,CTANGLE,RM,M2C,LINT,COMPILE,LINK,PREPROCESS,%
2238        CHECKOUT,%
2239        ARFLAGS,ASFLAGS,CFLAGS,CXXFLAGS,COFLAGS,CPPFLAGS,FFLAGS,GFLAGS,%
2240        LDFLAGS,LOADLIBES,LFLAGS,PFLAGS,RFLAGS,YFLAGS,M2FLAGS,MODFLAGS,%
2241        LINTFLAGS,MAKEINFO_FLAGS,TEXI2DVI_FLAGS,COFLAGS,GFLAGS,%
2242        OUTPUT_OPTION,SCCS_OUTPUT_OPTION,% missing comma: Markus Pahlow
2243        .PHONY,.SUFFIXES,.DEFAULT,.PRECIOUS,.INTERMEDIATE,.SECONDARY,%
2244        .IGNORE,.SILENT,.EXPORT_ALL_VARIABLES,MAKEFILES,VPATH,MAKESHELL,%
2245        MAKELEVEL,MAKECMDGOALS,SUFFIXES},%
2246      sensitive=true,
2247      morecomment=[l]\#,%
2248      morestring=[b]"%
2249    }[keywords,comments,strings,make]%

2250 \lst@definelanguage{make}
2251    {morekeywords={SHELL,MAKE,MAKEFLAGS,$@,$\%,$<,$?,$^,$+,$*},%
2252      sensitive=true,%
2253      morecomment=[l]\#,%
2254      morestring=[b]"%
2255    }[keywords,comments,strings,make]%
```

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

```
2256 ⟨/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.

2257 ⟨∗lang1⟩

```
2258 \lst@definelanguage{Matlab}%
2259   {morekeywords={gt,lt,gt,lt,amp,abs,acos,acosh,acot,acoth,acsc,acsch,%
2260       all,angle,ans,any,asec,asech,asin,asinh,atan,atan2,atanh,auread,%
2261       auwrite,axes,axis,balance,bar,bessel,besselk,bessely,beta,%
2262       betainc,betaln,blanks,bone,break,brighten,capture,cart2pol,%
2263       cart2sph,caxis,cd,cdf2rdf,cedit,ceil,chol,cla,clabel,clc,clear,%
2264       clf,clock,close,colmmd,Colon,colorbar,colormap,ColorSpec,colperm,%
2265       comet,comet3,compan,compass,computer,cond,condest,conj,contour,%
2266       contour3,contourc,contrast,conv,conv2,cool,copper,corrcoef,cos,%
2267       cosh,cot,coth,cov,cplxpair,cputime,cross,csc,csch,csvread,%
2268       csvwrite,cumprod,cumsum,cylinder,date,dbclear,dbcont,dbdown,%
2269       dbquit,dbstack,dbstatus,dbstep,dbstop,dbtype,dbup,ddeadv,ddeexec,%
2270       ddeinit,ddepoke,ddereq,ddeterm,ddeunadv,deblank,dec2hex,deconv,%
2271       del2,delete,demo,det,diag,diary,diff,diffuse,dir,disp,dlmread,%
2272       dlmwrite,dmperm,dot,drawnow,echo,eig,ellipj,ellipke,else,elseif,%
2273       end,engClose,engEvalString,engGetFull,engGetMatrix,engOpen,%
2274       engOutputBuffer,engPutFull,engPutMatrix,engSetEvalCallback,%
2275       engSetEvalTimeout,engWinInit,eps,erf,erfc,erfcx,erfinv,error,%
2276       errorbar,etime,etree,eval,exist,exp,expint,expm,expo,eye,fclose,%
2277       feather,feof,ferror,feval,fft,fft2,fftshift,fgetl,fgets,figure,%
2278       fill,fill3,filter,filter2,find,findstr,finite,fix,flag,fliplr,%
2279       flipud,floor,flops,fmin,fmins,fopen,for,format,fplot,fprintf,%
2280       fread,frewind,fscanf,fseek,ftell,full,function,funm,fwrite,fzero,%
2281       gallery,gamma,gammainc,gammaln,gca,gcd,gcf,gco,get,getenv,%
2282       getframe,ginput,global,gplot,gradient,gray,graymon,grid,griddata,%
2283       gtext,hadamard,hankel,help,hess,hex2dec,hex2num,hidden,hilb,hist,%
2284       hold,home,hostid,hot,hsv,hsv2rgb,if,ifft,ifft2,imag,image,%
2285       imagesc,Inf,info,input,int2str,interp1,interp2,interpft,inv,%
2286       invhilb,isempty,isglobal,ishold,isieee,isinf,isletter,isnan,%
2287       isreal,isspace,issparse,isstr,jet,keyboard,kron,lasterr,lcm,%
2288       legend,legendre,length,lin2mu,line,linspace,load,log,log10,log2,%
2289       loglog,logm,logspace,lookfor,lower,ls,lscov,lu,magic,matClose,%
2290       matDeleteMatrix,matGetDir,matGetFp,matGetFull,matGetMatrix,%
2291       matGetNextMatrix,matGetString,matlabrc,matlabroot,matOpen,%
2292       matPutFull,matPutMatrix,matPutString,max,mean,median,menu,mesh,%
2293       meshc,meshgrid,meshz,mexAtExit,mexCallMATLAB,mexdebug,%
2294       mexErrMsgTxt,mexEvalString,mexFunction,mexGetFull,mexGetMatrix,%
2295       mexGetMatrixPtr,mexPrintf,mexPutFull,mexPutMatrix,mexSetTrapFlag,%
2296       min,more,movie,moviein,mu2lin,mxCalloc,mxCopyCharacterToPtr,%
2297       mxCopyComplex16ToPtr,mxCopyInteger4ToPtr,mxCopyPtrToCharacter,%
2298       mxCopyPtrToComplex16,mxCopyPtrToInteger4,mxCopyPtrToReal8,%
2299       mxCopyReal8ToPtr,mxCreateFull,mxCreateSparse,mxCreateString,%
2300       mxFree,mxFreeMatrix,mxGetIr,mxGetJc,mxGetM,mxGetN,mxGetName,%
2301       mxGetNzmax,mxGetPi,mxGetPr,mxGetScalar,mxGetString,mxIsComplex,%
```

```
2302        mxIsFull,mxIsNumeric,mxIsSparse,mxIsString,mxIsTypeDouble,%
2303        mxSetIr,mxSetJc,mxSetM,mxSetN,mxSetName,mxSetNzmax,mxSetPi,%
2304        mxSetPr,NaN,nargchk,nargin,nargout,newplot,nextpow2,nnls,nnz,%
2305        nonzeros,norm,normest,null,num2str,nzmax,ode23,ode45,orient,orth,%
2306        pack,pascal,patch,path,pause,pcolor,pi,pink,pinv,plot,plot3,%
2307        pol2cart,polar,poly,polyder,polyeig,polyfit,polyval,polyvalm,%
2308        pow2,print,printopt,prism,prod,pwd,qr,qrdelete,qrinsert,quad,%
2309        quad8,quit,quiver,qz,rand,randn,randperm,rank,rat,rats,rbbox,%
2310        rcond,real,realmax,realmin,refresh,rem,reset,reshape,residue,%
2311        return,rgb2hsv,rgbplot,rootobject,roots,rose,rosser,rot90,rotate,%
2312        round,rref,rrefmovie,rsf2csf,save,saxis,schur,sec,sech,semilogx,%
2313        semilogy,set,setstr,shading,sign,sin,sinh,size,slice,sort,sound,%
2314        spalloc,sparse,spaugment,spconvert,spdiags,specular,speye,spfun,%
2315        sph2cart,sphere,spinmap,spline,spones,spparms,sprandn,sprandsym,%
2316        sprank,sprintf,spy,sqrt,sqrtm,sscanf,stairs,startup,std,stem,%
2317        str2mat,str2num,strcmp,strings,strrep,strtok,subplot,subscribe,%
2318        subspace,sum,surf,surface,surfc,surfl,surfnorm,svd,symbfact,%
2319        symmmd,symrcm,tan,tanh,tempdir,tempname,terminal,text,tic,title,%
2320        toc,toeplitz,trace,trapz,tril,triu,type,uicontrol,uigetfile,%
2321        uimenu,uiputfile,unix,unwrap,upper,vander,ver,version,view,%
2322        viewmtx,waitforbuttonpress,waterfall,wavread,wavwrite,what,%
2323        whatsnew,which,while,white,whitebg,who,whos,wilkinson,wk1read,%
2324        wk1write,xlabel,xor,ylabel,zeros,zlabel,zoom},%
2325     sensitive,%
2326     morecomment=[l]\%,%
2327     morestring=[m]'%
2328   }[keywords,comments,strings]%

2329 ⟨/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.

```
2330 ⟨∗lang1⟩

2331 \lst@definelanguage[5.2]{Mathematica}[3.0]{Mathematica}%%
2332   {morekeywords={Above,AbsoluteOptions,AbsoluteTiming,AccountingForm,%
2333        AccuracyGoal,Active,ActiveItem,AddOnHelpPath,%
2334        AdjustmentBox,AdjustmentBoxOptions,After,AiryAiPrime,%
2335        AlgebraicRulesData,Algebraics,Alias,AlignmentMarker,%
2336        AllowInlineCells,AllowScriptLevelChange,Analytic,AnimationCycleOffset,%
2337        AnimationCycleRepetitions,AnimationDirection,AnimationDisplayTime,ApartSquareFree,%
2338        AppellF1,ArgumentCountQ,ArrayDepth,ArrayPlot,%
2339        ArrayQ,ArrayRules,AspectRatioFixed,Assuming,%
2340        Assumptions,AutoDelete,AutoEvaluateEvents,AutoGeneratedPackage,%
2341        AutoIndent,AutoIndentSpacings,AutoItalicWords,AutoloadPath,%
2342        AutoOpenNotebooks,AutoOpenPalettes,AutoScroll,AutoSpacing,%
2343        AutoStyleOptions,Axis,BackgroundTasksSettings,Backsubstitution,%
2344        Backward,Baseline,Before,BeginDialogPacket,%
```

```
2345    BeginFrontEndInteractionPacket,Below,BezoutMatrix,BinaryFormat,%
2346    BinaryGet,BinaryRead,BinaryReadList,BinaryWrite,%
2347    BitAnd,BitNot,BitOr,BitXor,%
2348    Black,BlankForm,Blue,Boole,%
2349    Booleans,Bottom,Bounds,Box,%
2350    BoxBaselineShift,BoxData,BoxDimensions,BoxFormFormatTypes,%
2351    BoxFrame,BoxMargins,BoxRegion,Brown,%
2352    Buchberger,Button,ButtonBox,ButtonBoxOptions,%
2353    ButtonCell,ButtonContents,ButtonData,ButtonEvaluator,%
2354    ButtonExpandable,ButtonFrame,ButtonFunction,ButtonMargins,%
2355    ButtonMinHeight,ButtonNote,ButtonNotebook,ButtonSource,%
2356    ButtonStyle,ButtonStyleMenuListing,ByteOrdering,CallPacket,%
2357    CarmichaelLambda,Cell,CellAutoOverwrite,CellBaseline,%
2358    CellBoundingBox,CellBracketOptions,CellContents,CellDingbat,%
2359    CellEditDuplicate,CellElementsBoundingBox,CellElementSpacings,CellEvaluationDuplicate,%
2360    CellFrame,CellFrameColor,CellFrameLabelMargins,CellFrameLabels,%
2361    CellFrameMargins,CellGroup,CellGroupData,CellGrouping,%
2362    CellGroupingRules,CellHorizontalScrolling,CellLabel,CellLabelAutoDelete,%
2363    CellLabelMargins,CellLabelPositioning,CellMargins,CellObject,%
2364    CellOpen,CellPasswords,CellPrint,CellSize,%
2365    CellStyle,CellTags,CellularAutomaton,Center,%
2366    CharacterEncoding,CharacterEncodingsPath,CharacteristicPolynomial,CharacterRange,%
2367    CheckAll,CholeskyDecomposition,Clip,ClipboardNotebook,%
2368    Closed,ClosingAutoSave,CoefficientArrays,CoefficientDomain,%
2369    CofactorExpansion,ColonForm,ColorFunctionScaling,ColorRules,%
2370    ColorSelectorSettings,Column,ColumnAlignments,ColumnLines,%
2371    ColumnsEqual,ColumnSpacings,ColumnWidths,CommonDefaultFormatTypes,%
2372    CompileOptimizations,CompletionsListPacket,Complexes,ComplexityFunction,%
2373    Compose,ComposeSeries,ConfigurationPath,ConjugateTranspose,%
2374    Connect,ConsoleMessage,ConsoleMessagePacket,ConsolePrint,%
2375    ContentsBoundingBox,ContextToFileName,ContinuedFraction,ConversionOptions,%
2376    ConversionRules,ConvertToBitmapPacket,ConvertToPostScript,ConvertToPostScriptPacket,%
2377    Copyable,CoshIntegral,CounterAssignments,CounterBox,%
2378    CounterBoxOptions,CounterEvaluator,CounterFunction,CounterIncrements,%
2379    CounterStyle,CounterStyleMenuListing,CreatePalettePacket,Cross,%
2380    CurrentlySpeakingPacket,Cyan,CylindricalDecomposition,DampingFactor,%
2381    DataRange,Debug,DebugTag,Decimal,%
2382    DedekindEta,DefaultDuplicateCellStyle,DefaultFontProperties,DefaultFormatType,%
2383    DefaultFormatTypeForStyle,DefaultInlineFormatType,DefaultInputFormatType,
2384    DefaultNaturalLanguage,%
2385    DefaultNewCellStyle,DefaultNewInlineCellStyle,DefaultNotebook,DefaultOutputFormatType,%
2386    DefaultStyleDefinitions,DefaultTextFormatType,DefaultTextInlineFormatType,DefaultValues,%
2387    DefineExternal,DegreeLexicographic,DegreeReverseLexicographic,Deletable,%
2388    DeleteContents,DeletionWarning,DelimiterFlashTime,DelimiterMatching,%
2389    Delimiters,DependentVariables,DiacriticalPositioning,DialogLevel,%
2390    DifferenceOrder,DigitCharacter,DigitCount,DiracDelta,%
2391    Direction,DirectoryName,DisableConsolePrintPacket,DiscreteDelta,%
2392    DisplayAnimation,DisplayEndPacket,DisplayFlushImagePacket,DisplayForm,%
2393    DisplayPacket,DisplayRules,DisplaySetSizePacket,DisplayString,%
2394    DivisionFreeRowReduction,DOSTextFormat,DoubleExponential,DoublyInfinite,%
```

```
2395        Down,DragAndDrop,DrawHighlighted,DualLinearProgramming,%
2396        DumpGet,DumpSave,Edit,Editable,%
2397        EditButtonSettings,EditCellTagsSettings,EditDefinition,EditIn,%
2398        Element,EliminationOrder,EllipticExpPrime,EllipticNomeQ,%
2399        EllipticReducedHalfPeriods,EllipticThetaPrime,Empty,EnableConsolePrintPacket,%
2400        Encoding,EndAdd,EndDialogPacket,EndFrontEndInteractionPacket,%
2401        EndOfLine,EndOfString,Enter,EnterExpressionPacket,%
2402        EnterTextPacket,EqualColumns,EqualRows,EquatedTo,%
2403        Erfi,ErrorBox,ErrorBoxOptions,ErrorNorm,%
2404        ErrorPacket,ErrorsDialogSettings,Evaluatable,EvaluatePacket,%
2405        EvaluationCell,EvaluationCompletionAction,EvaluationMonitor,EvaluationNotebook,%
2406        Evaluator,EvaluatorNames,EventEvaluator,ExactNumberQ,%
2407        ExactRootIsolation,Except,ExcludedForms,Exists,%
2408        ExitDialog,ExponentPosition,ExponentStep,Export,%
2409        ExportAutoReplacements,ExportPacket,ExportString,ExpressionPacket,%
2410        ExpToTrig,Extension,ExternalCall,ExternalDataCharacterEncoding,%
2411        Extract,Fail,FEDisableConsolePrintPacket,FEEnableConsolePrintPacket,%
2412        Fibonacci,File,FileFormat,FileInformation,%
2413        FileName,FileNameDialogSettings,FindFit,FindInstance,%
2414        FindMaximum,FindSettings,FitAll,FlushPrintOutputPacket,%
2415        Font,FontColor,FontFamily,FontName,%
2416        FontPostScriptName,FontProperties,FontReencoding,FontSize,%
2417        FontSlant,FontSubstitutions,FontTracking,FontVariations,%
2418        FontWeight,ForAll,FormatRules,FormatTypeAutoConvert,%
2419        FormatValues,FormBox,FormBoxOptions,Forward,%
2420        ForwardBackward,FourierCosTransform,FourierParameters,FourierSinTransform,%
2421        FourierTransform,FractionalPart,FractionBox,FractionBoxOptions,%
2422        FractionLine,FrameBox,FrameBoxOptions,FresnelC,%
2423        FresnelS,FromContinuedFraction,FromDigits,FrontEndExecute,%
2424        FrontEndObject,FrontEndStackSize,FrontEndToken,FrontEndTokenExecute,%
2425        FrontEndVersion,Full,FullAxes,FullSimplify,%
2426        FunctionExpand,FunctionInterpolation,GaussKronrod,GaussPoints,%
2427        GenerateBitmapCaches,GenerateConditions,GeneratedCell,GeneratedParameters,%
2428        Generic,GetBoundingBoxSizePacket,GetContext,GetFileName,%
2429        GetFrontEndOptionsDataPacket,GetLinebreakInformationPacket,%
2430        GetMenusPacket,GetPageBreakInformationPacket,%
2431        Glaisher,GlobalPreferences,GlobalSession,Gradient,%
2432        GraphicsData,GraphicsGrouping,Gray,Green,%
2433        Grid,GridBaseline,GridBox,GridBoxOptions,%
2434        GridCreationSettings,GridDefaultElement,GridFrame,GridFrameMargins,%
2435        GroupPageBreakWithin,HarmonicNumber,Hash,HashTable,%
2436        HeadCompose,HelpBrowserLookup,HelpBrowserNotebook,HelpBrowserSettings,%
2437        HessenbergDecomposition,Hessian,HoldAllComplete,HoldComplete,%
2438        HoldPattern,Horizontal,HorizontalForm,HorizontalScrollPosition,%
2439        HTMLSave,Hypergeometric0F1Regularized,Hypergeometric1F1Regularized,%
2440        Hypergeometric2F1Regularized,%
2441        HypergeometricPFQ,HypergeometricPFQRegularized,HyperlinkCreationSettings,Hyphenation,%
2442        HyphenationOptions,IgnoreCase,ImageCache,ImageCacheValid,%
2443        ImageMargins,ImageOffset,ImageRangeCache,ImageRegion,%
2444        ImageResolution,ImageRotated,ImageSize,Import,%
```

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```
2445          ImportAutoReplacements,ImportString,IncludeFileExtension,IncludeSingularTerm,%
2446          IndentingNewlineSpacings,IndentMaxFraction,IndexCreationOptions,Inequality,%
2447          InexactNumberQ,InexactNumbers,Inherited,InitializationCell,%
2448          InitializationCellEvaluation,InitializationCellWarning,%
2449          InlineCounterAssignments,InlineCounterIncrements,%
2450          InlineRules,InputAliases,InputAutoFormat,InputAutoReplacements,%
2451          InputGrouping,InputNamePacket,InputNotebook,InputPacket,%
2452          InputSettings,InputStringPacket,InputToBoxFormPacket,InputToInputForm,%
2453          InputToStandardForm,InsertionPointObject,IntegerExponent,IntegerPart,%
2454          Integers,Interactive,Interlaced,InterpolationOrder,%
2455          InterpolationPoints,InterpolationPrecision,InterpretationBox,%
2456          InterpretationBoxOptions,%
2457          InterpretTemplate,InterruptSettings,Interval,IntervalIntersection,%
2458          IntervalMemberQ,IntervalUnion,InverseBetaRegularized,InverseEllipticNomeQ,%
2459          InverseErf,InverseErfc,InverseFourierCosTransform,
2460          InverseFourierSinTransform,%
2461          InverseFourierTransform,InverseGammaRegularized,InverseJacobiCD,%
2462          InverseJacobiCN,%
2463          InverseJacobiCS,InverseJacobiDC,InverseJacobiDN,InverseJacobiDS,%
2464          InverseJacobiNC,InverseJacobiND,InverseJacobiNS,InverseJacobiSC,%
2465          InverseJacobiSD,InverseLaplaceTransform,InverseWeierstrassP,InverseZTransform,%
2466          Jacobian,JacobiCD,JacobiCN,JacobiCS,%
2467          JacobiDC,JacobiDN,JacobiDS,JacobiNC,%
2468          JacobiND,JacobiNS,JacobiSC,JacobiSD,%
2469          JordanDecomposition,K,Khinchin,KleinInvariantJ,%
2470          KroneckerDelta,Language,LanguageCategory,LaplaceTransform,%
2471          Larger,Launch,LayoutInformation,Left,%
2472          LetterCharacter,Lexicographic,LicenseID,LimitsPositioning,%
2473          LimitsPositioningTokens,LinearSolveFunction,LinebreakAdjustments,LineBreakWithin,%
2474          LineForm,LineIndent,LineSpacing,LineWrapParts,%
2475          LinkActivate,LinkClose,LinkConnect,LinkConnectedQ,%
2476          LinkCreate,LinkError,LinkFlush,LinkHost,%
2477          LinkInterrupt,LinkLaunch,LinkMode,LinkObject,%
2478          LinkOpen,LinkOptions,LinkPatterns,LinkProtocol,%
2479          LinkRead,LinkReadHeld,LinkReadyQ,Links,%
2480          LinkWrite,LinkWriteHeld,ListConvolve,ListCorrelate,%
2481          Listen,ListInterpolation,ListQ,LiteralSearch,%
2482          LongestMatch,LongForm,Loopback,LUBackSubstitution,%
2483          LUDecomposition,MachineID,MachineName,MachinePrecision,%
2484          MacintoshSystemPageSetup,Magenta,Magnification,MakeBoxes,%
2485          MakeExpression,MakeRules,Manual,MatchLocalNameQ,%
2486          MathematicaNotation,MathieuC,MathieuCharacteristicA,MathieuCharacteristicB,%
2487          MathieuCharacteristicExponent,MathieuCPrime,MathieuS,MathieuSPrime,%
2488          MathMLForm,MathMLText,MatrixRank,Maximize,%
2489          MaxIterations,MaxPlotPoints,MaxPoints,MaxRecursion,%
2490          MaxStepFraction,MaxSteps,MaxStepSize,Mean,%
2491          Median,MeijerG,MenuPacket,MessageOptions,%
2492          MessagePacket,MessagesNotebook,MetaCharacters,Method,%
2493          MethodOptions,Minimize,MinRecursion,MinSize,%
2494          Mode,ModularLambda,MonomialOrder,MonteCarlo,%
```

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2495        Most,MousePointerNote,MultiDimensional,MultilaunchWarning,%
2496        MultilineFunction,MultiplicativeOrder,Multiplicity,Nand,%
2497        NeedCurrentFrontEndPackagePacket,NeedCurrentFrontEndSymbolsPacket,%
2498        NestedScriptRules,NestWhile,%
2499        NestWhileList,NevilleThetaC,NevilleThetaD,NevilleThetaN,%
2500        NevilleThetaS,Newton,Next,NHoldAll,%
2501        NHoldFirst,NHoldRest,NMaximize,NMinimize,%
2502        NonAssociative,NonPositive,Nor,Norm,%
2503        NormalGrouping,NormalSelection,NormFunction,Notebook,%
2504        NotebookApply,NotebookAutoSave,NotebookClose,NotebookConvert,%
2505        NotebookConvertSettings,NotebookCreate,NotebookCreateReturnObject,NotebookDefault,%
2506        NotebookDelete,NotebookDirectory,NotebookFind,NotebookFindReturnObject,%
2507        NotebookGet,NotebookGetLayoutInformationPacket,NotebookGetMisspellingsPacket,%
2508        NotebookInformation,%
2509        NotebookLocate,NotebookObject,NotebookOpen,NotebookOpenReturnObject,%
2510        NotebookPath,NotebookPrint,NotebookPut,NotebookPutReturnObject,%
2511        NotebookRead,NotebookResetGeneratedCells,Notebooks,NotebookSave,%
2512        NotebookSaveAs,NotebookSelection,NotebookSetupLayoutInformationPacket,%
2513        NotebooksMenu,%
2514        NotebookWrite,NotElement,NProductExtraFactors,NProductFactors,%
2515        NRoots,NSumExtraTerms,NSumTerms,NumberMarks,%
2516        NumberMultiplier,NumberString,NumericFunction,NumericQ,%
2517        NValues,Offset,OLEData,OneStepRowReduction,%
2518        Open,OpenFunctionInspectorPacket,OpenSpecialOptions,OptimizationLevel,%
2519        OptionInspectorSettings,OptionQ,OptionsPacket,OptionValueBox,%
2520        OptionValueBoxOptions,Orange,Ordering,Oscillatory,%
2521        OutputAutoOverwrite,OutputFormData,OutputGrouping,OutputMathEditExpression,%
2522        OutputNamePacket,OutputToOutputForm,OutputToStandardForm,Over,%
2523        Overflow,Overlaps,Overscript,OverscriptBox,%
2524        OverscriptBoxOptions,OwnValues,PadLeft,PadRight,%
2525        PageBreakAbove,PageBreakBelow,PageBreakWithin,PageFooterLines,%
2526        PageFooters,PageHeaderLines,PageHeaders,PalettePath,%
2527        PaperWidth,ParagraphIndent,ParagraphSpacing,ParameterVariables,%
2528        ParentConnect,ParentForm,Parenthesize,PasteBoxFormInlineCells,%
2529        Path,PatternTest,PeriodicInterpolation,Pick,%
2530        Piecewise,PiecewiseExpand,Pink,Pivoting,%
2531        PixelConstrained,Placeholder,Plain,Plot3Matrix,%
2532        PointForm,PolynomialForm,PolynomialReduce,Polynomials,%
2533        PowerModList,Precedence,PreferencesPath,PreserveStyleSheet,%
2534        Previous,PrimaryPlaceholder,Primes,PrincipalValue,%
2535        PrintAction,PrintingCopies,PrintingOptions,PrintingPageRange,%
2536        PrintingStartingPageNumber,PrintingStyleEnvironment,PrintPrecision,%
2537        PrivateCellOptions,%
2538        PrivateEvaluationOptions,PrivateFontOptions,PrivateNotebookOptions,PrivatePaths,%
2539        ProductLog,PromptForm,Purple,Quantile,%
2540        QuasiMonteCarlo,QuasiNewton,RadicalBox,RadicalBoxOptions,%
2541        RandomSeed,RationalFunctions,Rationals,RawData,%
2542        RawMedium,RealBlockForm,Reals,Reap,%
2543        Red,Refine,Refresh,RegularExpression,%
2544        Reinstall,Release,Removed,RenderingOptions,%
```

