

Lab 5: Write a program to check syntax of declaration statement using LEX and YACC.

declaration.y

```
%{
#include <stdio.h>

%}

%token Int Char Float Bool String IntV CharV FloatV BoolV StringV Id Am Const

%%

S1: S1 S
    | S
    ;

S: Int Iv';' { printf("int declaration accepted"); }
  | Char Cc';' { printf("char declaration accepted"); }
  | Float Ff';' { printf("float declaration accepted"); }
  | Bool Bb';' { printf("bool declaration accepted."); }
  ;

Iv: IdM
    | Iv ',' Id
    | Id '=' IntV
    | Iv ',' Id '=' IntV
    ;

Cc: IdM
    | Cc ',' Id
    | Id '=' CharV
    | Cc ',' Id '=' CharV
    ;

Ff: IdM
    | Ff ',' Id
    | Id '=' FloatV
    | Ff ',' Id '=' FloatV
    ;

Bb: IdM
```

```

| Bb ',' Id
| Id '=' BoolV
| Bb ',' Id '=' BoolV
;

Ss: IdM
| Ss ',' Id
| Id '=' StringV
| Ss ',' Id '=' StringV
;

IdM: Id
;

%%

void yyerror(char*s) {
printf("%s", s);
}

int main() {
yyparse();
return 0;
}

```

Declaration.l

```

%{
#include "y.tab.h"
%}

letter [a-zA-Z]
num [0-9]+
float {num}+\. {num}+
bools "true" | "false"
identifier {letter}{ {letter} | {num} } *

%%

"int" { return Int; }

```

OUTPUT:

```

~ decl.term x declaration.l x declaration.y x
~ Tour ChatGPT... - + @ Pause
~$ yacc -d -v declaration.y
declaration.y: warning: 1 nonterminal useless in grammar [-Wother]
declaration.y: warning: 4 rules useless in grammar [-Wother]
declaration.y:34:1-2: warning: nonterminal useless in grammar: Ss [-Wother]
  34 | Ss: IdM
      | ~
~$ lex declaration.l
~$ gcc lex.yy.c y.tab.c
y.tab.c: In function 'yyparse':
y.tab.c:1083:16: warning: implicit declaration of function 'yylex' [-Wimplicit-function-declaration]
 1083 |         yychar = yylex ();
      |                  ~
y.tab.c:1242:7: warning: implicit declaration of function 'yyerror'; did you mean 'yyerrok'? [-Wimplicit-function-declaration]
 1242 |         yyerror (YY_("syntax error"));
      |         ~~~~~
      |         yyerrok
declaration.y: At top level:
declaration.y:42:6: warning: conflicting types for 'yyerror'; have 'void(char *)'
   42 | void yyerror(char*s) {
      |      ~~~~~
y.tab.c:1242:7: note: previous implicit declaration of 'yyerror' with type 'void(char *)'
 1242 |         yyerror (YY_("syntax error"));
      |         ~~~~~
~$ ./a.out
int a;
int declaration accepted
int a=4;
int declaration accepted
char s='r';
char declaration accepted
bool f=true;
bool declaration accepted.

```