```
2545        RepeatedString,ReplaceList,Rescale,ResetMenusPacket,%
2546        Resolve,ResumePacket,ReturnExpressionPacket,ReturnInputFormPacket,%
2547        ReturnPacket,ReturnTextPacket,Right,Root,%
2548        RootReduce,RootSum,Row,RowAlignments,%
2549        RowBox,RowLines,RowMinHeight,RowsEqual,%
2550        RowSpacings,RSolve,RuleCondition,RuleForm,%
2551        RulerUnits,Saveable,SaveAutoDelete,ScreenRectangle,%
2552        ScreenStyleEnvironment,ScriptBaselineShifts,ScriptLevel,ScriptMinSize,%
2553        ScriptRules,ScriptSizeMultipliers,ScrollingOptions,ScrollPosition,%
2554        Second,SectionGrouping,Selectable,SelectedNotebook,%
2555        Selection,SelectionAnimate,SelectionCell,SelectionCellCreateCell,%
2556        SelectionCellDefaultStyle,SelectionCellParentStyle,SelectionCreateCell,%
2557        SelectionDuplicateCell,%
2558        SelectionEvaluate,SelectionEvaluateCreateCell,SelectionMove,SelectionSetStyle,%
2559        SelectionStrategy,SendFontInformationToKernel,SequenceHold,SequenceLimit,%
2560        SeriesCoefficient,SetBoxFormNamesPacket,SetEvaluationNotebook,%
2561        SetFileLoadingContext,%
2562        SetNotebookStatusLine,SetOptionsPacket,SetSelectedNotebook,%
2563        SetSpeechParametersPacket,%
2564        SetValue,ShortestMatch,ShowAutoStyles,ShowCellBracket,%
2565        ShowCellLabel,ShowCellTags,ShowClosedCellArea,ShowContents,%
2566        ShowCursorTracker,ShowGroupOpenCloseIcon,ShowPageBreaks,ShowSelection,%
2567        ShowShortBoxForm,ShowSpecialCharacters,ShowStringCharacters,%
2568        ShrinkWrapBoundingBox,%
2569        SingleLetterItalics,SingularityDepth,SingularValueDecomposition,%
2570        SingularValueList,%
2571        SinhIntegral,Smaller,Socket,SolveDelayed,%
2572        SoundAndGraphics,Sow,Space,SpaceForm,%
2573        SpanAdjustments,SpanCharacterRounding,SpanLineThickness,SpanMaxSize,%
2574        SpanMinSize,SpanningCharacters,SpanSymmetric,Sparse,%
2575        SparseArray,SpeakTextPacket,SpellingDictionaries,SpellingDictionariesPath,%
2576        SpellingOptions,SpellingSuggestionsPacket,Spherical,Split,%
2577        SqrtBox,SqrtBoxOptions,StandardDeviation,StandardForm,%
2578        StartingStepSize,StartOfLine,StartOfString,StartupSound,%
2579        StepMonitor,StieltjesGamma,StoppingTest,StringCases,%
2580        StringCount,StringExpression,StringFreeQ,StringQ,%
2581        StringReplaceList,StringReplacePart,StringSplit,StripBoxes,%
2582        StripWrapperBoxes,StructuredSelection,StruveH,StruveL,%
2583        StyleBox,StyleBoxAutoDelete,StyleBoxOptions,StyleData,%
2584        StyleDefinitions,StyleForm,StyleMenuListing,StyleNameDialogSettings,%
2585        StylePrint,StyleSheetPath,Subresultants,SubscriptBox,%
2586        SubscriptBoxOptions,Subsets,Subsuperscript,SubsuperscriptBox,%
2587        SubsuperscriptBoxOptions,SubtractFrom,SubValues,SugarCube,%
2588        SuperscriptBox,SuperscriptBoxOptions,SuspendPacket,SylvesterMatrix,%
2589        SymbolName,Syntax,SyntaxForm,SyntaxPacket,%
2590        SystemException,SystemHelpPath,SystemStub,Tab,%
2591        TabFilling,TabSpacings,TagBox,TagBoxOptions,%
2592        TaggingRules,TagStyle,TargetFunctions,TemporaryVariable,%
2593        TensorQ,TeXSave,TextAlignment,TextBoundingBox,%
2594        TextData,TextJustification,TextLine,TextPacket,%
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```
2595        TextParagraph,TextRendering,TextStyle,ThisLink,%
2596        TimeConstraint,TimeVariable,TitleGrouping,ToBoxes,%
2597        ToColor,ToFileName,Toggle,ToggleFalse,%
2598        Tolerance,TooBig,Top,ToRadicals,%
2599        Total,Tr,TraceAction,TraceInternal,%
2600        TraceLevel,TraditionalForm,TraditionalFunctionNotation,TraditionalNotation,%
2601        TraditionalOrder,TransformationFunctions,TransparentColor,Trapezoidal,%
2602        TrigExpand,TrigFactor,TrigFactorList,TrigReduce,%
2603        TrigToExp,Tuples,UnAlias,Underflow,%
2604        Underoverscript,UnderoverscriptBox,UnderoverscriptBoxOptions,Underscript,%
2605        UnderscriptBox,UnderscriptBoxOptions,UndocumentedTestFEParserPacket,%
2606        UndocumentedTestGetSelectionPacket,%
2607        UnitStep,Up,URL,Using,%
2608        V2Get,Value,ValueBox,ValueBoxOptions,%
2609        ValueForm,Variance,Verbatim,Verbose,%
2610        VerboseConvertToPostScriptPacket,VerifyConvergence,VerifySolutions,Version,%
2611        VersionNumber,Vertical,VerticalForm,ViewPointSelectorSettings,%
2612        Visible,VisibleCell,WeierstrassHalfPeriods,WeierstrassInvariants,%
2613        WeierstrassSigma,WeierstrassZeta,White,Whitespace,%
2614        WhitespaceCharacter,WindowClickSelect,WindowElements,WindowFloating,%
2615        WindowFrame,WindowFrameElements,WindowMargins,WindowMovable,%
2616        WindowSize,WindowTitle,WindowToolbars,WindowWidth,%
2617        WordBoundary,WordCharacter,WynnDegree,XMLElement},%
2618      morendkeywords={$,$AddOnsDirectory,$AnimationDisplayFunction,%
2619        $AnimationFunction,%
2620        $Assumptions,$BaseDirectory,$BoxForms,$ByteOrdering,%
2621        $CharacterEncoding,$ConditionHold,$CurrentLink,$DefaultPath,%
2622        $ExportEncodings,$ExportFormats,$FormatType,$FrontEnd,%
2623        $HistoryLength,$HomeDirectory,$ImportEncodings,$ImportFormats,%
2624        $InitialDirectory,$InstallationDate,$InstallationDirectory,%
2625        $InterfaceEnvironment,%
2626        $LaunchDirectory,$LicenseExpirationDate,$LicenseID,$LicenseProcesses,%
2627        $LicenseServer,$MachineDomain,$MaxExtraPrecision,$MaxLicenseProcesses,%
2628        $MaxNumber,$MaxPiecewiseCases,$MaxPrecision,$MaxRootDegree,%
2629        $MinNumber,$MinPrecision,$NetworkLicense,$NumberMarks,%
2630        $Off,$OutputForms,$ParentLink,$ParentProcessID,%
2631        $PasswordFile,$PathnameSeparator,$PreferencesDirectory,$PrintForms,%
2632        $PrintLiteral,$ProcessID,$ProcessorType,$ProductInformation,%
2633        $ProgramName,$PSDirectDisplay,$RandomState,$RasterFunction,%
2634        $RootDirectory,$SetParentLink,$SoundDisplay,$SuppressInputFormHeads,%
2635        $SystemCharacterEncoding,$SystemID,$TemporaryPrefix,$TextStyle,%
2636        $TopDirectory,$TraceOff,$TraceOn,$TracePattern,%
2637        $TracePostAction,$TracePreAction,$UserAddOnsDirectory,$UserBaseDirectory,%
2638        $UserName,Constant,Flat,HoldAll,%
2639        HoldAllComplete,HoldFirst,HoldRest,Listable,%
2640        Locked,NHoldAll,NHoldFirst,NHoldRest,%
2641        NumericFunction,OneIdentity,Orderless,Protected,%
2642        ReadProtected,SequenceHold},%
2643    }%
```

```
2644 %%
2645 %% Mathematica definitions (c) 1999 Michael Wiese
2646 %%
2647 \lst@definelanguage[3.0]{Mathematica}[1.0]{Mathematica}%
2648   {morekeywords={Abort,AbortProtect,AbsoluteDashing,AbsolutePointSize,%
2649       AbsoluteThickness,AbsoluteTime,AccountingFormAiry,AiPrime,AiryBi,%
2650       AiryBiPrime,Alternatives,AnchoredSearch,AxesEdge,AxesOrigin,%
2651       AxesStyle,Background,BetaRegularized,BoxStyle,C,CheckAbort,%
2652       Circle,ClebschGordan,CMYKColor,ColorFunction,ColorOutput,Compile,%
2653       Compiled,CompiledFunction,ComplexExpand,ComposeList,Composition,%
2654       ConstrainedMax,ConstrainedMin,Contexts,ContextToFilename,%
2655       ContourLines,Contours,ContourShading,ContourSmoothing,%
2656       ContourStyle,CopyDirectory,CopyFile,CosIntegral,CreateDirectory,%
2657       Cuboid,Date,DeclarePackage,DefaultColor,DefaultFont,Delete,%
2658       DeleteCases,DeleteDirectory,DeleteFile,Dialog,DialogIndent,%
2659       DialogProlog,DialogSymbols,DigitQ,Directory,DirectoryStack,Disk,%
2660       Dispatch,DownValues,DSolve,Encode,Epilog,Erfc,Evaluate,%
2661       ExponentFunction,FaceGrids,FileByteCount,FileDate,FileNames,%
2662       FileType,Find,FindList,FixedPointList,FlattenAt,Fold,FoldList,%
2663       Frame,FrameLabel,FrameStyle,FrameTicks,FromCharacterCode,%
2664       FromDate,FullGraphics,FullOptions,GammaRegularized,%
2665       GaussianIntegers,GraphicsArray,GraphicsSpacing,GridLines,%
2666       GroebnerBasis,Heads,HeldPart,HomeDirectory,Hue,IgnoreCases,%
2667       InputStream,Install,InString,IntegerDigits,InterpolatingFunction,%
2668       InterpolatingPolynomial,Interpolation,Interrupt,InverseFunction,%
2669       InverseFunctions,JacobiZeta,LetterQ,LinearProgramming,ListPlay,%
2670       LogGamma,LowerCaseQ,MachineNumberQ,MantissaExponent,MapIndexed,%
2671       MapThread,MatchLocalNames,MatrixExp,MatrixPower,MeshRange,%
2672       MeshStyle,MessageList,Module,NDSolve,NSolve,NullRecords,%
2673       NullWords,NumberFormat,NumberPadding,NumberSigns,OutputStream,%
2674       PaddedForm,ParentDirectory,Pause,Play,PlayRange,PlotRegion,%
2675       PolygonIntersections,PolynomialGCD,PolynomialLCM,PolynomialMod,%
2676       PostScript,PowerExpand,PrecisionGoal,PrimePi,Prolog,%
2677       QRDecomposition,Raster,RasterArray,RealDigits,Record,RecordLists,%
2678       RecordSeparators,ReleaseHold,RenameDirectory,RenameFile,%
2679       ReplaceHeldPart,ReplacePart,ResetDirectory,Residue,%
2680       RiemannSiegelTheta,RiemannSiegelZ,RotateLabel,SameTest,%
2681       SampleDepth,SampledSoundFunction,SampledSoundList,SampleRate,%
2682       SchurDecomposition,SessionTime,SetAccuracy,SetDirectory,%
2683       SetFileDate,SetPrecision,SetStreamPosition,Shallow,SignPadding,%
2684       SinIntegral,SixJSymbol,Skip,Sound,SpellingCorrection,%
2685       SphericalRegion,Stack,StackBegin,StackComplete,StackInhibit,%
2686       StreamPosition,Streams,StringByteCount,StringConversion,%
2687       StringDrop,StringInsert,StringPosition,StringReplace,%
2688       StringReverse,StringTake,StringToStream,SurfaceColor,%
2689       SyntaxLength,SyntaxQ,TableAlignments,TableDepth,%
2690       TableDirections,TableHeadings,TableSpacing,ThreeJSymbol,TimeUsed,%
2691       TimeZone,ToCharacterCode,ToDate,ToHeldExpression,TokenWords,%
2692       ToLowerCase,ToUpperCase,Trace,TraceAbove,TraceBackward,%
2693       TraceDepth,TraceDialog,TraceForward,TraceOff,TraceOn,%
```

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2694       TraceOriginal,TracePrint,TraceScan,Trig,Unevaluated,Uninstall,%
2695       UnsameQ,UpperCaseQ,UpValues,ViewCenter,ViewVertical,With,Word,%
2696       WordSearch,WordSeparators},%
2697     morendkeywords={Stub,Temporary,$Aborted,$BatchInput,$BatchOutput,%
2698       $CreationDate,$DefaultFont,$DumpDates,$DumpSupported,$Failed,%
2699       $Input,$Inspector,$IterationLimit,$Language,$Letters,$Linked,%
2700       $LinkSupported,$MachineEpsilon,$MachineID,$MachineName,%
2701       $MachinePrecision,$MachineType,$MaxMachineNumber,$MessageList,%
2702       $MessagePrePrint,$MinMachineNumber,$ModuleNumber,$NewMessage,%
2703       $NewSymbol,$Notebooks,$OperatingSystem,$Packages,$PipeSupported,%
2704       $PreRead,$ReleaseNumber,$SessionID,$SoundDisplayFunction,%
2705       $StringConversion,$StringOrder,$SyntaxHandler,$TimeUnit,%
2706       $VersionNumber}%
2707   }%

2708 \lst@definelanguage[1.0]{Mathematica}%
2709   {morekeywords={Abs,Accuracy,AccurayGoal,AddTo,AiryAi,AlgebraicRules,%
2710       AmbientLight,And,Apart,Append,AppendTo,Apply,ArcCos,ArcCosh,%
2711       ArcCot,ArcCoth,ArcCsc,ArcCsch,ArcSec,ArcSech,ArcSin,ArcSinh,%
2712       ArcTan,ArcTanh,Arg,ArithmeticGeometricMean,Array,AspectRatio,%
2713       AtomQ,Attributes,Axes,AxesLabel,BaseForm,Begin,BeginPackage,%
2714       BernoulliB,BesselI,BesselJ,BesselK,BesselY,Beta,Binomial,Blank,%
2715       BlankNullSequence,BlankSequence,Block,Boxed,BoxRatios,Break,Byte,%
2716       ByteCount,Cancel,Cases,Catch,Ceiling,CForm,Character,Characters,%
2717       ChebyshevT,ChebyshevU,Check,Chop,Clear,ClearAll,ClearAttributes,%
2718       ClipFill,Close,Coefficient,CoefficientList,Collect,ColumnForm,%
2719       Complement,Complex,CompoundExpression,Condition,Conjugate,%
2720       Constants,Context,Continuation,Continue,ContourGraphics,%
2721       ContourPlot,Cos,Cosh,Cot,Coth,Count,Csc,Csch,Cubics,Cyclotomic,%
2722       D,Dashing,Decompose,Decrement,Default,Definition,Denominator,%
2723       DensityGraphics,DensityPlot,Depth,Derivative,Det,DiagonalMatrix,%
2724       DigitBlock,Dimensions,DirectedInfinity,Display,DisplayFunction,%
2725       Distribute,Divide,DivideBy,Divisors,DivisorSigma,Do,Dot,Drop,Dt,%
2726       Dump,EdgeForm,Eigensystem,Eigenvalues,Eigenvectors,Eliminate,%
2727       EllipticE,EllipticExp,EllipticF,EllipticK,EllipticLog,EllipticPi,%
2728       EllipticTheta,End,EndPackage,EngineeringForm,Environment,Equal,%
2729       Erf,EulerE,EulerPhi,EvenQ,Exit,Exp,Expand,ExpandAll,%
2730       ExpandDenominator,ExpandNumerator,ExpIntegralE,ExpIntegralEi,%
2731       Exponent,Expression,ExtendedGCD,FaceForm,Factor,FactorComplete,%
2732       Factorial,Factorial2,FactorInteger,FactorList,FactorSquareFree,%
2733       FactorSquareFreeList,FactorTerms,FactorTermsList,FindMinimum,%
2734       FindRoot,First,Fit,FixedPoint,Flatten,Floor,FontForm,For,Format,%
2735       FormatType,FortranForm,Fourier,FreeQ,FullDefinition,FullForm,%
2736       Function,Gamma,GCD,GegenbauerC,General,Get,Goto,Graphics,%
2737       Graphics3D,GrayLevel,Greater,GreaterEqual,Head,HermiteH,%
2738       HiddenSurface,Hold,HoldForm,Hypergeometric0F1,Hypergeometric1F1,%
2739       Hypergeometric2F1,HypergeometricU,Identity,IdentityMatrix,If,Im,%
2740       Implies,In,Increment,Indent,Infix,Information,Inner,Input,%
2741       InputForm,InputString,Insert,Integer,IntegerQ,Integrate,%
2742       Intersection,Inverse,InverseFourier,InverseJacobiSN,%
```

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2743        InverseSeries,JacobiAmplitude,JacobiP,JacobiSN,JacobiSymbol,Join,%
2744        Label,LaguerreL,Last,LatticeReduce,LCM,LeafCount,LegendreP,%
2745        LegendreQ,LegendreType,Length,LerchPhi,Less,LessEqual,Level,%
2746        Lighting,LightSources,Limit,Line,LinearSolve,LineBreak,List,%
2747        ListContourPlot,ListDensityPlot,ListPlot,ListPlot3D,Literal,Log,%
2748        LogicalExpand,LogIntegral,MainSolve,Map,MapAll,MapAt,MatchQ,%
2749        MatrixForm,MatrixQ,Max,MaxBend,MaxMemoryUsed,MemberQ,%
2750        MemoryConstrained,MemoryInUse,Mesh,Message,MessageName,Messages,%
2751        Min,Minors,Minus,Mod,Modulus,MoebiusMu,Multinomial,N,NameQ,Names,%
2752        NBernoulliB,Needs,Negative,Nest,NestList,NIntegrate,%
2753        NonCommutativeMultiply,NonConstants,NonNegative,Normal,Not,%
2754        NProduct,NSum,NullSpace,Number,NumberForm,NumberPoint,NumberQ,%
2755        NumberSeparator,Numerator,O,OddQ,Off,On,OpenAppend,OpenRead,%
2756        OpenTemporary,OpenWrite,Operate,Optional,Options,Or,Order,%
2757        OrderedQ,Out,Outer,OutputForm,PageHeight,PageWidth,%
2758        ParametricPlot,ParametricPlot3D,Part,Partition,PartitionsP,%
2759        PartitionsQ,Pattern,Permutations,Plot,Plot3D,PlotDivision,%
2760        PlotJoined,PlotLabel,PlotPoints,PlotRange,PlotStyle,Pochhammer,%
2761        Plus,Point,PointSize,PolyGamma,Polygon,PolyLog,PolynomialQ,%
2762        PolynomialQuotient,PolynomialRemainder,Position,Positive,Postfix,%
2763        Power,PowerMod,PrecedenceForm,Precision,PreDecrement,Prefix,%
2764        PreIncrement,Prepend,PrependTo,Prime,PrimeQ,Print,PrintForm,%
2765        Product,Protect,PseudoInverse,Put,PutAppend,Quartics,Quit,%
2766        Quotient,Random,Range,Rational,Rationalize,Raw,Re,Read,ReadList,%
2767        Real,Rectangle,Reduce,Remove,RenderAll,Repeated,RepeatedNull,%
2768        Replace,ReplaceAll,ReplaceRepeated,Rest,Resultant,Return,Reverse,%
2769        RGBColor,Roots,RotateLeft,RotateRight,Round,RowReduce,Rule,%
2770        RuleDelayed,Run,RunThrough,SameQ,Save,Scaled,Scan,ScientificForm,%
2771        Sec,Sech,SeedRandom,Select,Sequence,SequenceForm,Series,%
2772        SeriesData,Set,SetAttributes,SetDelayed,SetOptions,Shading,Share,%
2773        Short,Show,Sign,Signature,Simplify,Sin,SingularValues,Sinh,%
2774        Skeleton,Slot,SlotSequence,Solve,SolveAlways,Sort,%
2775        SphericalHarmonicY,Splice,Sqrt,StirlingS1,StirlingS2,String,%
2776        StringBreak,StringForm,StringJoin,StringLength,StringMatchQ,%
2777        StringSkeleton,Subscript,Subscripted,Subtract,SubtractForm,Sum,%
2778        Superscript,SurfaceGraphics,Switch,Symbol,Table,TableForm,TagSet,%
2779        TagSetDelayed,TagUnset,Take,Tan,Tanh,ToString,TensorRank,TeXForm,%
2780        Text,TextForm,Thickness,Thread,Through,Throw,Ticks,%
2781        TimeConstrained,Times,TimesBy,Timing,ToExpression,Together,%
2782        ToRules,ToString,TotalHeight,TotalWidth,Transpose,TreeForm,TrueQ,%
2783        Unequal,Union,Unique,Unprotect,Unset,Update,UpSet,UpSetDelayed,%
2784        ValueQ,Variables,VectorQ,ViewPoint,WeierstrassP,%
2785        WeierstrassPPrime,Which,While,WorkingPrecision,Write,WriteString,%
2786        Xor,ZeroTest,Zeta},%
2787    morendkeywords={All,Automatic,Catalan,ComplexInfinity,Constant,%
2788        Degree,E,EndOfFile,EulerGamma,False,Flat,GoldenRatio,HoldAll,%
2789        HoldFirst,HoldRest,I,Indeterminate,Infinity,Listable,Locked,%
2790        Modular,None,Null,OneIdentity,Orderless,Pi,Protected,%
2791        ReadProtected,True,$CommandLine,$Context,$ContextPath,$Display,%
2792        $DisplayFunction,$Echo,$Epilog,$IgnoreEOF,$Line,$Messages,%
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2793        $Output,$Path,$Post,$Pre,$PrePrint,$RecursionLimit,$System,%
2794        $Urgent,$Version},%
2795      sensitive,%
2796      morecomment=[s]{(*}{*)},%
2797      morestring=[d]"%
2798    }[keywords,comments,strings]%
```

2799 ⟨/lang1⟩

2.43 Mercury

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

2800 ⟨∗lang2⟩

```
2801 %%
2802 %% Mercury definition (c) 1997 Dominique de Waleffe
2803 %% Extended (c) 2001 Ralph Becket
2804 %%
2805 \lst@definelanguage{Mercury}%
2806    {otherkeywords={::,->,-->,--->,:-,==,=>,<=,<=>},%
2807     morekeywords={module,include_module,import_module,interface,%
2808        end_module,implementation,mode,is,failure,semidet,nondet,det,%
2809        multi,erroneous,inst,in,out,di,uo,ui,type,typeclass,instance,%
2810        where,with_type,pred,func,lambda,impure,semipure,if,then,else,%
2811        some,all,not,true,fail,pragma,memo,no_inline,inline,loop_check,%
2812        minimal_model,fact_table,type_spec,terminates,does_not_terminate,%
2813        check_termination,promise_only_solution,unsafe_promise_unique,%
2814        source_file,obsolete,import,export,c_header_code,c_code,%
2815        foreign_code,foreign_proc,may_call_mercury,will_not_call_mercury,%
2816        thread_safe,not_thread_safe},%
2817     sensitive=t,%
2818     morecomment=[l]\%,%
2819     morecomment=[s]{/*}{*/},%
2820     morestring=[bd]",%
2821     morestring=[bd]'%
2822    }[keywords,comments,strings]%
```

2823 ⟨/lang2⟩

2.44 MetaPost

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

2824 ⟨∗lang3⟩

```
2825 %%
2826 %% MetaPost definition (c) 2004 Brooks Moses
2827 %%    This definition is based on the language specifications
2828 %%    contained in the _User's Manual for Metapost_, with the core
2829 %%    language enhancements that are described in the _Drawing
```

```
2830 %%    Graphs with MetaPost_ documentation.
2831 %%
2832 \lst@definelanguage{MetaPost}%
2833   {% keywords[1] = MetaPost primitives (not found in following tables)
2834     morekeywords={end,begingroup,endgroup,beginfig,endfig,def,vardef,%
2835        primary,secondary,tertiary,primarydef,secondarydef,tertiarydef,%
2836        expr,suffix,text,enddef,if,fi,else,elseif,for,forsuffixes,%
2837        forever,endfor,upto,downto,stop,until,tension,controls,on,off,%
2838        btex,etex,within,input},
2839     % keywords[2] = Operators (Tables 6-9 in MetaPost User's manual)
2840     morekeywords=[2]{abs,and,angle,arclength,arctime,ASCII,bbox,bluepart,%
2841        boolean,bot,ceiling,center,char,color,cosd,cutafter,cutbefore,%
2842        cycle,decimal,dir,direction,directionpoint,directiontime,div,%
2843        dotprod,floor,fontsize,greenpart,hex,infont,intersectionpoint,%
2844        intersectiontimes,inverse,known,length,lft,llcorner,lrcorner,%
2845        makepath,makepen,mexp,mlog,mod,normaldeviate,not,numeric,oct,%
2846        odd,or,pair,path,pen,penoffset,picture,point,postcontrol,%
2847        precontrol,redpart,reverse,rotated,round,rt,scaled,shifted,%
2848        sind,slanted,sqrt,str,string,subpath,substring,top,transform,%
2849        transformed,ulcorner,uniformdeviate,unitvector,unknown,%
2850        urcorner,whatever,xpart,xscaled,xxpart,xypart,ypart,yscaled,%
2851        yxpart,yypart,zscaled,of,reflectedabout,rotatedaround,ulft,urt,%
2852        llft,lrt,readfrom,write,stroked,filled,textual,clipped,bounded,%
2853        pathpart,penpart,dashpart,textpart,fontpart},%
2854     % keywords[3] = Commands (Table 10)
2855     morekeywords=[3]{addto,clip,cutdraw,draw,drawarrow,drawdblarrow,%
2856        fill,filldraw,interim,let,loggingall,newinternal,pickup,%
2857        save,setbounds,shipout,show,showdependencies,showtoken,%
2858        showvariable,special,tracingall,tracingnone,undraw,unfill,%
2859        unfilldraw,to,also,contour,doublepath,withcolor,withpen,%
2860        dashed,randomseed},%
2861     % keywords[4] = Function-Like Macros (Table 11)
2862     morekeywords=[4]{boxit,boxjoin,bpath,buildcycle,circleit,dashpattern,%
2863        decr,dotlabel,dotlabels,drawboxed,drawboxes,drawoptions,%
2864        drawunboxed,fixpos,fixsize,incr,interpath,label,labels,max,min,pic,%
2865        thelabel,z,image},%
2866     % keywords[5] = Internal and Predefined Variables (Tables 3, 4)
2867     morekeywords=[5]{ahangle,ahlength,bboxmargin,charcode,circmargin,%
2868        day,defaultdx,defaultdy,defaultpen,defaultscale,labeloffset,%
2869        linecap,linejoin,miterlimit,month,pausing,prologues,showstopping,%
2870        time,tracingcapsules,tracingchoices,tracingcommands,%
2871        tracingequations,tracinglostchars,tracingmacros,tracingonline,%
2872        tracingoutput,tracingrestores,tracingspecs,tracingstats,%
2873        tracingtitles,truecorners,warningcheck,year},
2874     morekeywords=[5]{background,currentpen,currentpicture,cuttings,%
2875        defaultfont},%
2876     % keywords[6] = Predefined Constants (Table 5)
2877     morekeywords=[6]{beveled,black,blue,bp,butt,cc,cm,dd,ditto,down,%
2878        epsilon,evenly,false,fullcircle,green,halfcircle,identity,%
2879        in,infinity,left,mitered,mm,nullpicture,origin,pc,pencircle,%
```

```
2880        pt,quartercircle,red,right,rounded,squared,true,unitsquare,%
2881        up,white,withdots},
2882      sensitive=false,%
2883      alsoother={0123456789$},%
2884      morecomment=[l]\%,%
2885      morestring=[mf]{input\ },%
2886      morestring=[b]"%
2887    }[keywords,comments,strings,mf]%
```

2888 ⟨/lang3⟩

2.45   Miranda

Thanks to Peter Bartke for providing the definition.

2889 ⟨∗lang2⟩

```
2890 %%
2891 %% Miranda definition (c) 1998 Peter Bartke
2892 %%
2893 %% Miranda: pure lazy functional language with polymorphic type system,
2894 %%          garbage collection and functions as first class citizens
2895 %%
2896 \lst@definelanguage{Miranda}%
2897    {morekeywords={abstype,div,if,mod,otherwise,readvals,show,type,where,%
2898        with,bool,char,num,sys_message,False,True,Appendfile,Closefile,%
2899        Exit,Stderr,Stdout,System,Tofile,\%include,\%export,\%free,%
2900        \%insert,abs,and,arctan,cjustify,code,concat,const,converse,cos,%
2901        decode,digit,drop,dropwhile,entier,error,exp,filemode,filter,%
2902        foldl,foldl1,foldr,foldr1,force,fst,getenv,hd,hugenum,id,index,%
2903        init,integer,iterate,last,lay,layn,letter,limit,lines,ljustify,%
2904        log,log10,map,map2,max,max2,member,merge,min,min2,mkset,neg,%
2905        numval,or,pi,postfix,product,read,rep,repeat,reverse,rjustify,%
2906        scan,seq,showfloat,shownum,showscaled,sin,snd,sort,spaces,sqrt,%
2907        subtract,sum,system,take,takewhile,tinynum,tl,transpose,undef,%
2908        until,zip2,zip3,zip4,zip5,zip6,zip},%
2909      sensitive,%
2910      morecomment=[l]||,%
2911      morestring=[b]"%
2912    }[keywords,comments,strings]%
```

2913 ⟨/lang2⟩

2.46   Mizar

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

2914 ⟨∗lang3⟩

```
2915 %%
2916 %% Mizar definition (c) 2003 Adam Grabowski
2917 %%
2918 %% Mizar is freely available at URL www.mizar.org for the Linux x86,
```

```
2919 %% Solaris x86, and Windows operating systems.
2920 %%
2921 \lst@definelanguage{Mizar}%
2922   {otherkeywords={->,(\#,\#),.=),\&},%
2923     morekeywords={vocabulary,constructors,$1,$1,$2,$3,$4,$5,$6,$7,$8,%
2924         @proof,according,aggregate,and,antonym,as,associativity,assume,%
2925         asymmetry,attr,be,begin,being,by,canceled,case,cases,cluster,%
2926         clusters,coherence,commutativity,compatibility,connectedness,%
2927         consider,consistency,constructors,contradiction,correctness,def,%
2928         deffunc,define,definition,definitions,defpred,end,environ,equals,%
2929         ex,exactly,existence,for,from,func,given,hence,hereby,holds,%
2930         idempotence,if,iff,implies,involutiveness,irreflexivity,is,it,%
2931         let,means,mode,non,not,notation,now,of,or,otherwise,over,per,%
2932         pred,prefix,projectivity,proof,provided,qua,reconsider,redefine,%
2933         reflexivity,requirements,reserve,scheme,schemes,section,selector,%
2934         set,st,struct,such,suppose,symmetry,synonym,take,that,the,then,%
2935         theorem,theorems,thesis,thus,to,transitivity,uniqueness,%
2936         vocabulary,where},%
2937     sensitive=t,%
2938     morecomment=[l]::%
2939   }[keywords,comments]%

2940 ⟨/lang3⟩
```

2.47 ML

Thanks to Torben Hoffmann for providing the definition.

2941 ⟨*lang2⟩

```
2942 %%
2943 %% ML definition (c) 1999 Torben Hoffmann
2944 %%
2945 \lst@definelanguage{ML}%
2946   {morekeywords={abstype,and,andalso,as,case,do,datatype,else,end,%
2947         eqtype,exception,fn,fun,functor,handle,if,in,include,infix,%
2948         infixr,let,local,nonfix,of,op,open,orelse,raise,rec,sharing,sig,%
2949         signature,struct,structure,then,type,val,with,withtype,while},%
2950     sensitive,%
2951     morecomment=[n]{(*}{*)},%
2952     morestring=[d]"%
2953   }[keywords,comments,strings]%

2954 ⟨/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.

2955 ⟨∗lang3⟩

2956 \lst@definelanguage{Modula-2}%
2957   {morekeywords={AND,ARRAY,BEGIN,BY,CASE,CONST,DIV,DO,ELSE,ELSIF,END,%
2958   EXIT,EXPORT,FOR,FROM,IF,IMPLEMENTATION,IMPORT,IN,MOD,MODULE,NOT,%
2959   OF,OR,POINTER,PROCEDURE,QUALIFIED,RECORD,REPEAT,RETURN,SET,THEN,%
2960   TYPE,UNTIL,VAR,WHILE,WITH,ABS,BITSET,BOOLEAN,CAP,CARDINAL,CHAR,%
2961   CHR,DEC,EXCL,FALSE,FLOAT,HALT,HIGH,INC,INCL,INTEGER,LONGCARD,%
2962   LONGINT,LONGREAL,MAX,MIN,NIL,ODD,ORD,PROC,REAL,SIZE,TRUE,TRUNC,%
2963   VAL,DEFINITION,LOOP},% added keywords due to Peter Bartke 99/07/22
2964   sensitive,%
2965   morecomment=[n]{(*}{*)},%
2966   morestring=[d]',%
2967   morestring=[d]"%
2968   }[keywords,comments,strings]%

2969 ⟨/lang3⟩

2.49 MuPAD

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

2970 ⟨∗lang3⟩

2971 \lst@definelanguage{MuPAD}{%
2972   morekeywords={end,next,break,if,then,elif,else,end_if,case,end_case,%
2973   otherwise,for,from,to,step,downto,in,end_for,while,end_while,%
2974   repeat,until,end_repeat,or,and,not,xor,div,mod,union,minus,%
2975   intersect,subset,proc,begin,end_proc,domain,end_domain,category,%
2976   end_category,axiom,end_axiom,quit,delete,frame},%
2977   morekeywords=[2]{NIL,FAIL,TRUE,FALSE,UNKNOWN,I,RD_INF,RD_NINF,%
2978   RD_NAN,name,local,option,save,inherits,of,do},%
2979   otherkeywords={\%if,?,!,:=,<,>,=,<=,<>,>=,==>,<=>,::,..,...,->,%
2980   @,@@,\$},%
2981   sensitive=true,%
2982   morecomment=[l]{//},%
2983   morecomment=[n]{/*}{*/},%
2984   morestring=[b]",%
2985   morestring=[d]{`}%
2986   }[keywords,comments,strings]

2987 ⟨/lang3⟩

2.50 NASTRAN

2988 ⟨∗lang3⟩

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

2989 \lst@definelanguage{NASTRAN}
2990   {morekeywords={ENDDATA},%
2991   morecomment=[l]$,%

```
2992    MoreSelectCharTable=%
2993         \lst@CArgX BEGIN\ BULK\relax\lst@CDef{}%
2994         {\lst@ifmode\else \ifnum\lst@length=\z@
2995             \lst@EnterMode{\lst@GPmode}{\lst@modetrue
2996                 \let\lst@currstyle\lst@gkeywords@sty}%
2997          \fi \fi}%
2998         {\ifnum\lst@mode=\lst@GPmode
2999             \lst@XPrintToken \lst@LeaveMode
3000          \fi}%
3001   }[keywords,comments]%
```

3002 ⟨/lang3⟩

2.51   Oberon-2

3003 ⟨∗lang3⟩

```
3004 \lst@definelanguage{Oberon-2}%
3005   {morekeywords={ARRAY,BEGIN,BOOLEAN,BY,CASE,CHAR,CONST,DIV,DO,ELSE,%
3006       ELSIF,END,EXIT,FALSE,FOR,IF,IMPORT,IN,INTEGER,IS,LONGINT,%
3007       LONGREAL,LOOP,MOD,MODULE,NIL,OF,OR,POINTER,PROCEDURE,REAL,RECORD,%
3008       REPEAT,RETURN,SET,SHORTINT,THEN,TO,TRUE,TYPE,UNTIL,VAR,WHILE,%
3009       WITH,ABS,ASH,CAP,CHR,COPY,DEC,ENTIER,EXCL,HALT,INC,INCL,LEN,LONG,%
3010       MAX,MIN,NEW,ODD,ORD,SHORT,SIZE},%
3011   sensitive,%
3012   morecomment=[n]{(*}{*)},%
3013   morestring=[d]',%
3014   morestring=[d]"%
3015   }[keywords,comments,strings]%
```

3016 ⟨/lang3⟩

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.

3017 ⟨∗lang3⟩

```
3018 %%
3019 %% OCL definition (c) 2000 Achim D. Brucker
3020 %%
3021 %% You are allowed to use, modify and distribute this code either under
3022 %% the terms of the LPPL (version 1.0 or later) or the GPL (version 2.0
3023 %% or later).
3024 %%
```

First we define are 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).

```
3025 \lst@definelanguage[decorative]{OCL}[OMG]{OCL}
3026   {otherkeywords={@pre},%
3027    morendkeywords={name,attributes,associatoinEnds,operations,%
3028       supertypes,allSupertypes,allInstances,oclIsKindOf,oclIsTypeOf,%
3029       oclAsType,oclInState,oclIsNew,evaluationType,abs,floor,round,max,%
3030       min,div,mod,size,concat,toUpper,toLower,substring,includes,%
3031       excludes,count,includesAll,exludesAll,isEmpty,notEmpty,sum,%
3032       exists,forAll,isUnique,sortedBy,iterate,union,intersection,%
3033       including,excluding,symmetricDifference,select,reject,collect,%
3034       asSequence,asBag,asSequence,asSet,append,prepend,subSequence,at,%
3035       first,last,true,false,isQuery}%
3036   }%
```

Remark: "isQuery" is not real OCL, but a 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):

```
3037 \lst@definelanguage[OMG]{OCL}%
3038       {morekeywords={context,pre,inv,post},%
```

Second order keywords are the operation 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):

```
3039       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:

```
3040       morekeywords=[3]{Boolean,Integer,Real,String,Set,Sequence,Bag,%
3041          OclType,OclAny,OclExpression,Enumeration,Collection,},%
3042       sensitive=t,%
3043       morecomment=[l]--,%
3044       morestring=[d]'%
3045   }[keywords,comments,strings]%
```

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

```
3046 ⟨/lang3⟩
```

2.53 Octave

```
3047 ⟨*lang1⟩
```

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

```
3048 %%
3049 %% Octave definition (c) 2001,2002 Ulrich G. Wortmann
3050 %%
3051 \lst@definelanguage{Octave}%
3052   {morekeywords={gt,lt,amp,abs,acos,acosh,acot,acoth,acsc,acsch,%
```

```
3053    all,angle,ans,any,asec,asech,asin,asinh,atan,atan2,atanh,auread,%
3054    auwrite,axes,axis,balance,bar,bessel,besselk,bessely,beta,%
3055    betainc,betaln,blanks,bone,break,brighten,capture,cart2pol,%
3056    cart2sph,caxis,cd,cdf2rdf,cedit,ceil,chol,cla,clabel,clc,clear,%
3057    clf,clock,close,colmmd,Colon,colorbar,colormap,ColorSpec,colperm,%
3058    comet,comet3,compan,compass,computer,cond,condest,conj,contour,%
3059    contour3,contourc,contrast,conv,conv2,cool,copper,corrcoef,cos,%
3060    cosh,cot,coth,cov,cplxpair,cputime,cross,csc,csch,csvread,%
3061    csvwrite,cumprod,cumsum,cylinder,date,dbclear,dbcont,dbdown,%
3062    dbquit,dbstack,dbstatus,dbstep,dbstop,dbtype,dbup,ddeadv,ddeexec,%
3063    ddeinit,ddepoke,ddereq,ddeterm,ddeunadv,deblank,dec2hex,deconv,%
3064    del2,delete,demo,det,diag,diary,diff,diffuse,dir,disp,dlmread,%
3065    dlmwrite,dmperm,dot,drawnow,echo,eig,ellipj,ellipke,else,elseif,%
3066    end,engClose,engEvalString,engGetFull,engGetMatrix,engOpen,%
3067    engOutputBuffer,engPutFull,engPutMatrix,engSetEvalCallback,%
3068    engSetEvalTimeout,engWinInit,eps,erf,erfc,erfcx,erfinv,%
3069    errorbar,etime,etree,eval,exist,exp,expint,expm,expo,eye,fclose,%
3070    feather,feof,ferror,feval,fft,fft2,fftshift,fgetl,fgets,figure,%
3071    fill,fill3,filter,filter2,find,findstr,finite,fix,flag,fliplr,%
3072    flipud,floor,flops,fmin,fmins,fopen,for,format,fplot,fprintf,%
3073    fread,frewind,fscanf,fseek,ftell,full,function,funm,fwrite,fzero,%
3074    gallery,gamma,gammainc,gammaln,gca,gcd,gcf,gco,get,getenv,%
3075    getframe,ginput,global,gplot,gradient,gray,graymon,grid,griddata,%
3076    gtext,hadamard,hankel,help,hess,hex2dec,hex2num,hidden,hilb,hist,%
3077    hold,home,hostid,hot,hsv,hsv2rgb,if,ifft,ifft2,imag,image,%
3078    imagesc,Inf,info,input,int2str,interp1,interp2,interpft,inv,%
3079    invhilb,isempty,isglobal,ishold,isieee,isinf,isletter,isnan,%
3080    isreal,isspace,issparse,isstr,jet,keyboard,kron,lasterr,lcm,%
3081    legend,legendre,length,lin2mu,line,linspace,load,log,log10,log2,%
3082    loglog,logm,logspace,lookfor,lower,ls,lscov,lu,magic,matClose,%
3083    matDeleteMatrix,matGetDir,matGetFp,matGetFull,matGetMatrix,%
3084    matGetNextMatrix,matGetString,matlabrc,matlabroot,matOpen,%
3085    matPutFull,matPutMatrix,matPutString,max,mean,median,menu,mesh,%
3086    meshc,meshgrid,meshz,mexAtExit,mexCallMATLAB,mexdebug,%
3087    mexErrMsgTxt,mexEvalString,mexFunction,mexGetFull,mexGetMatrix,%
3088    mexGetMatrixPtr,mexPrintf,mexPutFull,mexPutMatrix,mexSetTrapFlag,%
3089    min,more,movie,moviein,mu2lin,mxCalloc,mxCopyCharacterToPtr,%
3090    mxCopyComplex16ToPtr,mxCopyInteger4ToPtr,mxCopyPtrToCharacter,%
3091    mxCopyPtrToComplex16,mxCopyPtrToInteger4,mxCopyPtrToReal8,%
3092    mxCopyReal8ToPtr,mxCreateFull,mxCreateSparse,mxCreateString,%
3093    mxFree,mxFreeMatrix,mxGetIr,mxGetJc,mxGetM,mxGetN,mxGetName,%
3094    mxGetNzmax,mxGetPi,mxGetPr,mxGetScalar,mxGetString,mxIsComplex,%
3095    mxIsFull,mxIsNumeric,mxIsSparse,mxIsString,mxIsTypeDouble,%
3096    mxSetIr,mxSetJc,mxSetM,mxSetN,mxSetName,mxSetNzmax,mxSetPi,%
3097    mxSetPr,NaN,nargchk,nargin,nargout,newplot,nextpow2,nnls,nnz,%
3098    nonzeros,norm,normest,null,num2str,nzmax,ode23,ode45,orient,orth,%
3099    pack,pascal,patch,path,pause,pcolor,pi,pink,pinv,plot,plot3,%
3100    pol2cart,polar,poly,polyder,polyeig,polyfit,polyval,polyvalm,%
3101    pow2,print,printopt,prism,prod,pwd,qr,qrdelete,qrinsert,quad,%
3102    quad8,quit,quiver,qz,rand,randn,randperm,rank,rat,rats,rbbox,%
```

```
3103        rcond,real,realmax,realmin,refresh,rem,reset,reshape,residue,%
3104        return,rgb2hsv,rgbplot,rootobject,roots,rose,rosser,rot90,rotate,%
3105        round,rref,rrefmovie,rsf2csf,save,saxis,schur,sec,sech,semilogx,%
3106        semilogy,set,setstr,shading,sign,sin,sinh,size,slice,sort,sound,%
3107        spalloc,sparse,spaugment,spconvert,spdiags,specular,speye,spfun,%
3108        sph2cart,sphere,spinmap,spline,spones,spparms,sprandn,sprandsym,%
3109        sprank,sprintf,spy,sqrt,sqrtm,sscanf,stairs,startup,std,stem,%
3110        str2mat,str2num,strcmp,strings,strrep,strtok,subplot,subscribe,%
3111        subspace,sum,surf,surface,surfc,surfl,surfnorm,svd,symbfact,%
3112        symmmd,symrcm,tan,tanh,tempdir,tempname,terminal,text,tic,title,%
3113        toc,toeplitz,trace,trapz,tril,triu,type,uicontrol,uigetfile,%
3114        uimenu,uiputfile,unix,unwrap,upper,vander,ver,version,view,%
3115        viewmtx,waitforbuttonpress,waterfall,wavread,wavwrite,what,%
3116        whatsnew,which,while,white,whitebg,who,whos,wilkinson,wk1read,%
3117        stderr,stdout,plot,set,endif,wk1write,xlabel,xor,ylabel,zeros,%
3118        zlabel,zoom,endwhile,endfunction,printf,case,switch,otherwise,%
3119        system,lsode,endfor,error,ones,oneplot,__gnuplot_set__,do,until},%
3120      sensitive=t,%
3121      morecomment=[l]\#,%
3122      morecomment=[l]\#\#,%
3123      morecomment=[l]\%,%
3124      morestring=[m]',%
3125      morestring=[m]"%
3126    }[keywords,comments,strings]%
3127 ⟨/lang1⟩
```

2.54   Oz

```
3128 ⟨∗lang2⟩
```

Thanks to Andres Becerra Sandoval for providing this language definition.
```
3129 %%
3130 %% Oz definition (c) Andres Becerra Sandoval
3131 %%
3132 \lst@definelanguage{Oz}%
3133    {morekeywords={andthen,at,attr,case,catch,choice,class,%
3134        cond,declare,define,dis,div,else,elsecase,%
3135        elseif,end,export,fail,false,feat,finally,%
3136        from,fun,functor,if,import,in,local,%
3137        lock,meth,mod,not,of,or,orelse,%
3138        prepare,proc,prop,raise,require,self,skip,%
3139        then,thread,true,try,unit},%
3140      sensitive=true,%
3141      morecomment=[l]{\%},%
3142      morecomment=[s]{/*}{*/},%
3143      morestring=[b]",%
3144      morestring=[d]'%
3145    }[keywords,comments,strings]%
3146 ⟨/lang2⟩
```

2.55   Pascal

3147 ⟨∗lang1⟩

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

```
3148 \lst@definelanguage[XSC]{Pascal}[Standard]{Pascal}
3149   {deletekeywords={alfa,byte,pack,unpack},% 1998 Andreas Stephan
3150    morekeywords={dynamic,external,forward,global,module,nil,operator,%
3151        priority,sum,type,use,dispose,mark,page,release,cimatrix,%
3152        cinterval,civector,cmatrix,complex,cvector,dotprecision,imatrix,%
3153        interval,ivector,rmatrix,rvector,string,im,inf,re,sup,chr,comp,%
3154        eof,eoln,expo,image,ival,lb,lbound,length,loc,mant,maxlength,odd,%
3155        ord,pos,pred,round,rval,sign,substring,succ,trunc,ub,ubound}%
3156   }%
3157 \lst@definelanguage[Borland6]{Pascal}[Standard]{Pascal}
3158   {morekeywords={asm,constructor,destructor,implementation,inline,%
3159        interface,nil,object,shl,shr,string,unit,uses,xor},%
3160    morendkeywords={Abs,Addr,ArcTan,Chr,Concat,Copy,Cos,CSeg,DiskFree,%
3161        DiskSize,DosExitCode,DosVersion,DSeg,EnvCount,EnvStr,Eof,Eoln,%
3162        Exp,FExpand,FilePos,FileSize,Frac,FSearch,GetBkColor,GetColor,%
3163        GetDefaultPalette,GetDriverName,GetEnv,GetGraphMode,GetMaxMode,%
3164        GetMaxX,GetMaxY,GetModeName,GetPaletteSize,GetPixel,GetX,GetY,%
3165        GraphErrorMsg,GraphResult,Hi,ImageSize,InstallUserDriver,%
3166        InstallUserFont,Int,IOResult,KeyPressed,Length,Lo,MaxAvail,%
3167        MemAvail,MsDos,Odd,Ofs,Ord,OvrGetBuf,OvrGetRetry,ParamCount,%
3168        ParamStr,Pi,Pos,Pred,Ptr,Random,ReadKey,Round,SeekEof,SeekEoln,%
3169        Seg,SetAspectRatio,Sin,SizeOf,Sound,SPtr,Sqr,Sqrt,SSeg,Succ,%
3170        Swap,TextHeight,TextWidth,Trunc,TypeOf,UpCase,WhereX,WhereY,%
3171        Append,Arc,Assign,AssignCrt,Bar,Bar3D,BlockRead,BlockWrite,ChDir,%
3172        Circle,ClearDevice,ClearViewPort,Close,CloseGraph,ClrEol,ClrScr,%
3173        Dec,Delay,Delete,DelLine,DetectGraph,Dispose,DrawPoly,Ellipse,%
3174        Erase,Exec,Exit,FillChar,FillEllipse,FillPoly,FindFirst,FindNext,%
3175        FloodFill,Flush,FreeMem,FSplit,GetArcCoords,GetAspectRatio,%
3176        GetDate,GetDefaultPalette,GetDir,GetCBreak,GetFAttr,%
3177        GetFillSettings,GetFTime,GetImage,GetIntVec,GetLineSettings,%
3178        GetMem,GetPalette,GetTextSettings,GetTime,GetVerify,%
3179        GetViewSettings,GoToXY,Halt,HighVideo,Inc,InitGraph,Insert,%
3180        InsLine,Intr,Keep,Line,LineRel,LineTo,LowVideo,Mark,MkDir,Move,%
3181        MoveRel,MoveTo,MsDos,New,NormVideo,NoSound,OutText,OutTextXY,%
3182        OvrClearBuf,OvrInit,OvrInitEMS,OvrSetBuf,PackTime,PieSlice,%
3183        PutImage,PutPixel,Randomize,Rectangle,Release,Rename,%
3184        RestoreCrtMode,RmDir,RunError,Sector,Seek,SetActivePage,%
3185        SetAllPalette,SetBkColor,SetCBreak,SetColor,SetDate,SetFAttr,%
3186        SetFillPattern,SetFillStyle,SetFTime,SetGraphBufSize,%
3187        SetGraphMode,SetIntVec,SetLineStyle,SetPalette,SetRGBPalette,%
3188        SetTextBuf,SetTextJustify,SetTextStyle,SetTime,SetUserCharSize,%
3189        SetVerify,SetViewPort,SetVisualPage,SetWriteMode,Sound,Str,%
3190        SwapVectors,TextBackground,TextColor,TextMode,Truncate,%
3191        UnpackTime,Val,Window}%
3192   }%
3193 \lst@definelanguage[Standard]{Pascal}%
```

```
3194  {morekeywords={alfa,and,array,begin,boolean,byte,case,char,const,div,%
3195      do,downto,else,end,false,file,for,function,get,goto,if,in,%
3196      integer,label,maxint,mod,new,not,of,or,pack,packed,page,program,%
3197      put,procedure,read,readln,real,record,repeat,reset,rewrite,set,%
3198      text,then,to,true,type,unpack,until,var,while,with,write,%
3199      writeln},%
3200    sensitive=f,%
3201    morecomment=[s]{(*}{*)},%
3202    morecomment=[s]{\{}{\}},%
3203    morestring=[d]'%
3204  }[keywords,comments,strings]%

3205 ⟨/lang1⟩
```

2.56 Perl

I got the data from `http://www.perl.com`. But I wish to thank Herbert Wein-handl for the book 'Learning Perl'.

```
3206 ⟨*lang1⟩

3207 \lst@definelanguage{Perl}%
3208    {morekeywords={abs,accept,alarm,atan2,bind,binmode,bless,caller,%
3209        chdir,chmod,chomp,chop,chown,chr,chroot,close,closedir,connect,%
3210        continue,cos,crypt,dbmclose,dbmopen,defined,delete,die,do,dump,%
3211        each,else,elsif,endgrent,endhostent,endnetent,endprotoent,%
3212        endpwent,endservent,eof,eval,exec,exists,exit,exp,fcntl,fileno,%
3213        flock,for,foreach,fork,format,formline,getc,getgrent,getgrgid,%
3214        getgrnam,gethostbyaddr,gethostbyname,gethostent,getlogin,%
3215        getnetbyaddr,getnetbyname,getnetent,getpeername,getpgrp,%
3216        getppid,getpriority,getprotobyname,getprotobynumber,getprotoent,%
3217        getpwent,getpwnam,getpwuid,getservbyname,getservbyport,%
3218        getservent,getsockname,getsockopt,glob,gmtime,goto,grep,hex,if,%
3219        import,index,int,ioctl,join,keys,kill,last,lc,lcfirst,length,%
3220        link,listen,local,localtime,log,lstat,m,map,mkdir,msgctl,msgget,%
3221        msgrcv,msgsnd,my,next,no,oct,open,opendir,ord,pack,package,pipe,%
3222        pop,pos,print,printf,prototype,push,q,qq,quotemeta,qw,qx,rand,%
3223        read,readdir,readlink,recv,redo,ref,rename,require,reset,return,%
3224        reverse,rewinddir,rindex,rmdir,s,scalar,seek,seekdir,select,%
3225        semctl,semget,semop,send,setgrent,sethostent,setnetent,setpgrp,%
3226        setpriority,setprotoent,setpwent,setservent,setsockopt,shift,%
3227        shmctl,shmget,shmread,shmwrite,shutdown,sin,sleep,socket,%
3228        socketpair,sort,splice,split,sprintf,sqrt,srand,stat,study,sub,%
3229        substr,symlink,syscall,sysopen,sysread,system,syswrite,tell,%
3230        telldir,tie,tied,time,times,tr,truncate,uc,ucfirst,umask,undef,%
3231        unless,unlink,unpack,unshift,untie,until,use,utime,values,vec,%
3232        wait,waitpid,wantarray,warn,while,write,y},%
3233    sensitive,%
3234    morecomment=[l]\#,%
3235    morestring=[b]",%
3236    morestring=[b]',%
3237    MoreSelectCharTable=%
```

```
3238        \lst@ReplaceInput{\$\#}{\lst@ProcessOther\$\lst@ProcessOther\#}%
3239    }[keywords,comments,strings]%

3240 ⟨/lang1⟩
```

2.57 PHP

Luca Balzerani sent me this language definition.

```
3241 ⟨*lang2⟩

3242 %%
3243 %% PHP definition by Luca Balzerani
3244 %%
3245 \lst@definelanguage{PHP}%
3246   {morekeywords={%
3247   %--- core language
3248     <?,?>,::,break,case,continue,default,do,else,%
3249     elseif,for,foreach,if,include,require,phpinfo,%
3250     switch,while,false,FALSE,true,TRUE,%
3251   %--- apache functions
3252     apache_lookup_uri,apache_note,ascii2ebcdic,ebcdic2ascii,%
3253     virtual,apache_child_terminate,apache_setenv,%
3254   %--- array functions
3255     array,array_change_key_case,array_chunk,array_count_values,%
3256     array_filter,array_flip,array_fill,array_intersect,%
3257     array_keys,array_map,array_merge,array_merge_recursive,%
3258     array_pad,array_pop,array_push,array_rand,array_reverse,%
3259     array_shift,array_slice,array_splice,array_sum,array_unique,%
3260     array_values,array_walk,arsort,asort,compact,count,current,each,%
3261     extract,in_array,array_search,key,krsort,ksort,list,natsort,%
3262     next,pos,prev,range,reset,rsort,shuffle,sizeof,sort,uasort,%
3263     usort,%
3264   %--- aspell functions
3265     aspell_new,aspell_check,aspell_check_raw,aspell_suggest,%
3266   %--- bc functions
3267     bcadd,bccomp,bcdiv,bcmod,bcmul,bcpow,bcscale,bcsqrt,bcsub,%
3268   %--- bzip2 functions
3269     bzclose,bzcompress,bzdecompress,bzerrno,bzerror,bzerrstr,%
3270     bzopen,bzread,bzwrite,%
3271   %--- calendar functions
3272     JDToGregorian,GregorianToJD,JDToJulian,JulianToJD,JDToJewish,%
3273     JDToFrench,FrenchToJD,JDMonthName,JDDayOfWeek,easter_date,%
3274     unixtojd,jdtounix,cal_days_in_month,cal_to_jd,cal_from_jd,%
3275   %--- ccvs functions
3276     ccvs_init,ccvs_done,ccvs_new,ccvs_add,ccvs_delete,ccvs_auth,%
3277     ccvs_reverse,ccvs_sale,ccvs_void,ccvs_status,ccvs_count,%
3278     ccvs_report,ccvs_command,ccvs_textvalue,%
3279   %--- classobj functions
3280     call_user_method,call_user_method_array,class_exists,get_class,%
3281     get_class_vars,get_declared_classes,get_object_vars,%
```

```
3282    is_a,is_subclass_of,method_exists,%
3283  %--- com functions
3284    COM,VARIANT,com_load,com_invoke,com_propget,com_get,com_propput,%
3285    com_set,com_addref,com_release,com_isenum,com_load_typelib,%
3286  %--- cpdf functions
3287    cpdf_add_annotation,cpdf_add_outline,cpdf_arc,cpdf_begin_text,%
3288    cpdf_clip,cpdf_close,cpdf_closepath,cpdf_closepath_fill_stroke,%
3289    cpdf_continue_text,cpdf_curveto,cpdf_end_text,cpdf_fill,%
3290    cpdf_finalize,cpdf_finalize_page,%
3291    cpdf_import_jpeg,cpdf_lineto,cpdf_moveto,cpdf_newpath,cpdf_open,%
3292    cpdf_page_init,cpdf_place_inline_image,cpdf_rect,cpdf_restore,%
3293    cpdf_rmoveto,cpdf_rotate,cpdf_rotate_text,cpdf_save,%
3294    cpdf_scale,cpdf_set_char_spacing,cpdf_set_creator,%
3295    cpdf_set_font,cpdf_set_horiz_scaling,cpdf_set_keywords,%
3296    cpdf_set_page_animation,cpdf_set_subject,cpdf_set_text_matrix,%
3297    cpdf_set_text_rendering,cpdf_set_text_rise,cpdf_set_title,%
3298    cpdf_setdash,cpdf_setflat,cpdf_setgray,cpdf_setgray_fill,%
3299    cpdf_setlinecap,cpdf_setlinejoin,cpdf_setlinewidth,%
3300    cpdf_setrgbcolor,cpdf_setrgbcolor_fill,cpdf_setrgbcolor_stroke,%
3301    cpdf_show_xy,cpdf_stringwidth,cpdf_set_font_directories,%
3302    cpdf_set_viewer_preferences,cpdf_stroke,cpdf_text,%
3303    cpdf_set_action_url,%
3304  %--- crack functions
3305    crack_opendict,crack_closedict,crack_check,crack_getlastmessage,%
3306  %--- ctype functions
3307    ctype_alnum,ctype_alpha,ctype_cntrl,ctype_digit,ctype_lower,%
3308    ctype_print,ctype_punct,ctype_space,ctype_upper,ctype_xdigit,%
3309  %--- curl functions
3310    curl_init,curl_setopt,curl_exec,curl_close,curl_version,%
3311    curl_error,curl_getinfo,%
3312  %--- cybercash functions
3313    cybercash_encr,cybercash_decr,cybercash_base64_encode,%
3314  %--- cybermut functions
3315    cybermut_creerformulairecm,cybermut_testmac,%
3316  %--- cyrus functions
3317    cyrus_connect,cyrus_authenticate,cyrus_bind,cyrus_unbind,%
3318    cyrus_close,%
3319  %--- datetime functions
3320    checkdate,date,getdate,gettimeofday,gmdate,gmmktime,gmstrftime,%
3321    microtime,mktime,strftime,time,strtotime,%
3322  %--- dbase functions
3323    dbase_create,dbase_open,dbase_close,dbase_pack,dbase_add_record,%
3324    dbase_delete_record,dbase_get_record,%
3325    dbase_numfields,dbase_numrecords,%
3326  %--- dba functions
3327    dba_close,dba_delete,dba_exists,dba_fetch,dba_firstkey,%
3328    dba_nextkey,dba_popen,dba_open,dba_optimize,dba_replace,%
3329  %--- dbm functions
3330    dbmopen,dbmclose,dbmexists,dbmfetch,dbminsert,dbmreplace,%
3331    dbmfirstkey,dbmnextkey,dblist,%
```

```
3332    %--- dbx functions
3333      dbx_close,dbx_connect,dbx_error,dbx_query,dbx_sort,dbx_compare,%
3334    %--- dio functions
3335      dio_open,dio_read,dio_write,dio_truncate,dio_stat,dio_seek,%
3336      dio_close,%
3337    %--- dir functions
3338      chroot,chdir,dir,closedir,getcwd,opendir,readdir,rewinddir,%
3339    %--- dotnet functions
3340      dotnet_load,%
3341    %--- errorfunc functions
3342      error_log,error_reporting,restore_error_handler,%
3343      trigger_error,user_error,%
3344    %--- exec functions
3345      escapeshellarg,escapeshellcmd,exec,passthru,system,shell_exec,%
3346    %--- fbsql functions
3347      fbsql_affected_rows,fbsql_autocommit,fbsql_change_user,%
3348      fbsql_commit,fbsql_connect,fbsql_create_db,fbsql_create_blob,%
3349      fbsql_database_password,fbsql_data_seek,fbsql_db_query,%
3350      fbsql_drop_db,fbsql_errno,fbsql_error,fbsql_fetch_array,%
3351      fbsql_fetch_field,fbsql_fetch_lengths,fbsql_fetch_object,%
3352      fbsql_field_flags,fbsql_field_name,fbsql_field_len,%
3353      fbsql_field_table,fbsql_field_type,fbsql_free_result,%
3354      fbsql_list_dbs,fbsql_list_fields,fbsql_list_tables,%
3355      fbsql_num_fields,fbsql_num_rows,fbsql_pconnect,fbsql_query,%
3356      fbsql_read_clob,fbsql_result,fbsql_rollback,fbsql_set_lob_mode,%
3357      fbsql_start_db,fbsql_stop_db,fbsql_tablename,fbsql_warnings,%
3358      fbsql_get_autostart_info,fbsql_hostname,fbsql_password,%
3359      fbsql_username,%
3360    %--- fdf functions
3361      fdf_open,fdf_close,fdf_create,fdf_save,fdf_get_value,%
3362      fdf_next_field_name,fdf_set_ap,fdf_set_status,fdf_get_status,%
3363      fdf_get_file,fdf_set_flags,fdf_set_opt,%
3364      fdf_set_javascript_action,fdf_set_encoding,fdf_add_template,%
3365    %--- filepro functions
3366      filepro,filepro_fieldname,filepro_fieldtype,filepro_fieldwidth,%
3367      filepro_fieldcount,filepro_rowcount,%
3368    %--- filesystem functions
3369      basename,chgrp,chmod,chown,clearstatcache,copy,delete,dirname,%
3370      diskfreespace,disk_total_space,fclose,feof,fflush,fgetc,fgetcsv,%
3371      fgetss,file_get_contents,file,file_exists,fileatime,filectime,%
3372      fileinode,filemtime,fileowner,fileperms,filesize,filetype,flock,%
3373      fopen,fpassthru,fputs,fread,fscanf,fseek,fstat,ftell,ftruncate,%
3374      set_file_buffer,is_dir,is_executable,is_file,is_link,%
3375      is_writable,is_writeable,is_uploaded_file,link,linkinfo,mkdir,%
3376      parse_ini_file,pathinfo,pclose,popen,readfile,readlink,rename,%
3377      rmdir,stat,lstat,realpath,symlink,tempnam,tmpfile,touch,umask,%
3378    %--- fribidi functions
3379      fribidi_log2vis,%
3380    %--- ftp functions
3381      ftp_connect,ftp_login,ftp_pwd,ftp_cdup,ftp_chdir,ftp_mkdir,%
```

```
3382    ftp_nlist,ftp_rawlist,ftp_systype,ftp_pasv,ftp_get,ftp_fget,%
3383    ftp_fput,ftp_size,ftp_mdtm,ftp_rename,ftp_delete,ftp_site,%
3384    ftp_quit,ftp_exec,ftp_set_option,ftp_get_option,%
3385  %--- funchand functions
3386    call_user_func_array,call_user_func,create_function,%
3387    func_get_args,func_num_args,function_exists,%
3388    register_shutdown_function,register_tick_function,%
3389  %--- gettext functions
3390    bindtextdomain,bind_textdomain_codeset,dcgettext,dcngettext,%
3391    dngettext,gettext,ngettext,textdomain,%
3392  %--- gmp functions
3393    gmp_init,gmp_intval,gmp_strval,gmp_add,gmp_sub,gmp_mul,%
3394    gmp_div_r,gmp_div_qr,gmp_div,gmp_mod,gmp_divexact,gmp_cmp,%
3395    gmp_com,gmp_abs,gmp_sign,gmp_fact,gmp_sqrt,gmp_sqrtrm,%
3396    gmp_pow,gmp_powm,gmp_prob_prime,gmp_gcd,gmp_gcdext,gmp_invert,%
3397    gmp_jacobi,gmp_random,gmp_and,gmp_or,gmp_xor,gmp_setbit,%
3398    gmp_scan0,gmp_scan1,gmp_popcount,gmp_hamdist,%
3399  %--- http functions
3400    header,headers_sent,setcookie,%
3401  %--- hw functions
3402    hw_Array2Objrec,hw_Children,hw_ChildrenObj,hw_Close,hw_Connect,%
3403    hw_Deleteobject,hw_DocByAnchor,hw_DocByAnchorObj,%
3404    hw_Document_BodyTag,hw_Document_Content,hw_Document_SetContent,%
3405    hw_ErrorMsg,hw_EditText,hw_Error,hw_Free_Document,hw_GetParents,%
3406    hw_GetChildColl,hw_GetChildCollObj,hw_GetRemote,%
3407    hw_GetSrcByDestObj,hw_GetObject,hw_GetAndLock,hw_GetText,%
3408    hw_GetObjectByQueryObj,hw_GetObjectByQueryColl,%
3409    hw_GetChildDocColl,hw_GetChildDocCollObj,hw_GetAnchors,%
3410    hw_Mv,hw_Identify,hw_InCollections,hw_Info,hw_InsColl,hw_InsDoc,%
3411    hw_InsertObject,hw_mapid,hw_Modifyobject,hw_New_Document,%
3412    hw_Output_Document,hw_pConnect,hw_PipeDocument,hw_Root,%
3413    hw_Who,hw_getusername,hw_stat,hw_setlinkroot,hw_connection_info,%
3414    hw_insertanchors,hw_getrellink,hw_changeobject,%
3415  %--- ibase functions
3416    ibase_connect,ibase_pconnect,ibase_close,ibase_query,%
3417    ibase_fetch_row,ibase_fetch_object,ibase_field_info,%
3418    ibase_free_result,ibase_prepare,ibase_execute,ibase_trans,%
3419    ibase_rollback,ibase_timefmt,ibase_num_fields,ibase_blob_add,%
3420    ibase_blob_close,ibase_blob_create,ibase_blob_echo,%
3421    ibase_blob_import,ibase_blob_info,ibase_blob_open,%
3422  %--- icap functions
3423    icap_open,icap_close,icap_fetch_event,icap_list_events,%
3424    icap_delete_event,icap_snooze,icap_list_alarms,%
3425    icap_rename_calendar,icap_delete_calendar,icap_reopen,%
3426  %--- iconv functions
3427    iconv,iconv_get_encoding,iconv_set_encoding,ob_iconv_handler,%
3428  %--- ifx functions
3429    ifx_connect,ifx_pconnect,ifx_close,ifx_query,ifx_prepare,ifx_do,%
3430    ifx_errormsg,ifx_affected_rows,ifx_getsqlca,ifx_fetch_row,%
3431    ifx_fieldtypes,ifx_fieldproperties,ifx_num_fields,ifx_num_rows,%
```

```
3432    ifx_create_char,ifx_free_char,ifx_update_char,ifx_get_char,%
3433    ifx_copy_blob,ifx_free_blob,ifx_get_blob,ifx_update_blob,%
3434    ifx_textasvarchar,ifx_byteasvarchar,ifx_nullformat,%
3435    ifxus_free_slob,ifxus_close_slob,ifxus_open_slob,%
3436    ifxus_seek_slob,ifxus_read_slob,ifxus_write_slob,%
3437  %--- iisfunc functions
3438    iis_get_server_by_path,iis_get_server_by_comment,iis_add_server,%
3439    iis_set_dir_security,iis_get_dir_security,iis_set_server_rights,%
3440    iis_set_script_map,iis_get_script_map,iis_set_app_settings,%
3441    iis_stop_server,iis_stop_service,iis_start_service,%
3442  %--- image functions
3443    exif_imagetype,exif_read_data,exif_thumbnail,getimagesize,%
3444    imagealphablending,imagearc,imagefilledarc,imageellipse,%
3445    imagechar,imagecharup,imagecolorallocate,imagecolordeallocate,%
3446    imagecolorclosest,imagecolorclosestalpha,imagecolorclosestthwb,%
3447    imagecolorexactalpha,imagecolorresolve,imagecolorresolvealpha,%
3448    imagecolorset,imagecolorsforindex,imagecolorstotal,%
3449    imagecopy,imagecopymerge,imagecopymergegray,imagecopyresized,%
3450    imagecreate,imagecreatetruecolor,imagetruecolortopalette,%
3451    imagecreatefromgd2,imagecreatefromgd2part,imagecreatefromgif,%
3452    imagecreatefrompng,imagecreatefromwbmp,imagecreatefromstring,%
3453    imagecreatefromxpm,imagedashedline,imagedestroy,imagefill,%
3454    imagefilledrectangle,imagefilltoborder,imagefontheight,%
3455    imagegd,imagegd2,imagegif,imagepng,imagejpeg,imagewbmp,%
3456    imageline,imageloadfont,imagepalettecopy,imagepolygon,%
3457    imagepsencodefont,imagepsfreefont,imagepsloadfont,%
3458    imagepsslantfont,imagepstext,imagerectangle,imagesetpixel,%
3459    imagesetstyle,imagesettile,imagesetthickness,imagestring,%
3460    imagesx,imagesy,imagettfbbox,imageftbbox,imagettftext,%
3461    imagetypes,jpeg2wbmp,png2wbmp,iptcembed,read_exif_data,%
3462  %--- imap functions
3463    imap_8bit,imap_alerts,imap_append,imap_base64,imap_binary,%
3464    imap_bodystruct,imap_check,imap_clearflag_full,imap_close,%
3465    imap_delete,imap_deletemailbox,imap_errors,imap_expunge,%
3466    imap_fetchbody,imap_fetchheader,imap_fetchstructure,%
3467    imap_getmailboxes,imap_getsubscribed,imap_header,%
3468    imap_headers,imap_last_error,imap_listmailbox,%
3469    imap_mail,imap_mail_compose,imap_mail_copy,imap_mail_move,%
3470    imap_mime_header_decode,imap_msgno,imap_num_msg,imap_num_recent,%
3471    imap_ping,imap_popen,imap_qprint,imap_renamemailbox,imap_reopen,%
3472    imap_rfc822_parse_headers,imap_rfc822_write_address,%
3473    imap_search,imap_setacl,imap_set_quota,imap_setflag_full,%
3474    imap_status,imap_subscribe,imap_uid,imap_undelete,%
3475    imap_utf7_decode,imap_utf7_encode,imap_utf8,imap_thread,%
3476  %--- info functions
3477    assert,assert_options,extension_loaded,dl,getenv,get_cfg_var,%
3478    get_defined_constants,get_extension_funcs,getmygid,%
3479    get_loaded_extensions,get_magic_quotes_gpc,%
3480    getlastmod,getmyinode,getmypid,getmyuid,get_required_files,%
3481    ini_alter,ini_get,ini_get_all,ini_restore,ini_set,phpcredits,%
```

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```
3482      phpversion,php_logo_guid,php_sapi_name,php_uname,putenv,%
3483      set_time_limit,version_compare,zend_logo_guid,zend_version,%
3484   %--- ircg functions
3485      ircg_pconnect,ircg_fetch_error_msg,ircg_set_current,ircg_join,%
3486      ircg_msg,ircg_notice,ircg_nick,ircg_topic,ircg_channel_mode,%
3487      ircg_whois,ircg_kick,ircg_ignore_add,ircg_ignore_del,%
3488      ircg_is_conn_alive,ircg_lookup_format_messages,%
3489      ircg_set_on_die,ircg_set_file,ircg_get_username,%
3490      ircg_nickname_unescape,%
3491   %--- java functions
3492      java_last_exception_clear,java_last_exception_get,%
3493   %--- ldap functions
3494      ldap_add,ldap_bind,ldap_close,ldap_compare,ldap_connect,%
3495      ldap_delete,ldap_dn2ufn,ldap_err2str,ldap_errno,ldap_error,%
3496      ldap_first_attribute,ldap_first_entry,ldap_free_result,%
3497      ldap_get_dn,ldap_get_entries,ldap_get_option,ldap_get_values,%
3498      ldap_list,ldap_modify,ldap_mod_add,ldap_mod_del,%
3499      ldap_next_attribute,ldap_next_entry,ldap_read,ldap_rename,%
3500      ldap_set_option,ldap_unbind,ldap_8859_to_t61,%
3501      ldap_next_reference,ldap_parse_reference,ldap_parse_result,%
3502      ldap_sort,ldap_start_tls,ldap_t61_to_8859,%
3503   %--- mail functions
3504      mail,ezmlm_hash,%
3505   %--- math functions
3506      abs,acos,acosh,asin,asinh,atan,atanh,atan2,base_convert,bindec,%
3507      cos,cosh,decbin,dechex,decoct,deg2rad,exp,expm1,floor,%
3508      hexdec,hypot,is_finite,is_infinite,is_nan,lcg_value,log,log10,%
3509      max,min,mt_rand,mt_srand,mt_getrandmax,number_format,octdec,pi,%
3510      rad2deg,rand,round,sin,sinh,sqrt,srand,tan,tanh,%
3511   %--- mbstring functions
3512      mb_language,mb_parse_str,mb_internal_encoding,mb_http_input,%
3513      mb_detect_order,mb_substitute_character,mb_output_handler,%
3514      mb_strlen,mb_strpos,mb_strrpos,mb_substr,mb_strcut,mb_strwidth,%
3515      mb_convert_encoding,mb_detect_encoding,mb_convert_kana,%
3516      mb_decode_mimeheader,mb_convert_variables,%
3517      mb_decode_numericentity,mb_send_mail,mb_get_info,%
3518      mb_ereg,mb_eregi,mb_ereg_replace,mb_eregi_replace,mb_split,%
3519      mb_ereg_search,mb_ereg_search_pos,mb_ereg_search_regs,%
3520      mb_ereg_search_getregs,mb_ereg_search_getpos,%
3521   %--- mcal functions
3522      mcal_open,mcal_popen,mcal_reopen,mcal_close,%
3523      mcal_rename_calendar,mcal_delete_calendar,mcal_fetch_event,%
3524      mcal_append_event,mcal_store_event,mcal_delete_event,%
3525      mcal_list_alarms,mcal_event_init,mcal_event_set_category,%
3526      mcal_event_set_description,mcal_event_set_start,%
3527      mcal_event_set_alarm,mcal_event_set_class,mcal_is_leap_year,%
3528      mcal_date_valid,mcal_time_valid,mcal_day_of_week,%
3529      mcal_date_compare,mcal_next_recurrence,%
3530      mcal_event_set_recur_daily,mcal_event_set_recur_weekly,%
3531      mcal_event_set_recur_monthly_wday,mcal_event_set_recur_yearly,%
```

```
3532    mcal_event_add_attribute,mcal_expunge,mcal_week_of_year,%
3533  %--- mcrypt functions
3534    mcrypt_get_cipher_name,mcrypt_get_block_size,%
3535    mcrypt_create_iv,mcrypt_cbc,mcrypt_cfb,mcrypt_ecb,mcrypt_ofb,%
3536    mcrypt_list_modes,mcrypt_get_iv_size,mcrypt_encrypt,%
3537    mcrypt_module_open,mcrypt_module_close,mcrypt_generic_deinit,%
3538    mcrypt_generic,mdecrypt_generic,mcrypt_generic_end,%
3539    mcrypt_enc_is_block_algorithm_mode,%
3540    mcrypt_enc_is_block_mode,mcrypt_enc_get_block_size,%
3541    mcrypt_enc_get_supported_key_sizes,mcrypt_enc_get_iv_size,%
3542    mcrypt_enc_get_modes_name,mcrypt_module_self_test,%
3543    mcrypt_module_is_block_algorithm,mcrypt_module_is_block_mode,%
3544    mcrypt_module_get_algo_key_size,%
3545  %--- mhash functions
3546    mhash_get_hash_name,mhash_get_block_size,mhash_count,mhash,%
3547  %--- misc functions
3548    connection_aborted,connection_status,connection_timeout,%
3549    define,defined,die,eval,exit,get_browser,highlight_file,%
3550    ignore_user_abort,iptcparse,leak,pack,show_source,sleep,uniqid,%
3551    usleep,%
3552  %--- mnogosearch functions
3553    udm_add_search_limit,udm_alloc_agent,udm_api_version,%
3554    udm_cat_list,udm_clear_search_limits,udm_errno,udm_error,%
3555    udm_free_agent,udm_free_ispell_data,udm_free_res,%
3556    udm_get_res_field,udm_get_res_param,udm_load_ispell_data,%
3557    udm_check_charset,udm_check_stored,udm_close_stored,udm_crc32,%
3558  %--- msession functions
3559    msession_connect,msession_disconnect,msession_count,%
3560    msession_destroy,msession_lock,msession_unlock,msession_set,%
3561    msession_uniq,msession_randstr,msession_find,msession_list,%
3562    msession_set_array,msession_listvar,msession_timeout,%
3563    msession_getdata,msession_setdata,msession_plugin,%
3564  %--- msql functions
3565    msql,msql_affected_rows,msql_close,msql_connect,msql_create_db,%
3566    msql_data_seek,msql_dbname,msql_drop_db,msql_dropdb,msql_error,%
3567    msql_fetch_field,msql_fetch_object,msql_fetch_row,%
3568    msql_field_seek,msql_fieldtable,msql_fieldtype,msql_fieldflags,%
3569    msql_free_result,msql_freeresult,msql_list_fields,%
3570    msql_list_dbs,msql_listdbs,msql_list_tables,msql_listtables,%
3571    msql_num_rows,msql_numfields,msql_numrows,msql_pconnect,%
3572    msql_regcase,msql_result,msql_select_db,msql_selectdb,%
3573  %--- mssql functions
3574    mssql_close,mssql_connect,mssql_data_seek,mssql_fetch_array,%
3575    mssql_fetch_object,mssql_fetch_row,mssql_field_length,%
3576    mssql_field_seek,mssql_field_type,mssql_free_result,%
3577    mssql_min_error_severity,mssql_min_message_severity,%
3578    mssql_num_fields,mssql_num_rows,mssql_pconnect,mssql_query,%
3579    mssql_select_db,mssql_bind,mssql_execute,mssql_fetch_assoc,%
3580    mssql_guid_string,mssql_init,mssql_rows_affected,%
3581  %--- muscat functions
```

```
3582     muscat_setup,muscat_setup_net,muscat_give,muscat_get,%
3583  %--- mysql functions
3584     mysql_affected_rows,mysql_change_user,mysql_character_set_name,%
3585     mysql_connect,mysql_create_db,mysql_data_seek,mysql_db_name,%
3586     mysql_drop_db,mysql_errno,mysql_error,mysql_escape_string,%
3587     mysql_fetch_assoc,mysql_fetch_field,mysql_fetch_lengths,%
3588     mysql_fetch_row,mysql_field_flags,mysql_field_name,%
3589     mysql_field_seek,mysql_field_table,mysql_field_type,%
3590     mysql_info,mysql_insert_id,mysql_list_dbs,mysql_list_fields,%
3591     mysql_list_tables,mysql_num_fields,mysql_num_rows,%
3592     mysql_ping,mysql_query,mysql_unbuffered_query,%
3593     mysql_result,mysql_select_db,mysql_tablename,mysql_thread_id,%
3594     mysql_get_host_info,mysql_get_proto_info,mysql_get_server_info,%
3595  %--- network functions
3596     checkdnsrr,closelog,debugger_off,debugger_on,%
3597     fsockopen,gethostbyaddr,gethostbyname,gethostbynamel,getmxrr,%
3598     getprotobynumber,getservbyname,getservbyport,ip2long,long2ip,%
3599     pfsockopen,socket_get_status,socket_set_blocking,%
3600     syslog,%
3601  %--- nis functions
3602     yp_get_default_domain,yp_order,yp_master,yp_match,yp_first,%
3603     yp_errno,yp_err_string,yp_all,yp_cat,%
3604  %--- oci8 functions
3605     OCIDefineByName,OCIBindByName,OCILogon,OCIPLogon,OCINLogon,%
3606     OCIExecute,OCICommit,OCIRollback,OCINewDescriptor,OCIRowCount,%
3607     OCIResult,OCIFetch,OCIFetchInto,OCIFetchStatement,%
3608     OCIColumnName,OCIColumnSize,OCIColumnType,OCIServerVersion,%
3609     OCINewCursor,OCIFreeStatement,OCIFreeCursor,OCIFreeDesc,%
3610     OCIError,OCIInternalDebug,OCICancel,OCISetPrefetch,%
3611     OCISaveLobFile,OCISaveLob,OCILoadLob,OCIColumnScale,%
3612     OCIColumnTypeRaw,OCINewCollection,OCIFreeCollection,%
3613     OCICollAppend,OCICollAssignElem,OCICollGetElem,OCICollMax,%
3614     OCICollTrim,%
3615  %--- oracle functions
3616     Ora_Bind,Ora_Close,Ora_ColumnName,Ora_ColumnSize,Ora_ColumnType,%
3617     Ora_CommitOff,Ora_CommitOn,Ora_Do,Ora_Error,Ora_ErrorCode,%
3618     Ora_Fetch,Ora_Fetch_Into,Ora_GetColumn,Ora_Logoff,Ora_Logon,%
3619     Ora_Numcols,Ora_Numrows,Ora_Open,Ora_Parse,Ora_Rollback,%
3620  %--- outcontrol functions
3621     flush,ob_start,ob_get_contents,ob_get_length,ob_get_level,%
3622     ob_flush,ob_clean,ob_end_flush,ob_end_clean,ob_implicit_flush,%
3623  %--- ovrimos functions
3624     ovrimos_connect,ovrimos_close,ovrimos_longreadlen,%
3625     ovrimos_execute,ovrimos_cursor,ovrimos_exec,ovrimos_fetch_into,%
3626     ovrimos_result,ovrimos_result_all,ovrimos_num_rows,%
3627     ovrimos_field_name,ovrimos_field_type,ovrimos_field_len,%
3628     ovrimos_free_result,ovrimos_commit,ovrimos_rollback,%
3629  %--- pcntl functions
3630     pcntl_fork,pcntl_signal,pcntl_waitpid,pcntl_wexitstatus,%
3631     pcntl_wifsignaled,pcntl_wifstopped,pcntl_wstopsig,%
```

```
3632      pcntl_exec,%
3633   %--- pcre functions
3634      preg_match,preg_match_all,preg_replace,preg_replace_callback,%
3635      preg_quote,preg_grep,Pattern Modifiers,Pattern Syntax,%
3636   %--- pdf functions
3637      pdf_add_annotation,pdf_add_bookmark,pdf_add_launchlink,%
3638      pdf_add_note,pdf_add_outline,pdf_add_pdflink,pdf_add_thumbnail,%
3639      pdf_arc,pdf_arcn,pdf_attach_file,pdf_begin_page,%
3640      pdf_begin_template,pdf_circle,pdf_clip,pdf_close,pdf_closepath,%
3641      pdf_closepath_stroke,pdf_close_image,pdf_close_pdi,%
3642      pdf_concat,pdf_continue_text,pdf_curveto,pdf_delete,%
3643      pdf_endpath,pdf_end_pattern,pdf_end_template,pdf_fill,%
3644      pdf_findfont,pdf_get_buffer,pdf_get_font,pdf_get_fontname,%
3645      pdf_get_image_height,pdf_get_image_width,pdf_get_parameter,%
3646      pdf_get_pdi_value,pdf_get_majorversion,pdf_get_minorversion,%
3647      pdf_initgraphics,pdf_lineto,pdf_makespotcolor,pdf_moveto,%
3648      pdf_open,pdf_open_CCITT,pdf_open_file,pdf_open_gif,%
3649      pdf_open_image_file,pdf_open_jpeg,pdf_open_memory_image,%
3650      pdf_open_pdi_page,pdf_open_png,pdf_open_tiff,pdf_place_image,%
3651      pdf_rect,pdf_restore,pdf_rotate,pdf_save,pdf_scale,pdf_setcolor,%
3652      pdf_setflat,pdf_setfont,pdf_setgray,pdf_setgray_fill,%
3653      pdf_setlinecap,pdf_setlinejoin,pdf_setlinewidth,pdf_setmatrix,%
3654      pdf_setpolydash,pdf_setrgbcolor,pdf_setrgbcolor_fill,%
3655      pdf_set_border_color,pdf_set_border_dash,pdf_set_border_style,%
3656      pdf_set_duration,pdf_set_font,pdf_set_horiz_scaling,%
3657      pdf_set_info_author,pdf_set_info_creator,pdf_set_info_keywords,%
3658      pdf_set_info_title,pdf_set_leading,pdf_set_parameter,%
3659      pdf_set_text_rendering,pdf_set_text_rise,pdf_set_text_matrix,%
3660      pdf_set_word_spacing,pdf_show,pdf_show_boxed,pdf_show_xy,%
3661      pdf_stringwidth,pdf_stroke,pdf_translate,%
3662   %--- pfpro functions
3663      pfpro_init,pfpro_cleanup,pfpro_process,pfpro_process_raw,%
3664   %--- pgsql functions
3665      pg_close,pg_affected_rows,pg_connect,pg_dbname,pg_end_copy,%
3666      pg_query,pg_fetch_array,pg_fetch_object,pg_fetch_row,%
3667      pg_field_name,pg_field_num,pg_field_prtlen,pg_field_size,%
3668      pg_free_result,pg_last_oid,pg_host,pg_last_notice,pg_lo_close,%
3669      pg_lo_export,pg_lo_import,pg_lo_open,pg_lo_read,pg_lo_seek,%
3670      pg_lo_read_all,pg_lo_unlink,pg_lo_write,pg_num_fields,%
3671      pg_options,pg_pconnect,pg_port,pg_put_line,pg_fetch_result,%
3672      pg_client_encoding,pg_trace,pg_tty,pg_untrace,pg_get_result,%
3673      pg_send_query,pg_cancel_query,pg_connection_busy,%
3674      pg_connection_status,pg_copy_from,pg_copy_to,pg_escape_bytea,%
3675      pg_result_error,%
3676   %--- posix functions
3677      posix_kill,posix_getpid,posix_getppid,posix_getuid,%
3678      posix_getgid,posix_getegid,posix_setuid,posix_seteuid,%
3679      posix_setegid,posix_getgroups,posix_getlogin,posix_getpgrp,%
3680      posix_setpgid,posix_getpgid,posix_getsid,posix_uname,%
3681      posix_ctermid,posix_ttyname,posix_isatty,posix_getcwd,%
```

```
3682    posix_getgrnam,posix_getgrgid,posix_getpwnam,posix_getpwuid,%
3683  %--- printer functions
3684    printer_open,printer_abort,printer_close,printer_write,%
3685    printer_set_option,printer_get_option,printer_create_dc,%
3686    printer_start_doc,printer_end_doc,printer_start_page,%
3687    printer_create_pen,printer_delete_pen,printer_select_pen,%
3688    printer_delete_brush,printer_select_brush,printer_create_font,%
3689    printer_select_font,printer_logical_fontheight,%
3690    printer_draw_rectangle,printer_draw_elipse,printer_draw_text,%
3691    printer_draw_chord,printer_draw_pie,printer_draw_bmp,%
3692  %--- pspell functions
3693    pspell_add_to_personal,pspell_add_to_session,pspell_check,%
3694    pspell_config_create,pspell_config_ignore,pspell_config_mode,%
3695    pspell_config_repl,pspell_config_runtogether,%
3696    pspell_new,pspell_new_config,pspell_new_personal,%
3697    pspell_store_replacement,pspell_suggest,%
3698  %--- qtdom functions
3699    qdom_tree,qdom_error,%
3700  %--- readline functions
3701    readline,readline_add_history,readline_clear_history,%
3702    readline_info,readline_list_history,readline_read_history,%
3703  %--- recode functions
3704    recode_string,recode,recode_file,%
3705  %--- regex functions
3706    ereg,ereg_replace,eregi,eregi_replace,split,spliti,sql_regcase,%
3707  %--- sem functions
3708    sem_get,sem_acquire,sem_release,sem_remove,shm_attach,%
3709    shm_remove,shm_put_var,shm_get_var,shm_remove_var,ftok,%
3710  %--- sesam functions
3711    sesam_connect,sesam_disconnect,sesam_settransaction,%
3712    sesam_rollback,sesam_execimm,sesam_query,sesam_num_fields,%
3713    sesam_diagnostic,sesam_fetch_result,sesam_affected_rows,%
3714    sesam_field_array,sesam_fetch_row,sesam_fetch_array,%
3715    sesam_free_result,%
3716  %--- session functions
3717    session_start,session_destroy,session_name,session_module_name,%
3718    session_id,session_register,session_unregister,session_unset,%
3719    session_get_cookie_params,session_set_cookie_params,%
3720    session_encode,session_set_save_handler,session_cache_limiter,%
3721    session_write_close,%
3722  %--- shmop functions
3723    shmop_open,shmop_read,shmop_write,shmop_size,shmop_delete,%
3724  %--- snmp functions
3725    snmpget,snmpset,snmpwalk,snmpwalkoid,snmp_get_quick_print,%
3726    snmprealwalk,%
3727  %--- strings functions
3728    addcslashes,addslashes,bin2hex,chop,chr,chunk_split,%
3729    count_chars,crc32,crypt,echo,explode,get_html_translation_table,%
3730    hebrev,hebrevc,htmlentities,htmlspecialchars,implode,join,%
3731    localeconv,ltrim,md5,md5_file,metaphone,nl_langinfo,nl2br,ord,%
```

```
3732    print,printf,quoted_printable_decode,quotemeta,str_rot13,rtrim,%
3733    setlocale,similar_text,soundex,sprintf,strncasecmp,strcasecmp,%
3734    strcmp,strcoll,strcspn,strip_tags,stripcslashes,stripslashes,%
3735    strlen,strnatcmp,strnatcasecmp,strncmp,str_pad,strpos,strrchr,%
3736    strrev,strrpos,strspn,strstr,strtok,strtolower,strtoupper,%
3737    strtr,substr,substr_count,substr_replace,trim,ucfirst,ucwords,%
3738    vsprintf,wordwrap,%
3739  %--- swf functions
3740    swf_openfile,swf_closefile,swf_labelframe,swf_showframe,%
3741    swf_getframe,swf_mulcolor,swf_addcolor,swf_placeobject,%
3742    swf_removeobject,swf_nextid,swf_startdoaction,%
3743    swf_actiongeturl,swf_actionnextframe,swf_actionprevframe,%
3744    swf_actionstop,swf_actiontogglequality,swf_actionwaitforframe,%
3745    swf_actiongotolabel,swf_enddoaction,swf_defineline,%
3746    swf_definepoly,swf_startshape,swf_shapelinesolid,%
3747    swf_shapefillsolid,swf_shapefillbitmapclip,%
3748    swf_shapemoveto,swf_shapelineto,swf_shapecurveto,%
3749    swf_shapearc,swf_endshape,swf_definefont,swf_setfont,%
3750    swf_fontslant,swf_fonttracking,swf_getfontinfo,swf_definetext,%
3751    swf_definebitmap,swf_getbitmapinfo,swf_startsymbol,%
3752    swf_startbutton,swf_addbuttonrecord,swf_oncondition,%
3753    swf_viewport,swf_ortho,swf_ortho2,swf_perspective,swf_polarview,%
3754    swf_pushmatrix,swf_popmatrix,swf_scale,swf_translate,swf_rotate,%
3755  %--- sybase functions
3756    sybase_affected_rows,sybase_close,sybase_connect,%
3757    sybase_fetch_array,sybase_fetch_field,sybase_fetch_object,%
3758    sybase_field_seek,sybase_free_result,sybase_get_last_message,%
3759    sybase_min_error_severity,sybase_min_message_severity,%
3760    sybase_num_fields,sybase_num_rows,sybase_pconnect,sybase_query,%
3761    sybase_select_db,%
3762  %--- uodbc functions
3763    odbc_autocommit,odbc_binmode,odbc_close,odbc_close_all,%
3764    odbc_connect,odbc_cursor,odbc_do,odbc_error,odbc_errormsg,%
3765    odbc_execute,odbc_fetch_into,odbc_fetch_row,odbc_fetch_array,%
3766    odbc_fetch_object,odbc_field_name,odbc_field_num,%
3767    odbc_field_len,odbc_field_precision,odbc_field_scale,%
3768    odbc_longreadlen,odbc_num_fields,odbc_pconnect,odbc_prepare,%
3769    odbc_result,odbc_result_all,odbc_rollback,odbc_setoption,%
3770    odbc_tableprivileges,odbc_columns,odbc_columnprivileges,%
3771    odbc_primarykeys,odbc_foreignkeys,odbc_procedures,%
3772    odbc_specialcolumns,odbc_statistics,%
3773  %--- url functions
3774    base64_decode,base64_encode,parse_url,rawurldecode,rawurlencode,%
3775    urlencode,%
3776  %--- var functions
3777    doubleval,empty,floatval,gettype,get_defined_vars,%
3778    import_request_variables,intval,is_array,is_bool,is_double,%
3779    is_int,is_integer,is_long,is_null,is_numeric,is_object,is_real,%
3780    is_scalar,is_string,isset,print_r,serialize,settype,strval,%
3781    unset,var_dump,var_export,is_callable,%
```

```
3782  %--- vpopmail functions
3783    vpopmail_add_domain,vpopmail_del_domain,%
3784    vpopmail_add_domain_ex,vpopmail_del_domain_ex,%
3785    vpopmail_add_user,vpopmail_del_user,vpopmail_passwd,%
3786    vpopmail_auth_user,vpopmail_alias_add,vpopmail_alias_del,%
3787    vpopmail_alias_get,vpopmail_alias_get_all,vpopmail_error,%
3788  %--- w32api functions
3789    w32api_set_call_method,w32api_register_function,%
3790    w32api_deftype,w32api_init_dtype,%
3791  %--- wddx functions
3792    wddx_serialize_value,wddx_serialize_vars,wddx_packet_start,%
3793    wddx_add_vars,wddx_deserialize,%
3794  %--- xml functions
3795    xml_parser_create,xml_set_object,xml_set_element_handler,%
3796    xml_set_processing_instruction_handler,xml_set_default_handler,%
3797    xml_set_notation_decl_handler,%
3798    xml_parse,xml_get_error_code,xml_error_string,%
3799    xml_get_current_column_number,xml_get_current_byte_index,%
3800    xml_parser_free,xml_parser_set_option,xml_parser_get_option,%
3801    utf8_encode,xml_parser_create_ns,%
3802    xml_set_start_namespace_decl_handler,%
3803  %--- xslt functions
3804    xslt_set_log,xslt_create,xslt_errno,xslt_error,xslt_free,%
3805    xslt_set_sax_handler,xslt_set_scheme_handler,%
3806    xslt_set_base,xslt_set_encoding,xslt_set_sax_handlers,%
3807  %--- yaz functions
3808    yaz_addinfo,yaz_close,yaz_connect,yaz_errno,yaz_error,yaz_hits,%
3809    yaz_database,yaz_range,yaz_record,yaz_search,yaz_present,%
3810    yaz_scan,yaz_scan_result,yaz_ccl_conf,yaz_ccl_parse,%
3811    yaz_wait,yaz_sort,%
3812  %--- zip functions
3813    zip_close,zip_entry_close,zip_entry_compressedsize,%
3814    zip_entry_filesize,zip_entry_name,zip_entry_open,zip_entry_read,%
3815    zip_read,%
3816  %--- zlib functions
3817    gzclose,gzeof,gzfile,gzgetc,gzgets,gzgetss,gzopen,gzpassthru,%
3818    gzread,gzrewind,gzseek,gztell,gzwrite,readgzfile,gzcompress,%
3819    gzdeflate,gzinflate,gzencode,},%
3820    sensitive,%
3821    morecomment=[l]\#,%
3822    morecomment=[l]//,%
3823    morecomment=[s]{/*}{*/},%
3824    morestring=[b]",%
3825    morestring=[b]'%
3826  }[keywords,comments,strings]%

3827 ⟨/lang2⟩
```

2.58 Plasm

Alessio Pace provided the following definition.

3828 ⟨∗lang3⟩

3829 \lst@definelanguage{Plasm}%
3830 　{sensitive=false,%
3831 　　morekeywords={aa,abs,ac,acolor,acos,actor,al,alias,align,and,%
3832 　　　　animation,animation,appearance,apply,ar,arc,as,asin,assoc,atan,%
3833 　　　　axialcamera,axialcameras,basehermite,bbox,bbox,bernstein,%
3834 　　　　bernsteinbasis,bezier,beziercurve,beziermanifold,bezierstripe,%
3835 　　　　beziersurface,bigger,biggest,bilinearsurface,binormal,%
3836 　　　　biquadraticsurface,black,blend,blue,bottom,box,brown,bspize,%
3837 　　　　bspline,bsplinebasis,c,cabinet,camera,cart,case,cat,catch,ceil,%
3838 　　　　centeredcameras,centralcavalier,char,charseq,choose,circle,%
3839 　　　　circumference,class,cmap,color,comp,computecoords,cone,%
3840 　　　　conicalsurface,cons,control,convexcoords,convexhull,coonspatch,%
3841 　　　　copy,cos,cosh,crease,crosspolytope,cube,cubiccardinal,%
3842 　　　　cubiccardinalbasis,cubichermite,cubicubspline,cubicubsplinebasis,%
3843 　　　　cuboid,curl,curvature,curve2cspath,curve2mapvect,cyan,cylinder,%
3844 　　　　cylindricalsurface,d,deboor,def,depol,depth_sort,depth_test,%
3845 　　　　derbernstein,derbernsteinbase,derbezier,determinant,difference,%
3846 　　　　differencepr,dim,dimetric,dirproject,displaygraph,displaynubspline,%
3847 　　　　displaynurbspline,distl,distr,div,divergence,dodecahedron,dot,down,%
3848 　　　　dp,drawedges,drawforks,drawtree,ds,dsphere,dump,dumprep,ellipse,%
3849 　　　　embed,end,eq,ex,exp,explode,export,extract_bodies,extract_polygons,%
3850 　　　　extract_wires,extrude,extrusion,fact,false,feature,ff,fillcolor,%
3851 　　　　filter,finitecone,first,flash,flashani,floor,fontcolor,fontheight,%
3852 　　　　fontspacing,fontwidth,fractalsimplex,frame,frame,frameflash,fromto,%
3853 　　　　gausscurvature,ge,grad,gradient,gradmap,gray,green,gt,help,hermite,%
3854 　　　　hermitebasis,hermitesurface,hexahedron,icosahedron,id,idnt,if,in,%
3855 　　　　inarcs,innerprod,inset,insl,insr,intersection,intersectionpr,%
3856 　　　　intervals,intmax,intmin,intsto,inv,isa,isanimpol,isbool,ischar,%
3857 　　　　isclosedshape,iscloseto,isempty,iseven,isfun,isfunvect,isge,isgt,%
3858 　　　　isint,isintneg,isinto,isintpos,isle,islt,ismat,ismatof,isnat,%
3859 　　　　isnull,isnum,isnumneg,isnumpos,isodd,isometric,isorthoshape,ispair,%
3860 　　　　ispoint,ispointseq,ispol,ispoldim,ispolytope,ispurepol,isreal,%
3861 　　　　isrealneg,isrealpos,isrealvect,isseq,isseqof,isshape,issimplex,%
3862 　　　　issqrmat,isstring,isvect,iszero,jacobian,join,joints,k,last,le,%
3863 　　　　left,leftcavalier,len,less,lesseq,lex,lift,light,linecolor,%
3864 　　　　linesize,list,ln,load,loadlib,loop,lt,lxmy,magenta,map,mapshapes,%
3865 　　　　markersize,mat,matdotprod,material,mathom,max,mean,meanpoint,med,%
3866 　　　　merge,mesh,min,minkowski,mirror,mixedprod,mk,mkframe,mkpol,%
3867 　　　　mkvector,mkversork,mod,model,move,mul,multextrude,mxby,mxmy,mxty,%
3868 　　　　myfont,n,nat2string,neq,ngon,norm2,normalmap,not,nu_grid,nubspline,%
3869 　　　　nubsplineknots,nurbspline,nurbsplineknots,octahedron,offset,%
3870 　　　　onepoint,open,optimize,or,orange,ord,ortho,orthoproject,orthox,%
3871 　　　　orthoy,orthoz,outarcs,outerloop,outerwarp,pairdiff,parallel,%
3872 　　　　pascaltriangle,pdiff,pdifference,permutahedron,permutations,%
3873 　　　　perspective,perspective,pi,pivotop,plane,planemapping,pmap,%

```
3874        points2shape,polar,polyline,polymarker,polypoint,power,powerset,%
3875        presort,principalnormal,print,prism,profileprodsurface,%
3876        progressivesum,project,projection,purple,pyramid,q,quadarray,%
3877        quadmesh,quote,r,raise,range,rationalbezier,rationalblend,%
3878        rationalbspline,rationalize,red,rev,reverse,rgbacolor,right,%
3879        rightcavalier,ring,rn,rotatedtext,rotationalsurface,rotn,rtail,%
3880        ruledsurface,rxmy,s,save,scalarmatprod,scalarvectprod,schlegel2d,%
3881        schlegel3d,sdifference,sdifferencepr,segment,sel,setand,setdiff,%
3882        setfontcolor,setor,setxor,sex,shape_0,shape_1,shape2points,%
3883        shape2pol,shapeclosed,shapecomb,shapediff,shapedist,%
3884        shapeinbetweening,shapeinf,shapejoin,shapelen,shapenorm,%
3885        shapenormal,shapeprod,shaperot,shapesum,shapesup,shapezero,shift,%
3886        showprop,sign,signal,simplex,simplexpile,sin,sinh,size,skeleton,%
3887        skew,smaller,smallest,solidifier,solidify,sort,sphere,spline,%
3888        splinesampling,splitcells,splitpols,sqr,sqrt,star,string,%
3889        stringtokens,struct,sub,svg,sweep,t,tail,tan,tangent,tanh,%
3890        tensorprodsurface,tetrahedron,text,texture,textwithattributes,%
3891        thinsolid,threepoints,time,tmax,tmin,top,torus,torusmap,trace,%
3892        trans,tree,trianglefan,trianglestripe,trimetric,true,truncone,tt,%
3893        tube,twopoints,uk,ukpol,ukpolf,union,unionpr,unitvect,unprune,up,%
3894        vect2dtoangle,vect2mat,vectdiff,vectnorm,vectprod,vectsum,view,%
3895        viewmodel,viewmodel,vrml,warp,warp,where,white,with,xcavalier,xor,%
3896        xquadarray,xx,ycavalier,yellow},%
3897      moredirectives={loadlib},%
3898      otherkeywords={-,+,*,**,/,~,|,..,^,\&,\&\&,\#,\#\#},%
3899      morecomment=[s]{\%}{\%},%
3900      morestring=[b]',%
3901      literate={~}{{$\sim$}}{1} {^}{$\wedge$}{1},%
3902    }[keywords,directives,comments,strings]%

3903 ⟨/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

```
3904 ⟨*lang3⟩

3905 \lst@definelanguage{PL/I}%
3906   {morekeywords={ABS,ATAN,AUTOMATIC,AUTO,ATAND,BEGIN,BINARY,BIN,BIT,%
3907        BUILTIN,BY,CALL,CHARACTER,CHAR,CHECK,COLUMN,COL,COMPLEX,CPLX,%
3908        COPY,COS,COSD,COSH,DATA,DATE,DECIMAL,DEC,DECLARE,DCL,DO,EDIT,%
3909        ELSE,END,ENDFILE,ENDPAGE,ENTRY,EXP,EXTERNAL,EXT,FINISH,FIXED,%
3910        FIXEDOVERFLOW,FOFL,FLOAT,FORMAT,GET,GO,GOTO,IF,IMAG,INDEX,%
3911        INITIAL,INIT,INTERNAL,INT,LABEL,LENGTH,LIKE,LINE,LIST,LOG,LOG2,%
3912        LOG10,MAIN,MAX,MIN,MOD,NOCHECK,NOFIXEDOVERFLOW,NOFOFL,NOOVERFLOW,%
3913        NOOFL,NOSIZE,NOUNDERFLOW,NOUFL,NOZERODIVIDE,NOZDIV,ON,OPTIONS,%
```

```
3914        OVERFLOW,OFL,PAGE,PICTURE,PROCEDURE,PROC,PUT,READ,REPEAT,RETURN,%
3915        RETURNS,ROUND,SIN,SIND,SINH,SIZE,SKIP,SQRT,STATIC,STOP,STRING,%
3916        SUBSTR,SUM,SYSIN,SYSPRINT,TAN,TAND,TANH,THEN,TO,UNDERFLOW,UFL,%
3917        VARYING,WHILE,WRITE,ZERODIVIDE,ZDIV},%
3918      sensitive=f,%
3919      morecomment=[s]{/*}{*/},%
3920      morestring=[d]'%
3921    }[keywords,comments,strings]%

3922 ⟨/lang3⟩
```

2.60 PostScript

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

```
3923 ⟨*lang3⟩

3924 %%
3925 %% PostScript language definition (c) 2005 Christophe Jorssen.
3926 %%
3927 \lst@definelanguage{PostScript}{%
3928    morekeywords={abs,add,aload,anchorsearch,and,arc,arcn,arct,arcto,array,ashow,
3929        astore,atan,awidthshow,begin,bind,bitshift,bytesavailable,cachestatus,
3930        ceiling,charpath,clear,cleartomark,cleardictstack,clip,clippath,closefile,
3931        closepath,colorimage,concat,concatmatrix,condition,copy,copypage,cos,count,
3932        countdictstack,countexecstack,counttomark,cshow,currentblackgeneration,
3933        currentcacheparams,currentcmykcolor,currentcolor,currentcolorrendering,
3934        currentcolorscreen,currentcolorspace,currentcolortransfer,currentcontext,
3935        currentdash,currentdevparams,currentdict,currentfile,currentflat,currentfont,
3936        currentglobal,currentgray,currentgstate,currenthalftone,currenthalftonephase,
3937        currenthsbcolor,currentlinecap,currentlinejoin,currentlinewidth,currentmatrix,
3938        currentmiterlimit,currentobjectformat,currentpacking,currentpagedevice,
3939        currentpoint,currentrgbcolor,currentscreen,currentshared,currentstrokeadjust,
3940        currentsystemparams,currenttransfer,currentundercolorremoval,currentuserparams,
3941        curveto,cvi,cvlit,cvn,cvr,cvrs,cvs,cvx,def,defaultmatrix,definefont,
3942        defineresource,defineusername,defineuserobject,deletefile,detach,deviceinfo,
3943        dict,dictstack,div,dtransform,dup,
3944        echo,eexec,end,eoclip,eofill,eoviewclip,eq,erasepage,errordict,exch,exec,
3945        execform,execstack,execuserobject,executeonly,executive,exit,
3946        exp,false,file,filenameforall,fileposition,fill,filter,findencoding,findfont,
3947        findresource,flattenpath,floor,flush,flushfile,FontDirectory,for,forall,fork,ge,
3948        get,getinterval,globaldict,GlobalFontDirectory,glyphshow,grestore,grestoreall,
3949        gsave,gstate,gt,identmatrix,idiv,idtransform,if,ifelse,image,
3950        imagemask,index,ineofill,infill,initclip,initgraphics,initmatrix,initviewclip,
3951        instroke,internaldict,inueofill,inufill,inustroke,
3952        invertmatrix,ISOLatin1Encoding,itransform,join,kshow,
3953        known,languagelevel,le,length,lineto,ln,load,lock,log,loop,lt,
3954        makefont,makepattern,mark,matrix,maxlength,mod,monitor,moveto,mul,ne,neg,
3955        newpath,noaccess,not,notify,null,nulldevice,or,packedarray,
3956        pathbbox,pathforall,pop,print,printobject,product,prompt,pstack,put,putinterval,
```

```
3957    quit,rand,rcurveto,read,readhexstring,readline,readonly,readstring,
3958    realtime,rectclip,rectfill,rectstroke,rectviewclip,renamefile,repeat,resetfile,
3959    resourceforall,resourcestatus,restore,reversepath,revision,rlineto,rmoveto,roll,
3960    rootfont,rotate,round,rrand,run,save,scale,scalefont,scheck,search,selectfont,
3961    serialnumber,setbbox,setblackgeneration,setcachedevice,setcachedevice2,
3962    setcachelimit,setcacheparams,setcharwidth,setcmykcolor,setcolor,
3963    setcolorrendering,setcolorscreen,setcolorspace,setcolortransfer,setdash,
3964    setdevparams,setfileposition,setflat,setfont,setglobal,setgray,setgstate,
3965    sethalftone,sethalftonephase,sethsbcolor,setlinecap,setlinejoin,setlinewidth,
3966    setmatrix,setmiterlimit,setobjectformat,setoverprint,setpacking,setpagedevice,
3967    setpattern,setrgbcolor,setscreen,setshared,setstrokeadjust,setsystemparams,
3968    settransfer,setucacheparams,setundercolorremoval,setuserparams,setvmthreshold,
3969    shareddict,show,showpage,sin,sqrt,srand,stack,
3970    StandardEncoding,start,startjob,status,statusdict,stop,stopped,store,string,
3971    stringwidth,stroke,strokepath,sub,systemdict,transform,
3972    translate,true,truncate,type,token,uappend,ucache,ucachestatus,
3973    ueofill,ufill,undef,
3974    upath,userdict,UserObjects,
3975    usertime,ustroke,ustrokepath,version,viewclip,viewclippath,vmreclaim,
3976    vmstatus,wait,wcheck,where,widthshow,write,writehexstring,writeobject,
3977    writestring,wtranslation,xcheck,xor,xshow,xyshow,yield,yshow},
3978  sensitive,
3979  morecomment=[l]\%}[keywords,comments]

3980 ⟨/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.

```
3981 ⟨*lang1⟩

3982 %%
3983 %% POV definition (c) 1999 Berthold H\"ollmann
3984 %%
3985 \lst@definelanguage{POV}%
3986   {morekeywords={abs,absorption,acos,acosh,adaptive,adc_bailout,agate,%
3987       agate_turb,all,alpha,ambient,ambient_light,angle,aperture,append,%
3988       arc_angle,area_light,array,asc,asin,asinh,assumed_gamma,atan,%
3989       atan2,atanh,average,background,bezier_spline,bicubic_patch,%
3990       black_hole,blob,blue,blur_samples,bounded_by,box,boxed,bozo,%
3991       break,brick,brick_size,brightness,brilliance,bumps,bump_map,%
3992       bump_size,camera,case,caustics,ceil,checker,chr,clipped_by,clock,%
3993       clock_delta,color,color_map,colour,colour_map,component,%
3994       composite,concat,cone,confidence,conic_sweep,control0,control1,%
3995       cos,cosh,count,crackle,crand,cube,cubic,cubic_spline,cubic_wave,%
3996       cylinder,cylindrical,debug,declare,default,defined,degrees,%
3997       density,density_file,density_map,dents,difference,diffuse,%
3998       dimensions,dimension_size,direction,disc,distance,%
```

```
3999        distance_maximum,div,eccentricity,else,emission,end,error,%
4000        error_bound,exp,extinction,fade_distance,fade_power,falloff,%
4001        falloff_angle,false,fclose,file_exists,filter,finish,fisheye,%
4002        flatness,flip,floor,focal_point,fog,fog_alt,fog_offset,fog_type,%
4003        fopen,frequency,gif,global_settings,gradient,granite,%
4004        gray_threshold,green,height_field,hexagon,hf_gray_16,hierarchy,%
4005        hollow,hypercomplex,if,ifdef,iff,ifndef,image_map,include,int,%
4006        interior,interpolate,intersection,intervals,inverse,ior,irid,%
4007        irid_wavelength,jitter,julia_fractal,lambda,lathe,leopard,%
4008        light_source,linear_spline,linear_sweep,local,location,log,%
4009        looks_like,look_at,low_error_factor,macro,mandel,map_type,marble,%
4010        material,material_map,matrix,max,max_intersections,max_iteration,%
4011        max_trace_level,media,media_attenuation,media_interaction,merge,%
4012        mesh,metallic,min,minimum_reuse,mod,mortar,nearest_count,no,%
4013        normal,normal_map,no_shadow,number_of_waves,object,octaves,off,%
4014        offset,omega,omnimax,on,once,onion,open,orthographic,panoramic,%
4015        perspective,pgm,phase,phong,phong_size,pi,pigment,pigment_map,%
4016        planar,plane,png,point_at,poly,polygon,poly_wave,pot,pow,ppm,%
4017        precision,prism,pwr,quadratic_spline,quadric,quartic,quaternion,%
4018        quick_color,quick_colour,quilted,radial,radians,radiosity,radius,%
4019        rainbow,ramp_wave,rand,range,ratio,read,reciprocal,%
4020        recursion_limit,red,reflection,reflection_exponent,refraction,%
4021        render,repeat,rgb,rgbf,rgbft,rgbt,right,ripples,rotate,roughness,%
4022        samples,scale,scallop_wave,scattering,seed,shadowless,sin,%
4023        sine_wave,sinh,sky,sky_sphere,slice,slope_map,smooth,%
4024        smooth_triangle,sor,specular,sphere,spherical,spiral1,spiral2,%
4025        spotlight,spotted,sqr,sqrt,statistics,str,strcmp,strength,strlen,%
4026        strlwr,strupr,sturm,substr,superellipsoid,switch,sys,t,tan,tanh,%
4027        text,texture,texture_map,tga,thickness,threshold,tightness,tile2,%
4028        tiles,torus,track,transform,translate,transmit,triangle,%
4029        triangle_wave,true,ttf,turbulence,turb_depth,type,u,%
4030        ultra_wide_angle,undef,union,up,use_color,use_colour,use_index,%
4031        u_steps,v,val,variance,vaxis_rotate,vcross,vdot,version,vlength,%
4032        vnormalize,vrotate,v_steps,warning,warp,water_level,waves,while,%
4033        width,wood,wrinkles,write,x,y,yes,z},%
4034     moredirectives={break,case,debug,declare,default,else,end,fclose,%
4035        fopen,local,macro,read,render,statistics,switch,undef,version,%
4036        warning,write},%
4037     moredelim=*[directive]\#,%
4038     sensitive,%
4039     morecomment=[l]//,%
4040     morecomment=[s]{/*}{*/},%
4041     morestring=[d]",%
4042   }[keywords,directives,comments,strings]%

4043 ⟨/lang1⟩
```

2.62 Prolog

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

```
4044 ⟨*lang2⟩

4045 %%
4046 %% Prolog definition (c) 1997 Dominique de Waleffe
4047 %%
4048 \lst@definelanguage{Prolog}%
4049   {morekeywords={op,mod,abort,ancestors,arg,ascii,ask,assert,asserta,%
4050       assertz,atom,atomic,char,clause,close,concat,consult,ed,ef,em,%
4051       eof,fail,file,findall,write,functor,getc,integer,is,length,%
4052       listing,load,name,nl,nonvar,not,numbervars,op,or,pp,prin,print,%
4053       private,prompt,putc,ratom,read,read_from_this_file,rename,repeat,%
4054       retract,retractall,save,see,seeing,seen,sh,skip,statistics,%
4055       subgoal_of,system,tab,tell,telling,time,told,trace,true,unload,%
4056       untrace,var,write},%
4057   sensitive=f,%
4058   morecomment=[l]\%,%
4059   morecomment=[s]{/*}{*/},%
4060   morestring=[bd]",%
4061   morestring=[bd]'%
4062   }[keywords,comments,strings]%

4063 ⟨/lang2⟩
```

2.63 Promela

Thanks to William ThimblebyPromela for this language definition.

```
4064 ⟨*lang3⟩

4065 %%
4066 %% Promela definition (c) 2004 William Thimbleby
4067 %%
4068 \lst@definelanguage{Promela}
4069   {morekeywords={active,assert,atomic,bit,bool,break,byte,chan,d_step,%
4070       Dproctype,do,else,empty,enabled,fi,full,goto,hidden,if,init,int,%
4071       len,mtype,nempty,never,nfull,od,of,pcvalue,printf,priority,%
4072       proctype,provided,run,short,skip,timeout,typedef,unless,unsigned,%
4073       xr,xs,true,false,inline,eval},%
4074   moredirectives={define,ifdef,ifndef,if,if,else,endif,undef,include},%
4075   moredelim=*[directive]\#,%
4076   morecomment=[s]{/*}{*/},%
4077   morestring=[b]"%
4078   }[keywords,comments,strings,directives]%

4079 ⟨/lang3⟩
```

2.64 PSTricks

PSTricks is a TEX macro package bundle. Herbert Voss provided the following definition.

```
4080 ⟨*lang3⟩

4081 %%
4082 %% PSTricks definition (c) 2006 Herbert Voss
4083 %%
4084 \lst@definelanguage{PSTricks}%
4085   {morekeywords={%
4086     begin,end,definecolor,multido,%
4087     KillGlue,DontKillGlue,pslbrace,bsrbrace,psscalebox,psset,pstVerb,pstverb,%
4088     pst@def,,psframebox,psclip,endclip,endpspicture,psframe,
4089 %%    pspicture,%
4090     multirput,multips,Rput,rput,uput,cput,lput,%
4091     newrgbcolor,newgray,newcmykcolor,
4092 %%
4093 %% pstricks-add
4094     psStep,psgraph,psbrace,psPrintValue,
4095 %%
4096 %% pst-plot
4097     psvlabel,pshlabel,psplot,psline,pscustom,pscurve,psccurve,%
4098     readdata,savedata,fileplot,dataplot,listplot,%
4099     psecurce,psgraph,parametricplot,%
4100     psellipse,psaxes,ncline,nccurve,psbezier,parabola,%
4101     qdisk,qline,clipbox,endpsclip,%
4102     psgrid,pscircle,pscirclebox,psdiabox,pstribox,%
4103     newpsfontdot,psdot,psdots,%
4104     pspolygon,psdiamond,psoval,pstriangle,%
4105     psarc,psarcn,psellipticarc,psellipticarcn,pswedge,psellipticwedge,
4106     pcline,pcdiag,pcdiagg,pccurve,pccurve,pcecurve,%
4107     scalebox,scaleboxto,psmathboxtrue,everypsbox,psverbboxtrue,overlaybox,%
4108     psoverlay,putoverlaybox,%
4109     newpsstyle,newpsobject,%
4110     moveto,newpath,closepath,stroke,fill,gsave,grestore,msave,mrestore,translate,scale,%
4111     swapaxes,rotate,openshadow,closedshadow,movepath,lineto,rlineto,curveto,rcurveto,%
4112     code,dim,coor,rcoor,file,arrows,setcolor,%
4113     rotateleft,rotateright,rotatedown,%
4114 %%
4115 %% pst-node
4116     nput,naput,nbput,ncput,%
4117     ncarc,ncbox,ncangle,ncangles,ncloop,ncdiag,ncdiagg,ncarcbox,ncbar,%
4118     cnodeput,nccircle,%
4119     pnode,rnode,Rnode,Cnode,cnode,fnode,%
4120     circlenode,ovalnode,trinode,dianode,%
4121     psmatrix,endpsmatrix,psspan,%
4122 %%
4123 %% pst-tree
4124     pstree,Tcircle,TCircle,Ttri,Tn,TC,Tc,Tfan,TR,Tr,Tdia,Toval,Tdot,Tp,Tf,%
```

```
4125      skiplevel,skiplevels,endskiplevels,tspace,tlput,%
4126 %%
4127 %% pst-text
4128      pscharpath,pstextpath,
4129 %%
4130 %% pst-barcode
4131      psbarcode,
4132 %%
4133 %% pst-coil
4134      psboxfill,pscoil,psCoil,pszigzag,nccoil,
4135      psshadow,pstilt,psTilt,ThreeDput,
4136 %%
4137 %% pst-gr3d
4138      PstGridThreeDNodeProcessor,%
4139 %%
4140 %% pst-vue3d
4141      PstGridThreeD,
4142      AxesThreeD,LineThreeD,DieThreeD,FrameThreeD,SphereCircleThreeD,SphereMeridienThreeD,
4143      QuadrillageThreeD,TetraedreThreeD,PyramideThreeD,ConeThreeD,CylindreThreeD,
4144      DodecahedronThreeD,ConeThreeD,SphereThreeD,SphereInverseThreeD,DemiSphereThreeD,
4145      SphereCreuseThreeD,SphereCircledThreeD,PortionSphereThreeD,pNodeThreeD,CubeThreeD,%
4146 %%
4147 %% pst-3dplot
4148      pstThreeDCoor,pstThreeDDot,pstThreeDTriangle,pstThreeDCircle,pstPlanePut,%
4149      pstThreeDBox,pstThreeDEllipse,pstThreeDLine,pstThreeDPut,%
4150      pstThreeDNode,pstThreeDSquare,psplotThreeD,parametricplotThreeD,fileplotThreeD,%
4151      dataplotThreeD,pstScalePoints,%
4152 %%
4153 %% pst-circ
4154      resistor,battery,Ucc,Icc,capacitor,coil,diode,Zener,LED,lamp,switch,wire,tension,
4155      circledipole,multidipole,OA,transistor,Tswitch,potentiometer,transformer,
4156      optoCoupler,logic,
4157 %%
4158 %% pst-eucl
4159      pstTriangle,pstMediatorAB,pstInterLL,pstMiddleAB,pstProjection,pstCircleOA,pstLineAB,%
4160 %%
4161 %% pst-func
4162      psBessel,psPolynomial,psFourier,psGaussI,psGauss,psSi,pssi,psCi,psci,%
4163 %%
4164 %% pst-infixplot
4165      psPlot,
4166 %%
4167 %% pst-ob3d
4168      PstDie,PstCube,
4169 %%
4170 %% pst-poly
4171      PstPolygon,pspolygonbox,
4172 %%
4173 %% pst-bar
4174      psbarchart,readpsbardata,psbarscale,newpsbarstyle,%
```

```
4175 %%
4176 %% pst-lens
4177     PstLens,%
4178 %%
4179 %% pst-geo
4180     WorldMap,WorldMapII,WorldMapThreeD,WorldMapThreeDII,pnodeMap,MapPut,%
4181 %%
4182 %% pst-autoseg
4183     asr,firstnode,merge,massoc,labelmerge,%
4184 %%
4185 %% gastex
4186     node,imark,fmark,rmark,drawqbpedge,drawedge,drawloop,%
4187 %%
4188 %% pst-labo
4189     Distillation,Ballon,
4190 %%
4191 %% pst-optic
4192     lens,Transform,%
4193 %%
4194 %% pst-light3d
4195     PstLightThreeDText,%
4196 %%
4197 %% calendrier
4198     Calendrier,%
4199 %%
4200 %% pst-osci
4201     Oscillo%
4202   },%
4203     sensitive,%
4204     alsoother={0123456789$_},%
4205     morecomment=[l]\% %
4206   }[keywords,comments]%

4207 ⟨/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.

```
4208 ⟨∗lang1⟩

4209 %%
4210 %% Python definition (c) 1998 Michael Weber
4211 %% Additional definitions (2013) Alexis Dimitriadis
4212 %%
4213 \lst@definelanguage{Python}%
```

```
4214   {morekeywords={access,and,break,class,continue,def,del,elif,else,%
4215       except,exec,finally,for,from,global,if,import,in,is,lambda,not,%
4216       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

```
4217   % Built-ins
4218   morekeywords=[2]{abs,all,any,basestring,bin,bool,bytearray,callable,chr,
4219       classmethod,cmp,compile,complex,delattr,dict,dir,divmod,enumerate,eval,
4220       execfile,file,filter,float,format,frozenset,getattr,globals,hasattr,hash,
4221       help,hex,id,input,int,isinstance,issubclass,iter,len,list,locals,long,map,
4222       max,memoryview,min,next,object,oct,open,ord,pow,property,range,raw_input,
4223       reduce,reload,repr,reversed,round,set,setattr,slice,sorted,staticmethod,str,
4224       sum,super,tuple,type,unichr,unicode,vars,xrange,zip,apply,buffer,coerce,
4225       intern},
4226   sensitive=true,%
4227   morecomment=[l]\#,%
4228   morestring=[b]',%
4229   morestring=[b]",%
```

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

```
4230   morestring=[s]{'''}{'''},% used for documentation text (mulitiline strings)
4231   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:

```
4232   morestring=[s]{r'}{'},% 'raw' strings
4233   morestring=[s]{r"}{"},%
4234   morestring=[s]{r'''}{'''},%
4235   morestring=[s]{r"""}{"""},%
4236   morestring=[s]{u'}{'},% unicode strings
4237   morestring=[s]{u"}{"},%
4238   morestring=[s]{u'''}{'''},%
4239   morestring=[s]{u"""}{"""}%
4240   }%
```

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.

```
4241   ⟨/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:

```
4242   ⟨∗python-prf⟩

4243   \usepackage{xcolor}
4244   \usepackage{textcomp}
4245
```

```
4246 %% Actual colors from idlelib/config-highlight.def --> corrected to ''web-safe''
4247 %% strings  = #00aa00 / 0,170,0      (a darker green)
4248 %% builtins = #900090 / 144,0,144    (purple-ish)
4249 %% keywords = #FF7700 / 255,119,0    (quite close to plain 'orange')
4250 %\definecolor{IDLEorange}{RGB}{255,119,0} % pretty close to real orange
4251 %\definecolor{IDLEpurple}{RGB}{144,0,144}
4252 %\definecolor{IDLEgreen}{RGB}{0,170,0}
4253 %\definecolor{IDLEred}{RGB}{221,0,0}
4254 %% Corrected to ''web-safe''
4255 %\definecolor{orange2}{RGB}{255,102,0}
4256 \definecolor{purple2}{RGB}{153,0,153} % there's actually no standard purple
4257 \definecolor{green2}{RGB}{0,153,0} % a darker green
4258 %\definecolor{red2}{RGB}{221,0,0}
4259
4260 % Except for green and purple, the other colors are pretty good in standard
4261 % hue
4262 \lstdefinestyle{python-idle-code}{%
4263   language=Python,                    % the language
4264   basicstyle=\normalsize\ttfamily,    % size of the fonts for the code
4265   % Color settings to match IDLE style
4266   keywordstyle=\color{orange},        % core keywords
4267   keywordstyle={[2]\color{purple2}},  % built-ins
4268   stringstyle=\color{green2},
4269   commentstyle=\color{red},
4270   upquote=true,                       % requires textcomp
4271 }
4272 % Unimplemented IDLE syntax: function/class names being defined should be
4273 % blue
```

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

```
4274 ⟨/python-prf⟩
```

2.66 Rexx

Patrick TJ McPhee provided this definition.

```
4275 ⟨*lang2⟩

4276 %%
4277 %% classic rexx listings definition
4278 %% by Patrick TJ McPhee <ptjm@interlog.com>
4279 %%
4280 \lst@definelanguage{Rexx}
4281   {morekeywords={address,arg,call,do,drop,else,end,exit,if,iterate,%
4282                 interpret,leave,nop,numeric,options,otherwise,parse,%
4283                 procedure,pull,push,queue,return,say,signal,then,to,%
4284                 trace,when},%
4285    sensitive=false,%
4286    morecomment=[n]{/*}{*/},%
4287    morestring=[d]{'},%
```

```
4288    morestring=[d]{"},%
4289  }[keywords,comments,strings]%
```

4290 ⟨/lang2⟩

2.67 Reduce

was provided by Geraint Paul Bevan.

4291 ⟨∗lang3⟩

```
4292 %%
4293 %% Reduce definition (c) 2002 Geraint Paul Bevan
4294 %%
4295 \lst@definelanguage{Reduce}%
4296   {morekeywords={%
4297 %% reserved identifiers
4298 abs,acos,acosh,acot,acoth,acsc,acsch,%
4299 adjprec,algebraic,algint,allbranch,allfac,and,%
4300 antisymmetric,append,arglength,array,asec,asech,%
4301 asin,asinh,atan,atan2,atanh,begin,bfspace,bye,%
4302 card_no,ceiling,clear,clearrules,coeff,coeffn,%
4303 cofactor,combineexpt,combinelogs,comment,comp,%
4304 complex,conj,cons,cont,cos,cosh,cot,coth,cramer,%
4305 cref,csc,csch,decompose,define,defn,deg,demo,den,%
4306 depend,det,df,difference,dilog,display,div,do,e,%
4307 echo,ed,editdef,ei,end,eps,eq,equal,erf,errcont,%
4308 evallhseqp,eval_mode,even,evenp,exp,expandlogs,%
4309 expr,expt,ezgcd,factor,factorial,factorize,fexpr,%
4310 first,fix,fixp,floor,for,forall,foreach,fort,%
4311 fort_width,freeof,fullroots,g,gcd,geq,go,goto,%
4312 greaterp,high_pow,hypot,i,if,ifactor,impart,in,%
4313 index,infinity,infix,input,int,integer,interpol,%
4314 intstr,k,korder,lambda,lcm,lcof,length,leq,lessp,%
4315 let,lhs,linear,linelength,lisp,list,listargp,%
4316 listargs,ln,load,load_package,log,log10,logb,%
4317 low_pow,lterm,macro,mainvar,mass,mat,match,%
4318 mateigen,matrix,max,mcd,member,memq,min,minus,mkid,%
4319 modular,msg,mshell,multiplicities,nat,neq,nero,%
4320 nextprime,nil,nodepend,noncom,nonzero,nosplit,%
4321 nospur,nullspace,num,numberp,odd,off,on,operator,%
4322 or,order,ordp,out,output,part,pause,period,pf,pi,%
4323 plus,precedence,precise,precision,pret,pri,primep,%
4324 print_precision,procedure,product,quit,quotient,%
4325 random,random_new_seed,rank,rat,ratarg,rational,%
4326 rationalize,ratpri,real,rederr,reduct,remainder,%
4327 remfac,remind,repart,repeat,rest,resultant,retry,%
4328 return,reverse,revpri,rhs,rlisp88,%
4329 root_multiplicity,round,roundall,roundbf,rounded,%
4330 saveas,savestructr,scalar,sec,sech,second,set,%
4331 setmod,setq,share,showrules,showtime,shut,sign,sin,%
```

```
4332 sinh,smacro,solve,solvesingular,spur,sqrt,structr,%
4333 sub,sum,symbolic,symmetric,t,tan,tanh,third,time,%
4334 times,tp,tra,trace,trfac,trigform,trint,until,%
4335 varname,vecdim,vector,weight,when,where,while,%
4336 write,ws,wtlevel,%
4337 %% identifiers with spaces
4338 %% for all,for each,go to,such that,%
4339 },%
4340   sensitive=false,%
4341   morecomment=[l]\%,%
4342   morecomment=[s]{COMMENT}{;},%
4343   morecomment=[s]{COMMENT}{$},%
4344   morestring="%
4345 }[keywords,comments,strings]%

4346 ⟨/lang3⟩
```

2.68   RSL

Thanks go to Brian Christensen.

```
4347 ⟨*lang3⟩

4348 %%
4349 %% RSL definition (c) 2004 Brian Christensen
4350 %%
4351 \lst@definelanguage{RSL}%
4352   {morekeywords={Bool,Char,devt_relation,Int,Nat,Real,Text,Unit,abs,any,%
4353       as,axiom,card,case,channel,chaos,class,do,dom,elems,else,elsif,end,%
4354       extend,false,for,hd,hide,if,in,inds,initialise,int,len,let,local,%
4355       object,of,out,post,pre,read,real,rng,scheme,skip,stop,swap,%
4356       test_case,theory,then,tl,true,type,until,use,value,variable,while,%
4357       with,write},%
4358 literate=%
4359 {<}{$<$}{1}%
4360 {>}{$>$}{1}%
4361 {[}{$[$}{1}%%
4362 {]}{$]$}{1}%%
4363 {^}{{\mbox{$\widehat{\;}$}}}{1}%%
4364 {'}{{\raisebox{1ex}[1ex][0ex]{\protect\scriptsize$\prime$}}}{1}%%
4365 {||}{{\mbox{$\parallel$}}}{2}%%
4366 {|-}{$\vdash$}{1}%%
4367 {|=|}{{\mbox{$\lceil\!\rceil\!\!\!\!\!\!\;\lfloor\!\rfloor$}}}{1}%%
4368 {**}{$\uparrow$}{1}%
4369 {/\\}{$\wedge$}{1}%%
4370 {inter}{$\cap$}{1}%%
4371 {-\\}{$\lambda$}{1}%%
4372 {->}{$\rightarrow$}{1}%%
4373 {-m->}{{\mbox{$\rightarrow \hspace{-2.5\lst@width} _{m}\;$}}}{1}%
4374 {-~m->}{{\mbox{$\stackrel{\sim}{\mbox{$\rightarrow\hspace{-2.5\lst@width} _{m}\;$}}$}}}{1}%
4375 {-~->}{{\mbox{$\stackrel{\sim}{\rightarrow}$}}}{1}%%
```

```
4376 {-set}{\bf{-set}}{4}%%
4377 {-list}{{$^{\ast}$}}{1}%%
4378 {-inflist}{$^\omega$}{1}%
4379 {-infset}{{\mbox{{\bf -infset}}}}{7}%
4380 {\#}{$\circ$}{1}%%
4381 {:-}{{\raisebox{.4ex}{\tiny $\bullet$}}}{1}%%
4382 {=}{$=$}{1}%%
4383 {==}{$==$}{2}%%
4384 {=>}{$\Rightarrow$}{1}%%
4385 {\ is\protect\^^M}{{$\;\equiv$}}{2}%
4386 {\ is\ }{{$\equiv$}}{3}%%
4387 {\ isin\protect\^^M}{$\;\in$}{2}%%
4388 {~}{$\sim$}{1}%%
4389 {~=}{$\neq$}{1}%%
4390 {~isin}{$\notin$}{1}%%
4391 {+>}{$\mapsto$}{1}%%
4392 {++}{}{1}%
4393 {|^|}{{\mbox{$\lceil\!\rceil$}}}{1}%%
4394 {\\/}{$\vee$}{1}%%
4395 {exists}{$\exists$}{1}%%
4396 {union}{$\cup$}{1}%%
4397 {>=}{$\geq$}{1}%%
4398 {><}{$\times$}{1}%%
4399 {>>}{$\supset$}{1}%
4400 {>>=}{$\supseteq$}{1}%%
4401 {<=}{$\leq$}{1}%%
4402 {<<}{$\subset$}{1}%
4403 {<.}{$\langle$}{1}%%
4404 {<<=}{$\subseteq$}{1}%%
4405 {<->}{$\leftrightarrow$}{1}%%
4406 {[=}{$\sqsubseteq$}{1}%%
4407 {\{=}{$\preceq$}{1}%%
4408 {\ all\protect\^^M}{$\forall$}{2}%%
4409 {\ all\ }{$\forall$}{3}%%
4410 {!!}{$\dagger$}{1}%%
4411 {always}{$\Box$}{1}%%
4412 {.>}{$\rangle$}{1}%%
4413 {`alpha}{$\alpha$}{1}%
4414 {`beta}{$\beta$}{1}%
4415 {`gamma}{$\gamma$}{1}%
4416 {`delta}{$\delta$}{1}%
4417 {`epsilon}{$\epsilon$}{1}%
4418 {`zeta}{$\zeta$}{1}%
4419 {`eta}{$\eta$}{1}%
4420 {`theta}{$\theta$}{1}%
4421 {`iota}{$\iota$}{1}%
4422 {`kappa}{$\kappa$}{1}%
4423 {`mu}{$\mu$}{1}%
4424 {`nu}{$\nu$}{1}%
4425 {`xi}{$\xi$}{1}%
```

```
4426 {`pi}{$\pi$}{1}%
4427 {`rho}{$\rho$}{1}%
4428 {`sigma}{$\sigma$}{1}%
4429 {`tau}{$\tau$}{1}%
4430 {`upsilon}{$\upsilon$}{1}%
4431 {`phi}{$\phi$}{1}%
4432 {`chi}{$\chi$}{1}%
4433 {`psi}{$\psi$}{1}%
4434 {`omega}{$\omega$}{1}%
4435 {`Gamma}{$\Gamma$}{1}%
4436 {`Delta}{$\Delta$}{1}%
4437 {`Theta}{$\Theta$}{1}%
4438 {`Lambda}{$\Lambda$}{1}%
4439 {`Xi}{$\Xi$}{1}%
4440 {`Pi}{$\Pi$}{1}%
4441 {`Sigma}{$\Sigma$}{1}%
4442 {`Upsilon}{$\Upsilon$}{1}%
4443 {`Phi}{$\Phi$}{1}%
4444 {`Psi}{$\Psi$}{1}%
4445 {`Omega}{$\Omega$}{1},%
4446    sensitive=true,%
4447    morecomment=[l]{--},%
4448    morecomment=[s]{/*}{*/}%
4449   }[keywords,comments]%

4450 ⟨/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.

```
4451 ⟨*lang2⟩

4452 \lst@definelanguage{Ruby}%
4453   {morekeywords={__FILE__,__LINE__,BEGIN,END,alias,and,begin,break,%
4454       case,class,def,defined?,do,else,elsif,end,ensure,false,for,%
4455       if,in,module,next,nil,not,or,redo,rescue,retry,return,self,%
4456       super,then,true,undef,unless,until,when,while,yield},%
4457    sensitive=true,%
4458    morecomment=[l]\#,%
4459    morecomment=[l]\#\#,%
4460    morecomment=[s]{=BEGIN}{=END},%
4461    morestring=[b]',%
4462    morestring=[b]",%
```

```
4463    morestring=[s]{\%q/}{/},%
4464    morestring=[s]{\%q!}{!},%
4465    morestring=[s]{\%q\{}{\}},%
4466    morestring=[s]{\%q(}{)},%
4467    morestring=[s]{\%q[}{]},%
4468    morestring=[s]{\%q-}{-},%
4469    morestring=[s]{\%Q/}{/},%
4470    morestring=[s]{\%Q!}{!},%
4471    morestring=[s]{\%Q\{}{\}},%
4472    morestring=[s]{\%Q(}{)},%
4473    morestring=[s]{\%Q[}{]},%
4474    morestring=[s]{\%Q-}{-}%
4475  }[keywords,comments,strings]%
4476 %    \begin{macrocode}
4477 ⟨/lang2⟩
```

2.70   Scilab

Thanks go to Jean-Philippe Grivet.

```
4478 ⟨*lang1⟩

4479 %%
4480 %% Scilab definition (c) 2002,2003 Jean-Philippe Grivet
4481 %%
4482 \lst@definelanguage{Scilab}%
4483    {morekeywords={abcd,abinv,abort,abs,acoshm,acosh,acosm,acos,addcolor,%
4484        addf,addinter,addmenu,add_edge,add_node,adj2sp,adj_lists,aff2ab,%
4485        amell,analpf,analyze,ans,apropos,arc_graph,arc_number,argn,arhnk,%
4486        arl2,arma2p,armac,armax1,armax,arma,arsimul,artest,articul,ascii,%
4487        asinhm,asinh,asinm,asin,atanhm,atanh,atanm,atan,augment,auread,%
4488        auwrite,balanc,balreal,bandwr,basename,bdiag,besseli,besselj,%
4489        besselk,bessely,best_match,bezout,bifish,bilin,binomial,black,%
4490        bloc2exp,bloc2ss,bode,bool2s,boolean,boucle,break,bstap,buttmag,%
4491        bvode,cainv,calerf,calfrq,call,canon,casc,case,ccontrg,cdfbet,%
4492        cdfbin,cdfchi,cdfchn,cdffnc,cdff,cdfgam,cdfnbn,cdfnor,cdfpoi,%
4493        cdft,ceil,center,cepstrum,chaintest,chain_struct,champ1,champ,%
4494        chart,chdir,cheb1mag,cheb2mag,check_graph,check_io,chepol,chfact,%
4495        chol,chsolve,circuit,classmarkov,clean,clearfun,clearglobal,%
4496        clear,close,cls2dls,cmb_lin,cmndred,cmoment,code2str,coeff,coffg,%
4497        coff,colcompr,colcomp,colinout,colormap,colregul,companion,comp,%
4498        cond,conj,connex,contour2di,contour2d,contourf,contour,%
4499        contract_edge,contrss,contr,cont_frm,cont_mat,convex_hull,convol,%
4500        convstr,con_nodes,copfac,copy,correl,corr,coshm,cosh,cosm,cos,%
4501        cotg,cothm,coth,covar,csim,cspect,ctr_gram,cumprod,cumsum,%
4502        curblock,cycle_basis,czt,c_link,dasrt,dassl,datafit,date,dbphi,%
4503        dcf,ddp,debug,dec2hex,deff,definedfields,degree,delbpt,%
4504        delete_arcs,delete_nodes,delete,delip,delmenu,demos,denom,%
4505        derivative,derivat,des2ss,des2tf,determ,detr,det,dft,dhinf,%
4506        dhnorm,diag,diary,diff,diophant,dirname,dispbpt,dispfiles,disp,%
4507        dlgamma,double,dragrect,drawaxis,drawlater,drawnow,draw,driver,%
```

```
4508        dscr,dsearch,dsimul,dtsi,dt_ility,duplicate,edge_number,%
4509        edit_curv,edit_graph_menus,edit_graph,edit,eigenmarkov,ell1mag,%
4510        elseif,else,emptystr,endfunction,end,eqfir,eqiir,equil1,equil,%
4511        ereduc,erfcx,erfc,erf,errbar,errcatch,errclear,error,eval3dp,%
4512        eval3d,eval,evans,evstr,excel2sci,execstr,exec,exists,exit,expm,%
4513        exp,external,eye,fac3d,factors,faurre,fchamp,fcontour2d,fcontour,%
4514        fec,feedback,feval,ffilt,fftshift,fft,fgrayplot,figure,fileinfo,%
4515        file,filter,findm,findobj,findx0BD,find_freq,find_path,find,%
4516        findABCD,findAC,findBD,findBDK,findR,fit_dat,fix,floor,flts,foo,%
4517        formatman,format,fort,for,fourplan,fplot2d,fplot3d1,fplot3d,%
4518        fprintf,fprintfMat,frep2tf,freq,freson,frexp,frfit,frmag,fscanf,%
4519        fscanfMat,fsfirlin,fsolve,fspecg,fstabst,fstair,ftest,ftuneq,%
4520        fullrfk,fullrf,full,fun2string,funcprot,functions,function,%
4521        funptr,fusee,gainplot,gamitg,gammaln,gamma,gcare,gcd,gcf,%
4522        genfac3d,genlib,genmarkov,gen_net,geom3d,geomean,getblocklabel,%
4523        getcolor,getcurblock,getcwd,getdate,getd,getenv,getfield,getfont,%
4524        getf,getio,getlinestyle,getmark,getpid,getscicosvars,getsymbol,%
4525        getvalue,getversion,get_function_path,get,gfare,gfrancis,girth,%
4526        givens,glever,glist,global,glue,gpeche,graduate,grand,%
4527        graphics_entities,graph_2_mat,graph_center,graph_complement,%
4528        graph_diameter,graph_power,graph_simp,graph_sum,graph_union,%
4529        graph-list,graycolormap,grayplot,graypolarplot,grep,group,%
4530        gr_menu,gschur,gsort,gspec,gstacksize,gtild,g_margin,h2norm,halt,%
4531        hamilton,hankelsv,hank,harmean,havewindow,help,hermit,hess,%
4532        hex2dec,hilb,hinf,hist3d,histplot,horner,host,hotcolormap,%
4533        householder,hrmt,htrianr,hypermat,h_cl,h_inf_st,h_inf,h_norm,%
4534        iconvert,icon_edit,ieee,if,iirgroup,iirlp,iir,ilib_build,%
4535        ilib_compile,ilib_for_link,ilib_gen_gateway,ilib_gen_loader,%
4536        ilib_gen_Make,imag,impl,imrep2ss,imult,im_inv,inistate,input,%
4537        int16,int2d,int32,int3d,int8,intc,intdec,integrate,interpln,%
4538        interp,intersci,intersect,intg,intl,intppty,intsplin,inttrap,%
4539        inttype,int,invr,invsyslin,inv_coeff,inv,iqr,isdef,isdir,isequal,%
4540        iserror,isglobal,isinf,isnan,isoview,isreal,is_connex,jmat,%
4541        justify,kalm,karmarkar,kernel,keyboard,knapsack,kpure,krac2,%
4542        kroneck,kron,lasterror,lattn,lattp,lcf,lcmdiag,lcm,ldivf,ldiv,%
4543        leastsq,legends,length,leqr,levin,lev,lex_sort,lft,lgfft,library,%
4544        lib,lin2mu,lincos,lindquist,lines,line_graph,linfn,linf,link,%
4545        linmeq,linpro,linsolve,linspace,lin,listfiles,list,lmisolver,%
4546        lmitool,loadmatfile,loadplots,loadwave,load_graph,load,locate,%
4547        log10,log1p,log2,logm,logspace,log,lotest,lqe,lqg2stan,lqg_ltr,%
4548        lqg,lqr,lsq,lsslist,lstcat,lstsize,ltitr,ludel,lufact,luget,%
4549        lusolve,lu,lyap,macglov,macr2lst,macrovar,macro,mad,make_graph,%
4550        make_index,manedit,man,mapsound,markp2ss,matfile2sci,matrix,%
4551        mat_2_graph,maxi,max_cap_path,max_clique,max_flow,max,mclearerr,%
4552        mclose,meanf,mean,median,meof,mese,mesh2d,mfft,mfile2sci,mgeti,%
4553        mgetl,mgetstr,mget,milk_drop,mine,mini,minreal,minss,%
4554        min_lcost_cflow,min_lcost_flow1,min_lcost_flow2,min_qcost_flow,%
4555        min_weight_tree,min,mlist,mode,modulo,moment,mopen,move,%
4556        mps2linpro,mputl,mputstr,mput,mrfit,msd,mseek,mtell,mtlb_load,%
4557        mtlb_mode,mtlb_save,mtlb_sparse,mu2lin,mulf,mvvacov,m_circle,%
```

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```
4558    names,nand2mean,nanmax,nanmeanf,nanmean,nanmedian,nanmin,%
4559    nanstdev,nansum,narsimul,ndims,nearfloat,nehari,neighbors,%
4560    netclose,netwindows,netwindow,newest,newfun,nextpow2,nf3d,nfreq,%
4561    nlev,nnz,nodes_2_path,nodes_degrees,node_number,noisegen,norm,%
4562    null,numdiff,numer,nyquist,obscont1,obscont,observer,obsvss,%
4563    obsv_mat,obs_gram,odedc,odedi,odeoptions,ode_discrete,ode_root,%
4564    ode,oldload,oldsave,ones,optim,orth,param3d1,param3d,%
4565    paramfplot2d,parrot,part,pathconvert,path_2_nodes,pause,pbig,%
4566    pdiv,pen2ea,pencan,penlaur,perctl,perfect_match,pertrans,pfss,%
4567    phasemag,phc,pinv,pipe_network,playsnd,plot2d1,plot2d2,plot2d3,%
4568    plot2d4,plot2d,plot3d1,plot3d2,plot3d3,plot3d,plotframe,%
4569    plotprofile,plot_graph,plot,plzr,pmodulo,pol2des,pol2str,pol2tex,%
4570    polarplot,polar,polfact,poly,portr3d,portrait,power,ppol,prbs_a,%
4571    predecessors,predef,printf,printing,print,prod,profile,projsl,%
4572    projspec,proj,psmall,pspect,pvm_addhosts,pvm_barrier,pvm_bcast,%
4573    pvm_bufinfo,pvm_config,pvm_delhosts,pvm_error,pvm_exit,%
4574    pvm_f772sci,pvm_getinst,pvm_gettid,pvm_get_timer,pvm_gsize,%
4575    pvm_halt,pvm_joingroup,pvm_kill,pvm_lvgroup,pvm_mytid,pvm_parent,%
4576    pvm_probe,pvm_recv,pvm_reduce,pvm_sci2f77,pvm_send,pvm_set_timer,%
4577    pvm_spawn_independent,pvm_spawn,pvm_start,pvm_tasks,%
4578    pvm_tidtohost,pvm,pwd,p_margin,qassign,qr,quapro,quart,quaskro,%
4579    quit,randpencil,rand,range,rankqr,rank,rat,rcond,rdivf,read4b,%
4580    readb,readc_,readmps,read,real,recur,reglin,regress,remezb,remez,%
4581    repfreq,replot,residu,resume,return,riccati,riccsl,ricc,ric_desc,%
4582    rlist,roots,rotate,round,routh_t,rowcompr,rowcomp,rowinout,%
4583    rowregul,rowshuff,rpem,rref,rtitr,rubberbox,salesman,savewave,%
4584    save_graph,save,scaling,scanf,schur,sci2exp,sci2for,sci2map,%
4585    sciargs,scicosim,scicos,scifunc_block,sd2sci,secto3d,select,%
4586    semidef,sensi,setbpt,seteventhandler,setfield,setmenu,%
4587    setscicosvars,set,sfact,sgrid,shortest_path,showprofile,%
4588    show_arcs,show_graph,show_nodes,sident,signm,sign,simp_mode,simp,%
4589    sincd,sinc,sinc,sinhm,sinh,sinm,sin,size,sm2des,sm2ss,smooth,%
4590    solve,sorder,sort,sound,sp2adj,spaninter,spanplus,spantwo,sparse,%
4591    spchol,spcompack,specfact,spec,speye,spget,splin,split_edge,%
4592    spones,sprand,sprintf,spzeros,sqroot,sqrtm,sqrt,squarewave,%
4593    square,srfaur,srkf,ss2des,ss2ss,ss2tf,sscanf,sskf,ssprint,ssrand,%
4594    stabil,stacksize,standard_define,standard_draw,standard_input,%
4595    standard_origin,standard_output,startup,stdevf,stdev,steadycos,%
4596    str2code,strange,strcat,strindex,strings,string,stripblanks,%
4597    strong_connex,strong_con_nodes,strsubst,st_deviation,st_ility,%
4598    subf,subgraph,subplot,successors,sum,supernode,sva,svd,svplot,%
4599    sylm,sylv,sysconv,sysdiag,sysfact,syslin,syssize,systems,system,%
4600    systmat,tabul,tangent,tanhm,tanh,tanm,tan,tdinit,testmatrix,%
4601    texprint,tf2des,tf2ss,then,thrownan,timer,time_id,titlepage,%
4602    tk_getdir,tk_getfile,tlist,toeplitz,tokenpos,tokens,trace,%
4603    translatepaths,trans_closure,trans,trfmod,trianfml,tril,trimmean,%
4604    trisolve,triu,trzeros,typename,typeof,type,uicontrol,uimenu,%
4605    uint16,uint32,uint8,ui_observer,ulink,unglue,union,unique,unix_g,%
4606    unix_s,unix_w,unix_x,unix,unobs,unsetmenu,user,varargin,%
4607    varargout,variancef,variance,varn,warning,wavread,wavwrite,%
```

```
4608        wcenter,wfir,what,whereami,whereis,where,while,whos,who_user,who,%
4609        wiener,wigner,window,winsid,with_gtk,with_pvm,with_texmacs,%
4610        with_tk,writb,write4b,write,xarcs,xarc,xarrows,xaxis,xbasc,%
4611        xbasimp,xbasr,xchange,xclear,xclea,xclick,xclip,xdel,xend,xfarcs,%
4612        xfarc,xfpolys,xfpoly,xfrect,xgetech,xgetfile,xgetmouse,xget,%
4613        xgraduate,xgrid,xinfo,xinit,xlfont,xload,xname,xnumb,xpause,%
4614        xpolys,xpoly,xrects,xrect,xrpoly,xs2fig,xs2gif,xs2ppm,xs2ps,%
4615        xsave,xsegs,select,xsetech,xsetm,xset,xstringb,xstringl,xstring,%
4616        xtape,xtitle,x_choices,x_choose,x_dialog,x_matrix,x_mdialog,%
4617        x_message_modeless,x_message,yulewalk,zeropen,zeros,zgrid,zpbutt,%
4618        zpch1,zpch2,zpell,mfprintf,mfscanf,mprintf,mscanf,msprintf,%
4619        msscanf,mucomp,%
4620        ABSBLK_f,AFFICH_f,ANDLOG_f,ANIMXY_f,BIGSOM_f,CLINDUMMY_f,CLKIN_f,%
4621        CLKINV_f,CLKOUT_f,CLKOUTV_f,CLKSOM_f,CLKSOMV_f,CLKSPLIT_f,%
4622        CLOCK_f,CLR_f,CLSS_f,CONST_f,COSBLK_f,CURV_f,DELAY_f,DELAYV_f,%
4623        DEMUX_f,DLR_f,DLRADAPT_f,DLSS_f,EVENTSCOPE_f,EVTDLY_f,EVTGEN_f,%
4624        EXPBLK_f,G_make,GAIN_f,GAINBLK_f,GENERAL_f,GENERIC_f,GENSIN_f,%
4625        GENSQR_f,HALT_f,IFTHEL_f,IN_f,INTEGRAL_f,INTRP2BLK_f,INTRPLBLK_f,%
4626        INVBLK_f,LOGBLK_f,LOOKUP_f,Matplot1,Matplot,MAX_f,MCLOCK_f,%
4627        MFCLCK_f,MIN_f,MUX_f,NDcost,NEGTOPOS_f,OUT_f,POSTONEG_f,POWBLK_f,%
4628        PROD_f,QUANT_f,RAND_f,READC_f,REGISTER_f,RELAY_f,RFILE_f,%
4629        ScilabEval,Sfgrayplot,Sgrayplot,SAMPLEHOLD_f,SAT_f,SAWTOOTH_f,%
4630        SCOPE_f,SCOPXY_f,SELECT_f,SINBLK_f,SOM_f,SPLIT_f,STOP_f,SUPER_f,%
4631        TANBLK_f,TCLSS_f,TEXT_f,TIME_f,TK_EvalFile,TK_EvalStr,TK_GetVar,%
4632        TK_SetVar,TRASH_f,WFILE_f,WRITEC_f,ZCROSS_f,%
4633        \%asn,\%helps,\%k,\%sn},%
4634    alsoletter=\%,% chmod
4635    sensitive,%
4636    morecomment=[l]//,%
4637    morestring=[b]",%
4638    morestring=[m]'%
4639   }[keywords,comments,strings]%
4640 ⟨/lang1⟩
```

2.71 SHELXL

Thanks to Aidan Philip Heerdegen for mailing this definition.

```
4641 ⟨*lang2⟩

4642 %%
4643 %% SHELXL definition (c) 1999 Aidan Philip Heerdegen
4644 %%
4645 \lst@definelanguage{SHELXL}%
4646   {morekeywords={TITL,CELL,ZERR,LATT,SYMM,SFAC,DISP,UNIT,LAUE,%
4647       REM,MORE,TIME,END,HKLF,OMIT,SHEL,BASF,TWIN,EXTI,SWAT,%
4648       MERG,SPEC,RESI,MOVE,ANIS,AFIX,HFIX,FRAG,FEND,EXYZ,EADP,%
4649       EQIV,OMIT,CONN,PART,BIND,FREE,DFIX,BUMP,SAME,SADI,CHIV,%
4650       FLAT,DELU,SIMU,DEFS,ISOR,SUMP,L.S.,CGLS,SLIM,BLOC,DAMP,%
4651       WGHT,FVAR,BOND,CONF,MPLA,RTAB,LIST,ACTA,SIZE,TEMP,WPDB,%
```

```
4652        FMAP,GRID,PLAN,MOLE},%
4653     sensitive=false,%
4654     alsoother=_,% Makes the syntax highlighting ignore the underscores
4655     morecomment=[l]{! },%
4656     }%
```

4657 ⟨/lang2⟩

2.72   Simula

Took data from

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

4658 ⟨∗lang3⟩

4659 `\lst@definelanguage[IBM]{Simula}[DEC]{Simula}{}%`

```
4660 \lst@definelanguage[DEC]{Simula}[67]{Simula}%
4661   {morekeywords={and,eq,eqv,ge,gt,hidden,imp,le,long,lt,ne,not,%
4662       options,or,protected,short}%
4663   }%
```

```
4664 \lst@definelanguage[CII]{Simula}[67]{Simula}%
4665   {morekeywords={and,equiv,exit,impl,not,or,stop}}%
```

```
4666 \lst@definelanguage[67]{Simula}%
4667   {morekeywords={activate,after,array,at,before,begin,boolean,%
4668       character,class,comment,delay,detach,do,else,end,external,false,%
4669       for,go,goto,if,in,inner,inspect,integer,is,label,name,new,none,%
4670       notext,otherwise,prior,procedure,qua,reactivate,real,ref,resume,%
4671       simset,simulation,step,switch,text,then,this,to,true,until,value,%
4672       virtual,when,while},%
4673     sensitive=f,%
4674     keywordcommentsemicolon={end}{else,end,otherwise,when}{comment},%
4675     morestring=[d]",%
4676     morestring=[d]'%
4677   }[keywords,keywordcomments,strings]%
```

4678 ⟨/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.

4679 ⟨∗lang3⟩

```
4680 %%
4681 %% SPARQL definition (c) 2006 Christoph Kiefer
4682 %%
4683 \lst@definelanguage{SPARQL}%
```

```
4684  {morekeywords={BASE,PREFIX,SELECT,DISTINCT,CONSTRUCT,DESCRIBE,ASK,%
4685       FROM,NAMED,WHERE,ORDER,BY,ASC,DESC,LIMIT,OFFSET,OPTIONAL,%
4686       GRAPH,UNION,FILTER,a,STR,LANG,LANGMATCHES,DATATYPE,BOUND,%
4687       isIRI,isURI,isBLANK,isLITERAL,REGEX,true,false},%
4688   sensitive=false,%
4689   morecomment=[l]\#,%
4690   morestring=[d]',%
4691   morestring=[d]"%
4692  }[keywords,comments,strings]%
```

4693 ⟨/lang3⟩

2.74   SQL

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

4694 ⟨∗lang1⟩

```
4695 %%
4696 %% SQL definition (c) 1998 Christian Haul
4697 %%                  (c) 2002 Neil Conway
4698 %%                  (c) 2002 Robert Frank
4699 %%                  (c) 2003 Dirk Jesko
4700 %%
4701 \lst@definelanguage{SQL}%
4702  {morekeywords={ABSOLUTE,ACTION,ADD,ALLOCATE,ALTER,ARE,AS,ASSERTION,%
4703       AT,BETWEEN,BIT_LENGTH,BOTH,BY,CASCADE,CASCADED,CASE,CAST,%
4704       CATALOG,CHAR_LENGTH,CHARACTER_LENGTH,CLUSTER,COALESCE,%
4705       COLLATE,COLLATION,COLUMN,CONNECT,CONNECTION,CONSTRAINT,%
4706       CONSTRAINTS,CONVERT,CORRESPONDING,CREATE,CROSS,CURRENT_DATE,%
4707       CURRENT_TIME,CURRENT_TIMESTAMP,CURRENT_USER,DAY,DEALLOCATE,%
4708       DEC,DEFERRABLE,DEFERED,DESCRIBE,DESCRIPTOR,DIAGNOSTICS,%
4709       DISCONNECT,DOMAIN,DROP,ELSE,END,EXEC,EXCEPT,EXCEPTION,EXECUTE,%
4710       EXTERNAL,EXTRACT,FALSE,FIRST,FOREIGN,FROM,FULL,GET,GLOBAL,%
4711       GRAPHIC,HAVING,HOUR,IDENTITY,IMMEDIATE,INDEX,INITIALLY,INNER,%
4712       INPUT,INSENSITIVE,INSERT,INTO,INTERSECT,INTERVAL,%
4713       ISOLATION,JOIN,KEY,LAST,LEADING,LEFT,LEVEL,LIMIT,LOCAL,LOWER,%
4714       MATCH,MINUTE,MONTH,NAMES,NATIONAL,NATURAL,NCHAR,NEXT,NO,NOT,NULL,%
4715       NULLIF,OCTET_LENGTH,ON,ONLY,ORDER,ORDERED,OUTER,OUTPUT,OVERLAPS,%
4716       PAD,PARTIAL,POSITION,PREPARE,PRESERVE,PRIMARY,PRIOR,READ,%
4717       RELATIVE,RESTRICT,REVOKE,RIGHT,ROWS,SCROLL,SECOND,SELECT,SESSION,%
4718       SESSION_USER,SIZE,SPACE,SQLSTATE,SUBSTRING,SYSTEM_USER,%
4719       TABLE,TEMPORARY,THEN,TIMEZONE_HOUR,%
4720       TIMEZONE_MINUTE,TRAILING,TRANSACTION,TRANSLATE,TRANSLATION,TRIM,%
4721       TRUE,UNIQUE,UNKNOWN,UPPER,USAGE,USING,VALUE,VALUES,%
4722       VARGRAPHIC,VARYING,WHEN,WHERE,WRITE,YEAR,ZONE,%
4723       AND,ASC,avg,CHECK,COMMIT,count,DECODE,DESC,DISTINCT,GROUP,IN,% FF
4724       LIKE,NUMBER,ROLLBACK,SUBSTR,sum,VARCHAR2,% FF
4725       MIN,MAX,UNION,UPDATE,% RF
4726       ALL,ANY,CUBE,CUBE,DEFAULT,DELETE,EXISTS,GRANT,OR,RECURSIVE,% DJ
```

```
4727        ROLE,ROLLUP,SET,SOME,TRIGGER,VIEW},% DJ
4728    morendkeywords={BIT,BLOB,CHAR,CHARACTER,CLOB,DATE,DECIMAL,FLOAT,% DJ
4729        INT,INTEGER,NUMERIC,SMALLINT,TIME,TIMESTAMP,VARCHAR},% moved here
4730    sensitive=false,% DJ
4731    morecomment=[l]--,%
4732    morecomment=[s]{/*}{*/},%
4733    morestring=[d]',%
4734    morestring=[d]"%
4735  }[keywords,comments,strings]%

4736 ⟨/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.

```
4737 ⟨∗lang2⟩

4738 %%
4739 %% Tcl/Tk definition (c) Gerd Neugebauer
4740 %%
4741 \lst@definelanguage[tk]{tcl}[]{tcl}%
4742   {morekeywords={activate,add,separator,radiobutton,checkbutton,%
4743      command,cascade,all,bell,bind,bindtags,button,canvas,canvasx,%
4744      canvasy,cascade,cget,checkbutton,config,configu,configur,%
4745      configure,clipboard,create,arc,bitmap,image,line,oval,polygon,%
4746      rectangle,text,textwindow,curselection,delete,destroy,end,entry,%
4747      entrycget,event,focus,font,actual,families,measure,metrics,names,%
4748      frame,get,grab,current,release,status,grid,columnconfigure,%
4749      rowconfigure,image,image,create,bitmap,photo,delete,height,types,%
4750      widt,names,index,insert,invoke,itemconfigure,label,listbox,lower,%
4751      menu,menubutton,message,move,option,add,clear,get,readfile,pack,%
4752      photo,place,radiobutton,raise,scale,scroll,scrollbar,search,see,%
4753      selection,send,stdin,stdout,stderr,tag,bind,text,tk,tkerror,%
4754      tkwait,window,variable,visibility,toplevel,unknown,update,winfo,%
4755      class,exists,ismapped,parent,reqwidth,reqheight,rootx,rooty,%
4756      width,height,wm,aspect,client,command,deiconify,focusmodel,frame,%
4757      geometry,group,iconbitmap,iconify,iconmask,iconname,iconposition,%
4758      iconwindow,maxsize,minsize,overrideredirect,positionfrom,%
4759      protocol,sizefrom,state,title,transient,withdraw,xview,yview,%
4760      yposition,%
```

```
4761       -accelerator,-activebackground,-activeborderwidth,%
4762       -activeforeground,-after,-anchor,-arrow,-arrowshape,-aspect,%
4763       -async,-background,-before,-bg,-bigincrement,-bitmap,-bordermode,%
4764       -borderwidth,-button,-capstyle,-channel,-class,-closeenough,%
4765       -colormap,-column,-columnspan,-command,-confine,-container,%
4766       -count,-cursor,-data,-default,-detail,-digits,-direction,%
4767       -displayof,-disableforeground,-elementborderwidth,-expand,%
4768       -exportselection,-extend,-family,-fg,-file,-fill,-focus,-font,%
4769       -fontmap,-foreground,-format,-from,-gamma,-global,-height,%
4770       -highlightbackground,-highlightcolor,-highlightthickness,-icon,%
4771       -image,-in,-insertbackground,-insertborderwidth,-insertofftime,%
4772       -insertontime,-imsertwidth,-ipadx,-ipady,-joinstyle,-jump,%
4773       -justify,-keycode,-keysym,-label,-lastfor,-length,-maskdata,%
4774       -maskfile,-menu,-message,-mode,-offvalue,-onvalue,-orient,%
4775       -outlien,-outlinestipple,-overstrike,-override,-padx,-pady,%
4776       -pageanchor,-pageheight,-pagewidth,-pagey,-pagey,-palette,%
4777       -parent,-place,-postcommand,-relheight,-relief,-relwidth,-relx,%
4778       -rely,-repeatdelay,-repeatinterval,-resolution,-root,-rootx,%
4779       -rooty,-rotate,-row,-rowspan,-screen,-selectcolor,-selectimage,%
4780       -sendevent,-serial,-setgrid,-showvalue,-shrink,-side,-size,%
4781       -slant,-sliderlength,-sliderrelief,-smooth,-splinesteps,-state,%
4782       -sticky,-stipple,-style,-subsample,-subwindow,-tags,-takefocus,%
4783       -tearoff,-tearoffcommand,-text,-textvariable,-tickinterval,-time,%
4784       -title,-to,-troughcolor,-type,-underline,-use,-value,-variable,%
4785       -visual,-width,-wrap,-wraplength,-x,-xscrollcommand,-y,%
4786       -bgstipple,-fgstipple,-lmargin1,-lmargin2,-rmargin,-spacing1,%
4787       -spacing2,-spacing3,-tabs,-yscrollcommand,-zoom,%
4788       activate,add,addtag,bbox,cget,clone,configure,coords,%
4789       curselection,debug,delete,delta,deselect,dlineinfo,dtag,dump,%
4790       entrycget,entryconfigure,find,flash,fraction,get,gettags,handle,%
4791       icursor,identify,index,insert,invoke,itemcget,itemconfigure,mark,%
4792       moveto,own,post,postcascade,postscript,put,redither,ranges,%
4793       scale,select,show,tag,type,unpost,xscrollcommand,xview,%
4794       yscrollcommand,yview,yposition}%
4795    }%
4796 \lst@definelanguage[]{tcl}%
4797    {alsoletter={.:,*=&-},%
4798     morekeywords={after,append,array,names,exists,anymore,donesearch,%
4799       get,nextelement,set,size,startsearch,auto_mkindex,binary,break,%
4800       case,catch,cd,clock,close,concat,console,continue,default,else,%
4801       elseif,eof,error,eval,exec,-keepnewline,exit,expr,fblocked,%
4802       fconfigure,fcopy,file,atime,dirname,executable,exists,extension,%
4803       isdirectory,isfile,join,lstat,mtime,owned,readable,readlink,%
4804       rootname,size,stat,tail,type,writable,-permissions,-group,-owner,%
4805       -archive,-hidden,-readonly,-system,-creator,-type,-force,%
4806       fileevent,flush,for,foreach,format,gets,glob,global,history,if,%
4807       incr,info,argsbody,cmdcount,commands,complete,default,exists,%
4808       globals,level,library,locals,patchlevel,procs,script,tclversion,%
4809       vars,interp,join,lappend,lindex,linsert,list,llength,lrange,%
```

```
4810      lreplace,lsearch,-exact,-regexp,-glob,lsort,-ascii,-integer,%
4811      -real,-dictionary,-increasing,-decreasing,-index,-command,load,%
4812      namespace,open,package,forget,ifneeded,provide,require,unknown,%
4813      vcompare,versions,vsatisfies,pid,proc,puts,-nonewline,pwd,read,%
4814      regexp,-indices,regsub,-all,-nocaserename,return,scan,seek,set,%
4815      socket,source,split,string,compare,first,index,last,length,match,%
4816      range,tolower,toupper,trim,trimleft,trimright,subst,switch,tell,%
4817      time,trace,variable,vdelete,vinfo,unknown,unset,uplevel,upvar,%
4818      vwait,while,acos,asin,atan,atan2,ceil,cos,cosh,exp,floor,fmod,%
4819      hypot,log,log10,pow,sin,sinh,sqrt,tan,tanh,abs,double,int,round%
4820      },%
4821  morestring=[d]",%
4822  morecomment=[f]\#,%
4823  morecomment=[l]{;\#},%
4824  morecomment=[l]{[\#},%
4825  morecomment=[l]{\{\#}%
4826  }[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.

```
4827 ⟨/lang2⟩
```

2.76 Statistical languages

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

```
4828 ⟨∗lang3⟩
```

```
4829 \lst@definelanguage{S}[]{R}{}
4830 \lst@definelanguage[PLUS]{S}[]{R}{}
4831 \lst@definelanguage{R}%
4832   {keywords={abbreviate,abline,abs,acos,acosh,action,add1,add,%
4833       aggregate,alias,Alias,alist,all,anova,any,aov,aperm,append,apply,%
4834       approx,approxfun,apropos,Arg,args,array,arrows,as,asin,asinh,%
4835       atan,atan2,atanh,attach,attr,attributes,autoload,autoloader,ave,%
4836       axis,backsolve,barplot,basename,besselI,besselJ,besselK,besselY,%
4837       beta,binomial,body,box,boxplot,break,browser,bug,builtins,bxp,by,%
4838       c,C,call,Call,case,cat,category,cbind,ceiling,character,char,%
4839       charmatch,check,chol,chol2inv,choose,chull,class,close,cm,codes,%
4840       coef,coefficients,co,col,colnames,colors,colours,commandArgs,%
4841       comment,complete,complex,conflicts,Conj,contents,contour,%
4842       contrasts,contr,control,helmert,contrib,convolve,cooks,coords,%
4843       distance,coplot,cor,cos,cosh,count,fields,cov,covratio,wt,CRAN,%
4844       create,crossprod,cummax,cummin,cumprod,cumsum,curve,cut,cycle,D,%
4845       data,dataentry,date,dbeta,dbinom,dcauchy,dchisq,de,debug,%
4846       debugger,Defunct,default,delay,delete,deltat,demo,de,density,%
4847       deparse,dependencies,Deprecated,deriv,description,detach,%
4848       dev2bitmap,dev,cur,deviance,off,prev,,dexp,df,dfbetas,dffits,%
4849       dgamma,dgeom,dget,dhyper,diag,diff,digamma,dim,dimnames,dir,%
4850       dirname,dlnorm,dlogis,dnbinom,dnchisq,dnorm,do,dotplot,double,%
```

```
4851        download,dpois,dput,drop,drop1,dsignrank,dt,dummy,dump,dunif,%
4852        duplicated,dweibull,dwilcox,dyn,edit,eff,effects,eigen,else,%
4853        emacs,end,environment,env,erase,eval,equal,evalq,example,exists,%
4854        exit,exp,expand,expression,External,extract,extractAIC,factor,%
4855        fail,family,fft,file,filled,find,fitted,fivenum,fix,floor,for,%
4856        For,formals,format,formatC,formula,Fortran,forwardsolve,frame,%
4857        frequency,ftable,ftable2table,function,gamma,Gamma,gammaCody,%
4858        gaussian,gc,gcinfo,gctorture,get,getenv,geterrmessage,getOption,%
4859        getwd,gl,glm,globalenv,gnome,GNOME,graphics,gray,grep,grey,grid,%
4860        gsub,hasTsp,hat,heat,help,hist,home,hsv,httpclient,I,identify,if,%
4861        ifelse,Im,image,\%in\%,index,influence,measures,inherits,install,%
4862        installed,integer,interaction,interactive,Internal,intersect,%
4863        inverse,invisible,IQR,is,jitter,kappa,kronecker,labels,lapply,%
4864        layout,lbeta,lchoose,lcm,legend,length,levels,lgamma,library,%
4865        licence,license,lines,list,lm,load,local,locator,log,log10,log1p,%
4866        log2,logical,loglin,lower,lowess,ls,lsfit,lsf,ls,machine,Machine,%
4867        mad,mahalanobis,make,link,margin,match,Math,matlines,mat,matplot,%
4868        matpoints,matrix,max,mean,median,memory,menu,merge,methods,min,%
4869        missing,Mod,mode,model,response,mosaicplot,mtext,mvfft,na,nan,%
4870        names,omit,nargs,nchar,ncol,NCOL,new,next,NextMethod,nextn,%
4871        nlevels,nlm,noquote,NotYetImplemented,NotYetUsed,nrow,NROW,null,%
4872        numeric,\%o\%,objects,offset,old,on,Ops,optim,optimise,optimize,%
4873        options,or,order,ordered,outer,package,packages,page,pairlist,%
4874        pairs,palette,panel,par,parent,parse,paste,path,pbeta,pbinom,%
4875        pcauchy,pchisq,pentagamma,persp,pexp,pf,pgamma,pgeom,phyper,pico,%
4876        pictex,piechart,Platform,plnorm,plogis,plot,pmatch,pmax,pmin,%
4877        pnbinom,pnchisq,pnorm,points,poisson,poly,polygon,polyroot,pos,%
4878        postscript,power,ppoints,ppois,predict,preplot,pretty,Primitive,%
4879        print,prmatrix,proc,prod,profile,proj,prompt,prop,provide,%
4880        psignrank,ps,pt,ptukey,punif,pweibull,pwilcox,q,qbeta,qbinom,%
4881        qcauchy,qchisq,qexp,qf,qgamma,qgeom,qhyper,qlnorm,qlogis,qnbinom,%
4882        qnchisq,qnorm,qpois,qqline,qqnorm,qqplot,qr,Q,qty,qy,qsignrank,%
4883        qt,qtukey,quantile,quasi,quit,qunif,quote,qweibull,qwilcox,%
4884        rainbow,range,rank,rbeta,rbind,rbinom,rcauchy,rchisq,Re,read,csv,%
4885        csv2,fwf,readline,socket,real,Recall,rect,reformulate,regexpr,%
4886        relevel,remove,rep,repeat,replace,replications,report,require,%
4887        resid,residuals,restart,return,rev,rexp,rf,rgamma,rgb,rgeom,R,%
4888        rhyper,rle,rlnorm,rlogis,rm,rnbinom,RNGkind,rnorm,round,row,%
4889        rownames,rowsum,rpois,rsignrank,rstandard,rstudent,rt,rug,runif,%
4890        rweibull,rwilcox,sample,sapply,save,scale,scan,scan,screen,sd,se,%
4891        search,searchpaths,segments,seq,sequence,setdiff,setequal,set,%
4892        setwd,show,sign,signif,sin,single,sinh,sink,solve,sort,source,%
4893        spline,splinefun,split,sqrt,stars,start,stat,stem,step,stop,%
4894        storage,strstrheight,stripplot,strsplit,structure,strwidth,sub,%
4895        subset,substitute,substr,substring,sum,summary,sunflowerplot,svd,%
4896        sweep,switch,symbol,symbols,symnum,sys,status,system,t,table,%
4897        tabulate,tan,tanh,tapply,tempfile,terms,terrain,tetragamma,text,%
4898        time,title,topo,trace,traceback,transform,tri,trigamma,trunc,try,%
4899        ts,tsp,typeof,unclass,undebug,undoc,union,unique,uniroot,unix,%
4900        unlink,unlist,unname,untrace,update,upper,url,UseMethod,var,%
```

```
4901        variable,vector,Version,vi,warning,warnings,weighted,weights,%
4902        which,while,window,write,\%x\%,x11,X11,xedit,xemacs,xinch,xor,%
4903        xpdrows,xy,xyinch,yinch,zapsmall,zip},%
4904    otherkeywords={!,!=,~,$,*,\&,\%/\%,\%*\%,\%\%,<-,<<-,_,/},%
4905    alsoother={._$},%
4906    sensitive,%
4907    morecomment=[l]\#,%
4908    morestring=[d]",%
4909    morestring=[d]'% 2001 Robert Denham
4910    }%
```

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

```
4911 \lst@definelanguage{SAS}%
4912    {procnamekeys={proc},%
4913    morekeywords={DATA,AND,OR,NOT,EQ,GT,LT,GE,LE,NE,INFILE,INPUT,DO,BY,%
4914        TO,SIN,COS,OUTPUT,END,PLOT,RUN,LIBNAME,VAR,TITLE,FIRSTOBS,OBS,%
4915        DELIMITER,DLM,EOF,ABS,DIM,HBOUND,LBOUND,MAX,MIN,MOD,SIGN,SQRT,%
4916        CEIL,FLOOR,FUZZ,INT,ROUND,TRUNC,DIGAMMA,ERF,ERFC,EXP,GAMMA,%
4917        LGAMMA,LOG,LOG2,LOG10,ARCOS,ARSIN,ATAN,COSH,SINH,TANH,TAN,%
4918        POISSON,PROBBETA,PROBBNML,PROBCHI,PROBF,PROBGAM,PROBHYPR,%
4919        PROBNEGB,PROBNORM,PROBT,BETAINV,CINV,FINV,GAMINV,PROBIT,TINV,CSS,%
4920        CV,KURTOSIS,MEAN,NMISS,RANGE,SKEWNESS,STD,STDERR,SUM,USS,NORMAL,%
4921        RANBIN,RANCAU,RANEXP,RANGAM,RANNOR,RANPOI,RANTBL,RANTRI,RANUNI,%
4922        UNIFORM,IF,THEN,ELSE,WHILE,UNTIL,DROP,KEEP,LABEL,DEFAULT,ARRAY,%
4923        MERGE,CARDS,CARDS4,PUT,SET,UPDATE,ABORT,DELETE,DISPLAY,LIST,%
4924        LOSTCARD,MISSING,STOP,WHERE,ARRAY,DROP,KEEP,WINDOW,LENGTH,RENAME,%
4925        RETAIN,MEANS,UNIVARIATE,SUMMARY,TABULATE,CORR,FREQ,FOOTNOTE,NOTE,%
4926        SHOW},%
4927    otherkeywords={!,!=,~,$,*,\&,_,/,<,>=,=<,>},%
4928    morestring=[d]'%
4929    }[keywords,comments,strings,procnames]%
```

```
4930 ⟨/lang3⟩
```

2.77 TeX

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

```
4931 ⟨*lang3⟩
```

```
4932 \lst@definelanguage[AlLaTeX]{TeX}[LaTeX]{TeX}%
4933    {moretexcs={AtBeginDocument,AtBeginDvi,AtEndDocument,AtEndOfClass,%
4934        AtEndOfPackage,ClassError,ClassInfo,ClassWarning,%
4935        ClassWarningNoLine,CurrentOption,DeclareErrorFont,%
4936        DeclareFixedFont,DeclareFontEncoding,DeclareFontEncodingDefaults,%
4937        DeclareFontFamily,DeclareFontShape,DeclareFontSubstitution,%
4938        DeclareMathAccent,DeclareMathAlphabet,DeclareMathAlphabet,%
4939        DeclareMathDelimiter,DeclareMathRadical,DeclareMathSizes,%
4940        DeclareMathSymbol,DeclareMathVersion,DeclareOldFontCommand,%
```

```
4941        DeclareOption,DeclarePreloadSizes,DeclareRobustCommand,%
4942        DeclareSizeFunction,DeclareSymbolFont,DeclareSymbolFontAlphabet,%
4943        DeclareTextAccent,DeclareTextAccentDefault,DeclareTextCommand,%
4944        DeclareTextCommandDefault,DeclareTextComposite,%
4945        DeclareTextCompositeCommand,DeclareTextFontCommand,%
4946        DeclareTextSymbol,DeclareTextSymbolDefault,ExecuteOptions,%
4947        GenericError,GenericInfo,GenericWarning,IfFileExists,%
4948        InputIfFileExists,LoadClass,LoadClassWithOptions,MessageBreak,%
4949        OptionNotUsed,PackageError,PackageInfo,PackageWarning,%
4950        PackageWarningNoLine,PassOptionsToClass,PassOptionsToPackage,%
4951        ProcessOptionsProvidesClass,ProvidesFile,ProvidesFile,%
4952        ProvidesPackage,ProvideTextCommand,RequirePackage,%
4953        RequirePackageWithOptions,SetMathAlphabet,SetSymbolFont,%
4954        TextSymbolUnavailable,UseTextAccent,UseTextSymbol},%
4955      morekeywords={array,center,displaymath,document,enumerate,eqnarray,%
4956        equation,flushleft,flushright,itemize,list,lrbox,math,minipage,%
4957        picture,sloppypar,tabbing,tabular,trivlist,verbatim}%
4958    }%
4959 \lst@definelanguage[LaTeX]{TeX}[common]{TeX}%
4960    {moretexcs={a,AA,aa,addcontentsline,addpenalty,addtocontents,%
4961        addtocounter,addtolength,addtoversion,addvspace,alph,Alph,and,%
4962        arabic,array,arraycolsep,arrayrulewidth,arraystretch,author,%
4963        baselinestretch,begin,bezier,bfseries,bibcite,bibdata,bibitem,%
4964        bibliography,bibliographystyle,bibstyle,bigskip,boldmath,%
4965        botfigrule,bottomfraction,Box,caption,center,CheckCommand,circle,%
4966        citation,cite,cleardoublepage,clearpage,cline,columnsep,%
4967        columnseprule,columnwidth,contentsline,dashbox,date,dblfigrule,%
4968        dblfloatpagefraction,dblfloatsep,dbltextfloatsep,dbltopfraction,%
4969        defaultscriptratio,defaultscriptscriptratio,depth,Diamond,%
4970        displaymath,document,documentclass,documentstyle,doublerulesep,%
4971        em,emph,endarray,endcenter,enddisplaymath,enddocument,%
4972        endenumerate,endeqnarray,endequation,endflushleft,endflushright,%
4973        enditemize,endlist,endlrbox,endmath,endminipage,endpicture,%
4974        endsloppypar,endtabbing,endtabular,endtrivlist,endverbatim,%
4975        enlargethispage,ensuremath,enumerate,eqnarray,equation,%
4976        evensidemargin,extracolsep,fbox,fboxrule,fboxsep,filecontents,%
4977        fill,floatpagefraction,floatsep,flushbottom,flushleft,flushright,%
4978        fnsymbol,fontencoding,fontfamily,fontseries,fontshape,fontsize,%
4979        fontsubfuzz,footnotemark,footnotesep,footnotetext,footskip,frac,%
4980        frame,framebox,fussy,glossary,headheight,headsep,height,hline,%
4981        hspace,I,include,includeonly,index,inputlineno,intextsep,%
4982        itemindent,itemize,itemsep,iterate,itshape,Join,kill,label,%
4983        labelsep,labelwidth,LaTeX,LaTeXe,leadsto,lefteqn,leftmargin,%
4984        leftmargini,leftmarginii,leftmarginiii,leftmarginiv,leftmarginv,%
4985        leftmarginvi,leftmark,lhd,lim,linebreak,linespread,linethickness,%
4986        linewidth,list,listfiles,listfiles,listparindent,lrbox,%
4987        makeatletter,makeatother,makebox,makeglossary,makeindex,%
4988        makelabel,MakeLowercase,MakeUppercase,marginpar,marginparpush,%
4989        marginparsep,marginparwidth,markboth,markright,math,mathbf,%
```

```
4990        mathellipsis,mathgroup,mathit,mathrm,mathsf,mathsterling,mathtt,%
4991        mathunderscore,mathversion,mbox,mdseries,mho,minipage,%
4992        multicolumn,multiput,NeedsTeXFormat,newcommand,newcounter,%
4993        newenvironment,newfont,newhelp,newlabel,newlength,newline,%
4994        newmathalphabet,newpage,newsavebox,newtheorem,nobreakspace,%
4995        nobreakspace,nocite,nocorr,nocorrlist,nofiles,nolinebreak,%
4996        nonumber,nopagebreak,normalcolor,normalfont,normalmarginpar,%
4997        numberline,obeycr,oddsidemargin,oldstylenums,onecolumn,oval,%
4998        pagebreak,pagenumbering,pageref,pagestyle,paperheight,paperwidth,%
4999        paragraphmark,parbox,parsep,partopsep,picture,poptabs,pounds,%
5000        protect,pushtabs,put,qbezier,qbeziermax,r,raggedleft,raisebox,%
5001        ref,refstepcounter,renewcommand,renewenvironment,restorecr,%
5002        reversemarginpar,rhd,rightmargin,rightmark,rmfamily,roman,Roman,%
5003        rootbox,rule,samepage,sbox,scshape,secdef,section,sectionmark,%
5004        selectfont,setcounter,settodepth,settoheight,settowidth,sffamily,%
5005        shortstack,showoutput,showoverfull,sloppy,sloppypar,slshape,%
5006        smallskip,sqsubset,sqsupset,SS,stackrel,stepcounter,stop,stretch,%
5007        subparagraphmark,subsectionmark,subsubsectionmark,sum,%
5008        suppressfloats,symbol,tabbing,tabbingsep,tabcolsep,tabular,%
5009        tabularnewline,textasciicircum,textasciitilde,textbackslash,%
5010        textbar,textbf,textbraceleft,textbraceright,textbullet,%
5011        textcircled,textcompwordmark,textdagger,textdaggerdbl,textdollar,%
5012        textellipsis,textemdash,textendash,textexclamdown,textfloatsep,%
5013        textfraction,textgreater,textheight,textit,textless,textmd,%
5014        textnormal,textparagraph,textperiodcentered,textquestiondown,%
5015        textquotedblleft,textquotedblright,textquoteleft,textquoteright,%
5016        textregistered,textrm,textsc,textsection,textsf,textsl,%
5017        textsterling,textsuperscript,texttrademark,texttt,textunderscore,%
5018        textup,textvisiblespace,textwidth,thanks,thefootnote,thempfn,%
5019        thempfn,thempfootnote,thepage,thepage,thicklines,thinlines,%
5020        thispagestyle,title,today,topfigrule,topfraction,topmargin,%
5021        topsep,totalheight,tracingfonts,trivlist,ttfamily,twocolumn,%
5022        typein,typeout,unboldmath,unitlength,unlhd,unrhd,upshape,usebox,%
5023        usecounter,usefont,usepackage,value,vector,verb,verbatim,vline,%
5024        vspace,width,%
5025        normalsize,small,footnotesize,scriptsize,tiny,large,Large,LARGE,%
5026        huge,Huge}%
5027   }%
5028 \lst@definelanguage[plain]{TeX}[common]{TeX}%
5029   {moretexcs={advancepageno,beginsection,bf,bffam,bye,cal,cleartabs,%
5030        columns,dosupereject,endinsert,eqalign,eqalignno,fiverm,fivebf,%
5031        fivei,fivesy,folio,footline,hang,headline,it,itemitem,itfam,%
5032        leqalignno,magnification,makefootline,makeheadline,midinsert,mit,%
5033        mscount,nopagenumbers,normalbottom,of,oldstyle,pagebody,%
5034        pagecontents,pageinsert,pageno,plainoutput,preloaded,proclaim,rm,%
5035        settabs,sevenbf,seveni,sevensy,sevenrm,sl,slfam,supereject,%
5036        tabalign,tabs,tabsdone,tabsyet,tenbf,tenex,teni,tenit,tenrm,%
5037        tensl,tensy,tentt,textindent,topglue,topins,topinsert,tt,ttfam,%
5038        ttraggedright,vfootnote}%
```

```
5039    }%
```

The following language is only a helper.

```
5040 \lst@definelanguage[common]{TeX}[primitive]{TeX}
5041    {moretexcs={active,acute,ae,AE,aleph,allocationnumber,allowbreak,%
5042       alpha,amalg,angle,approx,arccos,arcsin,arctan,arg,arrowvert,%
5043       Arrowvert,ast,asymp,b,backslash,bar,beta,bgroup,big,Big,bigbreak,%
5044       bigcap,bigcirc,bigcup,bigg,Bigg,biggl,Biggl,biggm,Biggm,biggr,%
5045       Biggr,bigl,Bigl,bigm,Bigm,bigodot,bigoplus,bigotimes,bigr,Bigr,%
5046       bigskip,bigskipamount,bigsqcup,bigtriangledown,bigtriangleup,%
5047       biguplus,bigvee,bigwedge,bmod,bordermatrix,bot,bowtie,brace,%
5048       braceld,bracelu,bracerd,braceru,bracevert,brack,break,breve,%
5049       buildrel,bullet,c,cap,cases,cdot,cdotp,cdots,centering,%
5050       centerline,check,chi,choose,circ,clubsuit,colon,cong,coprod,%
5051       copyright,cos,cosh,cot,coth,csc,cup,d,dag,dagger,dashv,ddag,%
5052       ddagger,ddot,ddots,deg,delta,Delta,det,diamond,diamondsuit,dim,%
5053       displaylines,div,do,dospecials,dot,doteq,dotfill,dots,downarrow,%
5054       Downarrow,downbracefill,egroup,eject,ell,empty,emptyset,endgraf,%
5055       endline,enskip,enspace,epsilon,equiv,eta,exists,exp,filbreak,%
5056       flat,fmtname,fmtversion,footins,footnote,footnoterule,forall,%
5057       frenchspacing,frown,gamma,Gamma,gcd,ge,geq,gets,gg,goodbreak,%
5058       grave,H,hat,hbar,heartsuit,hglue,hideskip,hidewidth,hom,%
5059       hookleftarrow,hookrightarrow,hphantom,hrulefill,i,ialign,iff,Im,%
5060       imath,in,inf,infty,int,interdisplaylinepenalty,%
5061       interfootnotelinepenalty,intop,iota,item,j,jmath,joinrel,jot,%
5062       kappa,ker,l,L,lambda,Lambda,land,langle,lbrace,lbrack,lceil,%
5063       ldotp,ldots,le,leavevmode,leftarrow,Leftarrow,leftarrowfill,%
5064       leftharpoondown,leftharpoonup,leftline,leftrightarrow,%
5065       Leftrightarrow,leq,lfloor,lg,lgroup,lhook,lim,liminf,limsup,line,%
5066       ll,llap,lmoustache,ln,lnot,log,longleftarrow,Longleftarrow,%
5067       longleftrightarrow,Longleftrightarrow,longmapsto,longrightarrow,%
5068       Longrightarrow,loop,lor,lq,magstep,magstep,magstephalf,mapsto,%
5069       mapstochar,mathhexbox,mathpalette,mathstrut,matrix,max,maxdimen,%
5070       medbreak,medskip,medskipamount,mid,min,models,mp,mu,multispan,%
5071       nabla,narrower,natural,ne,nearrow,neg,negthinspace,neq,newbox,%
5072       newcount,newdimen,newfam,newif,newinsert,newlanguage,newmuskip,%
5073       newread,newskip,newtoks,newwrite,next,ni,nobreak,nointerlineskip,%
5074       nonfrenchspacing,normalbaselines,normalbaselineskip,%
5075       normallineskip,normallineskiplimit,not,notin,nu,null,nwarrow,o,O,%
5076       oalign,obeylines,obeyspaces,odot,oe,OE,offinterlineskip,oint,%
5077       ointop,omega,Omega,ominus,ooalign,openup,oplus,oslash,otimes,%
5078       overbrace,overleftarrow,overrightarrow,owns,P,parallel,partial,%
5079       perp,phantom,phi,Phi,pi,Pi,pm,pmatrix,pmod,Pr,prec,preceq,prime,%
5080       prod,propto,psi,Psi,qquad,quad,raggedbottom,raggedright,rangle,%
5081       rbrace,rbrack,rceil,Re,relbar,Relbar,removelastskip,repeat,%
5082       rfloor,rgroup,rho,rhook,rightarrow,Rightarrow,rightarrowfill,%
5083       rightharpoondown,rightharpoonup,rightleftharpoons,rightline,rlap,%
5084       rmoustache,root,rq,S,sb,searrow,sec,setminus,sharp,showhyphens,%
5085       sigma,Sigma,sim,simeq,sin,sinh,skew,slash,smallbreak,smallint,%
5086       smallskip,smallskipamount,smash,smile,sp,space,spadesuit,sqcap,%
```

```
5087        sqcup,sqrt,sqsubseteq,sqsupseteq,ss,star,strut,strutbox,subset,%
5088        subseteq,succ,succeq,sum,sup,supset,supseteq,surd,swarrow,t,tan,%
5089        tanh,tau,TeX,theta,Theta,thinspace,tilde,times,to,top,tracingall,%
5090        triangle,triangleleft,triangleright,u,underbar,underbrace,%
5091        uparrow,Uparrow,upbracefill,updownarrow,Updownarrow,uplus,%
5092        upsilon,Upsilon,v,varepsilon,varphi,varpi,varrho,varsigma,%
5093        vartheta,vdash,vdots,vec,vee,vert,Vert,vglue,vphantom,wedge,%
5094        widehat,widetilde,wlog,wp,wr,xi,Xi,zeta}%
5095    }%
```

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

```
5096 \lst@definelanguage[primitive]{TeX}%
5097    {moretexcs={above,abovedisplayshortskip,abovedisplayskip,aftergroup,%
5098        abovewithdelims,accent,adjdemerits,advance,afterassignment,atop,%
5099        atopwithdelims,badness,baselineskip,batchmode,begingroup,%
5100        belowdisplayshortskip,belowdisplayskip,binoppenalty,botmark,box,%
5101        boxmaxdepth,brokenpenalty,catcode,char,chardef,cleaders,closein,%
5102        closeout,clubpenalty,copy,count,countdef,cr,crcr,csname,day,%
5103        deadcycles,def,defaulthyphenchar,defaultskewchar,delcode,%
5104        delimiter,delimiterfactor,delimitershortfall,dimen,dimendef,%
5105        discretionary,displayindent,displaylimits,displaystyle,%
5106        displaywidowpenalty,displaywidth,divide,doublehyphendemerits,dp,%
5107        edef,else,emergencystretch,end,endcsname,endgroup,endinput,%
5108        endlinechar,eqno,errhelp,errmessage,errorcontextlines,%
5109        errorstopmode,escapechar,everycr,everydisplay,everyhbox,everyjob,%
5110        everymath,everypar,everyvbox,exhyphenpenalty,expandafter,fam,fi,%
5111        finalhyphendemerits,firstmark,floatingpenalty,font,fontdimen,%
5112        fontname,futurelet,gdef,global,globaldefs,halign,hangafter,%
5113        hangindent,hbadness,hbox,hfil,hfill,hfilneg,hfuzz,hoffset,%
5114        holdinginserts,hrule,hsize,hskip,hss,ht,hyphenation,hyphenchar,%
5115        hyphenpenalty,if,ifcase,ifcat,ifdim,ifeof,iffalse,ifhbox,ifhmode,%
5116        ifinner,ifmmode,ifnum,ifodd,iftrue,ifvbox,ifvmode,ifvoid,ifx,%
5117        ignorespaces,immediate,indent,input,insert,insertpenalties,%
5118        interlinepenalty,jobname,kern,language,lastbox,lastkern,%
5119        lastpenalty,lastskip,lccode,leaders,left,lefthyphenmin,leftskip,%
5120        leqno,let,limits,linepenalty,lineskip,lineskiplimit,long,%
5121        looseness,lower,lowercase,mag,mark,mathaccent,mathbin,mathchar,%
5122        mathchardef,mathchoice,mathclose,mathcode,mathinner,mathop,%
5123        mathopen,mathord,mathpunct,mathrel,mathsurround,maxdeadcycles,%
5124        maxdepth,meaning,medmuskip,message,mkern,month,moveleft,%
5125        moveright,mskip,multiply,muskip,muskipdef,newlinechar,noalign,%
5126        noboundary,noexpand,noindent,nolimits,nonscript,nonstopmode,%
5127        nulldelimiterspace,nullfont,number,omit,openin,openout,or,outer,%
5128        output,outputpenalty,over,overfullrule,overline,overwithdelims,%
5129        pagedepth,pagefilllstretch,pagefillstretch,pagefilstretch,%
5130        pagegoal,pageshrink,pagestretch,pagetotal,par,parfillskip,%
5131        parindent,parshape,parskip,patterns,pausing,penalty,%
5132        postdisplaypenalty,predisplaypenalty,predisplaysize,pretolerance,%
5133        prevdepth,prevgraf,radical,raise,read,relax,relpenalty,right,%
```

```
5134        righthyphenmin,rightskip,romannumeral,scriptfont,%
5135        scriptscriptfont,scriptscriptstyle,scriptspace,scriptstyle,%
5136        scrollmode,setbox,setlanguage,sfcode,shipout,show,showbox,%
5137        showboxbreadth,showboxdepth,showlists,showthe,skewchar,skip,%
5138        skipdef,spacefactor,spaceskip,span,special,splitbotmark,%
5139        splitfirstmark,splitmaxdepth,splittopskip,string,tabskip,%
5140        textfont,textstyle,the,thickmuskip,thinmuskip,time,toks,toksdef,%
5141        tolerance,topmark,topskip,tracingcommands,tracinglostchars,%
5142        tracingmacros,tracingonline,tracingoutput,tracingpages,%
5143        tracingparagraphs,tracingrestores,tracingstats,uccode,uchyph,%
5144        underline,unhbox,unhcopy,unkern,unpenalty,unskip,unvbox,unvcopy,%
5145        uppercase,vadjust,valign,vbadness,vbox,vcenter,vfil,vfill,%
5146        vfilneg,vfuzz,voffset,vrule,vsize,vskip,vsplit,vss,vtop,wd,%
5147        widowpenalty,write,xdef,xleaders,xspaceskip,year},%
5148     sensitive,%
5149     alsoother={0123456789$_},%$ to make Emacs fontlocking happy
5150     morecomment=[l]\%%
5151    }[keywords,tex,comments]%
5152 ⟨/lang3⟩
```

2.78   VBScript

Sonja WeidmannVBScript sent me this language definition.

```
5153 ⟨*lang2⟩

5154 %%
5155 %% VBScript definition (c) 2000 Sonja Weidmann
5156 %%
5157 \lst@definelanguage{VBScript}%
5158   {morekeywords={Call,Case,Const,Dim,Do,Each,Else,End,Erase,Error,Exit,%
5159        Explicit,For,Function,If,Loop,Next,On,Option,Private,Public,%
5160        Randomize,ReDim,Rem,Select,Set,Sub,Then,Wend,While,Abs,Array,Asc,%
5161        Atn,CBool,CByte,CCur,CDate,CDbl,Chr,CInt,CLng,Cos,CreateObject,%
5162        CSng,CStr,Date,DateAdd,DateDiff,DatePart,DateSerial,DateValue,%
5163        Day,Exp,Filter,Fix,FormatCurrency,FormatDateTime,FormatNumber,%
5164        FormatPercent,GetObject,Hex,Hour,InputBox,InStr,InStrRev,Int,%
5165        IsArray,IsDate,IsEmpty,IsNull,IsNumeric,IsObject,Join,LBound,%
5166        LCase,Left,Len,LoadPicture,Log,LTrim,Mid,Minute,Month,MonthName,%
5167        MsgBox,Now,Oct,Replace,RGB,Right,Rnd,Round,RTrim,ScriptEngine,%
5168        ScriptEngineBuildVersion,ScriptEngineMajorVersion,%
5169        ScriptEngineMinorVersion,Second,Sgn,Sin,Space,Split,Sqr,StrComp,%
5170        StrReverse,String,Tan,Time,TimeSerial,TimeValue,Trim,TypeName,%
5171        UBound,UCase,VarType,Weekday,WeekdayName,Year, And,Eqv,Imp,Is,%
5172        Mod,Not,Or,Xor,Add,BuildPath,Clear,Close,Copy,CopyFile,%
5173        CopyFolder,CreateFolder,CreateTextFile,Delete,DeleteFile,%
5174        DeleteFolder,Dictionary,Drive,DriveExists,Drives,Err,Exists,File,%
5175        FileExists,FileSystemObject,Files,Folder,FolderExists,Folders,%
5176        GetAbsolutePathName,GetBaseName,GetDrive,GetDriveName,%
5177        GetExtensionName,GetFile,GetFileName,GetFolder,%
```

```
5178       GetParentFolderName,GetSpecialFolder,GetTempName,Items,Keys,Move,%
5179       MoveFile,MoveFolder,OpenAsTextStream,OpenTextFile,Raise,Read,%
5180       ReadAll,ReadLine,Remove,RemoveAll,Skip,SkipLine,TextStream,Write,%
5181       WriteBlankLines,WriteLine,Alias,Archive,CDROM,Compressed,%
5182       Directory,Fixed,ForAppending,ForReading,ForWriting,Hidden,Normal,%
5183       RAMDisk,ReadOnly,Remote,Removable,System,SystemFolder,%
5184       TemporaryFolder,TristateFalse,TristateTrue,TristateUseDefault,%
5185       Unknown,Volume,WindowsFolder,vbAbortRetryIgnore,%
5186       vbApplicationModal,vbArray,vbBinaryCompare,vbBlack,vbBlue,%
5187       vbBoolean,vbByte,vbCr,vbCrLf,vbCritical,vbCurrency,vbCyan,%
5188       vbDataObject,vbDate,vbDecimal,vbDefaultButton1,vbDefaultButton2,%
5189       vbDefaultButton3,vbDefaultButton4,vbDouble,vbEmpty,vbError,%
5190       vbExclamation,vbFirstFourDays,vbFirstFullWeek,vbFirstJan1,%
5191       vbFormFeed,vbFriday,vbGeneralDate,vbGreen,vbInformation,%
5192       vbInteger,vbLf,vbLong,vbLongDate,vbLongTime,vbMagenta,vbMonday,%
5193       vbNewLine,vbNull,vbNullChar,vbNullString,vbOKC,ancel,vbOKOnly,%
5194       vbObject,vbObjectError,vbQuestion,vbRed,vbRetryCancel,vbSaturday,%
5195       vbShortDate,vbShortTime,vbSingle,vbString,vbSunday,vbSystemModal,%
5196       vbTab,vbTextCompare,vbThursday,vbTuesday,vbUseSystem,%
5197       vbUseSystemDayOfWeek,vbVariant,vbVerticalTab,vbWednesday,vbWhite,%
5198       vbYellow,vbYesNo,vbYesNoCancel},%
5199     sensitive=f,%
5200     morecomment=[l]',%
5201     morestring=[d]"%
5202   }[keywords,comments,strings]%
5203 ⟨/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.

```
5204 ⟨*lang3⟩

5205 %%
5206 %% Verilog definition (c) 2003 Cameron H. G. Wright <c.h.g.wright@ieee.org>
5207 %%    Based on the IEEE 1364-2001 Verilog HDL standard
5208 %%    Ref: S. Palnitkar, "Verilog HDL: A Guide to Digital Design and Synthesis,"
5209 %%         Prentice Hall, 2003. ISBN: 0-13-044911-3
5210 %%
5211 \lst@definelanguage{Verilog}%
5212   {morekeywords={% reserved keywords
5213       always,and,assign,automatic,begin,buf,bufif0,bufif1,case,casex,%
5214       casez,cell,cmos,config,deassign,default,defparam,design,disable,%
5215       edge,else,end,endcase,endconfig,endfunction,endgenerate,%
5216       endmodule,endprimitive,endspecify,endtable,endtask,event,for,%
5217       force,forever,fork,function,generate,genvar,highz0,highz1,if,%
5218       ifnone,incdir,include,initial,inout,input,instance,integer,join,%
5219       large,liblist,library,localparam,macromodule,medium,module,nand,%
```

```
5220      negedge,nmos,nor,noshowcancelled,not,notif0,notif1,or,output,%
5221      parameter,pmos,posedge,primitive,pull0,pull1,pulldown,pullup,%
5222      pulsestyle_onevent,pulsestyle_ondetect,rcmos,real,realtime,reg,%
5223      release,repeat,rnmos,rpmos,rtran,rtranif0,rtranif1,scalared,%
5224      showcancelled,signed,small,specify,specparam,strong0,strong1,%
5225      supply0,supply1,table,task,time,tran,tranif0,tranif1,tri,tri0,%
5226      tri1,triand,trior,trireg,unsigned,use,vectored,wait,wand,weak0,%
5227      weak1,while,wire,wor,xnor,xor},%
5228    morekeywords=[2]{% system tasks and functions
5229      $bitstoreal,$countdrivers,$display,$fclose,$fdisplay,$fmonitor,%
5230      $fopen,$fstrobe,$fwrite,$finish,$getpattern,$history,$incsave,%
5231      $input,$itor,$key,$list,$log,$monitor,$monitoroff,$monitoron,%
5232      $nokey},%
5233    morekeywords=[3]{% compiler directives
5234      `accelerate,`autoexpand_vectornets,`celldefine,`default_nettype,%
5235      `define,`else,`elsif,`endcelldefine,`endif,`endprotect,%
5236      `endprotected,`expand_vectornets,`ifdef,`ifndef,`include,%
5237      `no_accelerate,`noexpand_vectornets,`noremove_gatenames,%
5238      `nounconnected_drive,`protect,`protected,`remove_gatenames,%
5239      `remove_netnames,`resetall,`timescale,`unconnected_drive},%
5240    alsoletter=\`,%
5241    sensitive,%
5242    morecomment=[s]{/*}{*/},%
5243    morecomment=[l]//,% nonstandard
5244    morestring=[b]"%
5245  }[keywords,comments,strings]%

5246 ⟨/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 Ar-
naud Tisseranddded three keywords.

```
5247 ⟨*lang1⟩

5248 %%
5249 %% VHDL definition (c) 1997 Kai Wollenweber
5250 %%
5251 \lst@definelanguage{VHDL}%
5252   {morekeywords={ALL,ARCHITECTURE,ABS,AND,ASSERT,ARRAY,AFTER,ALIAS,%
5253      ACCESS,ATTRIBUTE,BEGIN,BODY,BUS,BLOCK,BUFFER,CONSTANT,CASE,%
5254      COMPONENT,CONFIGURATION,DOWNTO,ELSE,ELSIF,END,ENTITY,EXIT,%
5255      FUNCTION,FOR,FILE,GENERIC,GENERATE,GUARDED,GROUP,IF,IN,INOUT,IS,%
5256      INERTIAL,IMPURE,LIBRARY,LOOP,LABEL,LITERAL,LINKAGE,MAP,MOD,NOT,%
5257      NOR,NAND,NULL,NEXT,NEW,OUT,OF,OR,OTHERS,ON,OPEN,PROCESS,PORT,%
5258      PACKAGE,PURE,PROCEDURE,POSTPONED,RANGE,REM,ROL,ROR,REPORT,RECORD,%
5259      RETURN,REGISTER,REJECT,SIGNAL,SUBTYPE,SLL,SRL,SLA,SRA,SEVERITY,%
5260      SELECT,THEN,TYPE,TRANSPORT,TO,USE,UNITS,UNTIL,VARIABLE,WHEN,WAIT,%
5261      WHILE,XOR,XNOR,%
```

```
5262       DISCONNECT,ELIF,WITH},% Arnaud Tisserand
5263    sensitive=f,% 1998 Gaurav Aggarwal
5264    morecomment=[l]--,%
5265    morestring=[d]{"}%
5266   }[keywords,comments,strings]%
```

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

```
5267 %%
5268 %% VHDL-AMS definition (c) Steffen Klupsch
5269 %%
5270 \lst@definelanguage[AMS]{VHDL}[]{VHDL}%
5271   {morekeywords={ACROSS,ARRAY,BREAK,DISCONNECT,NATURE,NOISE,PORT,%
5272       PROCEDURAL,QUANTITY,SHARED,SPECTRUM,SUBNATURE,TERMINAL,THROUGH,%
5273       TOLERANCE,UNAFFACTED,UNITS}}
```

5274 ⟨/lang1⟩

2.81 VRML

This language is due to Oliver Baum VRML.

5275 ⟨∗lang2⟩

```
5276 %%
5277 %% VRML definition (c) 2001 Oliver Baum
5278 %%
5279 \lst@definelanguage[97]{VRML}
5280   {morekeywords={DEF,EXTERNPROTO,FALSE,IS,NULL,PROTO,ROUTE,TO,TRUE,USE,%
5281       eventIn,eventOut,exposedField,field,Introduction,Anchor,%
5282       Appearance,AudioClip,Background,Billboard,Box,Collision,Color,%
5283       ColorInterpolator,Cone,Coordinate,CoordinateInterpolator,%
5284       Cylinder,CylinderSensor,DirectionalLight,ElevationGrid,Extrusion,%
5285       Fog,FontStyle,Group,ImageTexture,IndexedFaceSet,IndexedLineSet,%
5286       Inline,LOD,Material,MovieTexture,NavigationInfo,Normal,%
5287       NormalInterpolator,OrientationInterpolator,PixelTexture,%
5288       PlaneSensor,PointLight,PointSet,PositionInterpolator,%
5289       ProximitySensor,ScalarInterpolator,Script,Shape,Sound,Sphere,%
5290       SphereSensor,SpotLight,Switch,Text,TextureCoordinate,%
5291       TextureTransform,TimeSensor,TouchSensor,Transform,Viewpoint,%
5292       VisibilitySensor,WorldInfo},%
5293    morecomment=[l]\#,% bug: starts comment in the first column
5294    morestring=[b]"%
5295   }[keywords,comments,strings]
```

5296 ⟨/lang2⟩

2.82 XML et al

Bernhard Walle provided the following two definitions.

5297 ⟨∗lang1⟩

```
5298 \lst@definelanguage{XSLT}[]{XML}%
5299   {morekeywords={%
5300      % main elements
5301      xsl:stylesheet,xsl:transform,%
5302      % childs of the main element
5303      xsl:apply-imports,xsl:attribute-set,xsl:decimal-format,xsl:import,%
5304      xsl:include,xsl:key,xsl:namespace-alias,xsl:output,xsl:param,%
5305      xsl:preserve-space,xsl:strip-space,xsl:template,xsl:variable,%
5306      % 21 directives
5307      xsl:apply-imports,xsl:apply-templates,xsl:attribute,%
5308      xsl:call-template,xsl:choose,xsl:comment,xsl:copy,xsl:copy-of,%
5309      xsl:element,xsl:fallback,xsl:for-each,xsl:if,xsl:message,%
5310      xsl:number,xsl:otherwise,xsl:processing-instruction,xsl:text,%
5311      xsl:value-of,xsl:variable,xsl:when,xsl:with-param},%
5312    alsodigit={-},%
5313   }%

5314 \lst@definelanguage{Ant}[]{XML}%
5315   {morekeywords={%
5316      project,target,patternset,include,exclude,excludesfile,includesfile,filterset,%
5317      filter,filtersfile,libfileset,custom,classpath,fileset,none,depend,mapper,%
5318      filename,not,date,contains,selector,depth,or,and,present,majority,size,dirset,%
5319      filelist,pathelement,path,param,filterreader,extension,filterchain,linecontainsregexp,%
5320      regexp,classconstants,headfilter,tabstospaces,striplinebreaks,tailfilter,stripjavacomments
5321      expandproperties,linecontains,replacetokens,token,striplinecomments,comment,prefixlines,%
5322      classfileset,rootfileset,root,description,xmlcatalog,entity,dtd,substitution,%
5323      extensionSet,propertyfile,entry,vsscheckin,sql,transaction,cvspass,csc,%
5324      dirname,wlrun,wlclasspath,p4label,replaceregexp,get,jjtree,sleep,jarlib,%
5325      dependset,targetfileset,srcfileset,srcfilelist,targetfilelist,zip,zipgroupfileset,zipfiles
5326      patch,jspc,webapp,style,test,arg,jvmarg,sysproperty,testlet,env,tstamp,%
5327      format,unwar,vsshistory,icontract,cvschangelog,user,p4submit,ccmcheckin,%
5328      p4change,bzip2,vssadd,javadoc,bottom,source,doctitle,header,excludepackage,bootclasspath,%
5329      doclet,taglet,packageset,sourcepath,link,footer,package,group,title,tag,%
5330      translate,signjar,vajload,vajproject,jarlib,extensionset,WsdlToDotnet,buildnumber,%
5331      jpcovmerge,tomcat,ejbjar,weblogictoplink,jboss,borland,weblogic,iplanet,jonas,%
5332      support,websphere,wasclasspath,war,manifest,attribute,section,metainf,lib,%
5333      classes,webinf,rename,sequential,serverdeploy,generic,property,move,%
5334      copydir,ccheckin,wljspc,fixcrlf,sosget,pathconvert,map,record,p4sync,exec,%
5335      p4edit,maudit,rulespath,searchpath,antlr,netrexxc,jpcovreport,reference,filters,%
5336      coveragepath,execon,targetfile,srcfile,ccmcheckout,ant,xmlvalidate,xslt,%
5337      iplanet,ccmcheckintask,gzip,native2ascii,starteam,ear,archives,input,%
5338      rmic,extdirs,compilerarg,checksum,mail,bcc,message,cc,to,from,loadfile,vsscheckout,%
5339      stylebook,soscheckin,mimemail,stlabel,gunzip,concat,cab,touch,parallel,splash,%
5340      antcall,cccheckout,typedef,p4have,xmlproperty,copy,tomcat,antstructure,ccmcreatetask,%
5341      rpm,delete,replace,replacefilter,replacetoken,replacevalue,mmetrics,waitfor,isfalse,%
5342      equals,available,filepath,os,filesmatch,istrue,isset,socket,http,uptodate,srcfiles,%
5343      untar,loadproperties,echoproperties,vajexport,stcheckout,bunzip2,copyfile,vsscreate,%
5344      ejbc,unjar,tomcat,wsdltodotnet,mkdir,condition,cvs,commandline,marker,argument,%
5345      tempfile,junitreport,report,taskdef,echo,ccupdate,java,renameext,vsslabel,basename,%
5346      javadoc2,vsscp,tar,tarfileset,tomcat,vajimport,setproxy,wlstop,p4counter,ilasm,%
```

```
5347        soscheckout,apply,ccuncheckout,jarlib,location,url,cvstagdiff,jlink,mergefiles,%
5348        addfiles,javacc,pvcs,pvcsproject,jarlib,options,depends,chmod,jar,sound,fail,%
5349        success,mparse,blgenclient,genkey,dname,javah,class,ccmreconfigure,unzip,javac,%
5350        src,p4add,soslabel,jpcoverage,triggers,method,vssget,deltree,ddcreator},
5351    deletekeywords={default},%
5352  }
```

5353 ⟨/lang1⟩

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

5354 ⟨∗lang1⟩

```
5355 \lst@definelanguage{XML}%
5356   {keywords={,CDATA,DOCTYPE,ATTLIST,termdef,ELEMENT,EMPTY,ANY,ID,%
5357       IDREF,IDREFS,ENTITY,ENTITIES,NMTOKEN,NMTOKENS,NOTATION,%
5358       INCLUDE,IGNORE,SYSTEM,PUBLIC,NDATA,PUBLIC,%
5359       PCDATA,REQUIRED,IMPLIED,FIXED,%%% preceded by #
5360       xml,xml:space,xml:lang,version,standalone,default,preserve},%
5361    alsoother=$,%
5362    alsoletter=:,%
5363    tag=**[s]<>,%
5364    morestring=[d]",% ??? doubled
5365    morestring=[d]',% ??? doubled
5366    MoreSelectCharTable=%
5367      \lst@CArgX--\relax\lst@DefDelimB{}{}%
5368          {\ifnum\lst@mode=\lst@tagmode\else
5369              \expandafter\@gobblethree
5370           \fi}%
5371          \lst@BeginComment\lst@commentmode{{\lst@commentstyle}}%
5372      \lst@CArgX--\relax\lst@DefDelimE{}{}{}%
5373          \lst@EndComment\lst@commentmode
5374      \lst@CArgX[CDATA[\relax\lst@CDef{}%
5375          {\ifnum\lst@mode=\lst@tagmode
5376              \expandafter\lst@BeginCDATA
5377           \else \expandafter\lst@CArgEmpty
5378           \fi}%
5379          \@empty
5380      \lst@CArgX]]\relax\lst@CDef{}%
5381          {\ifnum\lst@mode=\lst@GPmode
5382              \expandafter\lst@EndComment
5383           \else \expandafter\lst@CArgEmpty
5384           \fi}%
5385          \@empty
5386   }[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.

5387 ⟨/lang1⟩