Lab 4 : Write a program for syntax checking of control statements using LEX and YACC.

Control.l:

```
%{
#include<stdio.h>
#include "y.tab.h"
%}
L [A-Za-z]
D [0-9]
id {L}({L}|{D})*
%%
"if" {return IF;}
"else" {return ELSE;}
"for"  {return FOR;}
"do"  {return DO;}
"while" {return WHILE;}
"++" {return INC;}
"--" {return DEC;}
"||"  {return OR;}
"&&" {return AND;}
"!"  {return NOT;}
"switch" {return SWITCH;}
"case" {return CASE;}
"break" {return BREAK;}
"default" {return DEFAULT;}
[0-9]+(\.[0-9]+)?  {return NUM;}
{id} {return id;}
"<"|"<="|">"|">="|"=="|"!="  {return relop;}
[-/;=+*,\(\)\{\}:]   {return yytext[0];}
[ ] {}
\n {}
%%

int yywrap()
{
return 1;
}
```

Control.y

```
%{
#include <stdio.h>
%}
%token id NUM OR AND NOT relop TRUE FALSE INC DEC IF ELSE DO WHILE uminu
s FOR SWITCH CASE BREAK DEFAULT
%right '='
%left '+' '-'
%left '*' '/'
%right '^'
%nonassoc uminus
%left OR
```

```
%left AND
%nonassoc NOT
%%

S1 : S1 S
   | S
   ;

 S : AS ';' {printf("Assignment statement accepted \n");}
   |IFS     {printf("If statement is accepted \n");}
   |IFES    {printf("If else statement is accepted\n");}
   |WS      {printf("While statement is accepted\n");}
   |DWS     {printf("Do while statement is accepted\n");}
   |FORS    {printf("For statement is accepted\n");}
   |SS        {printf("Switch statement is accepted");}
   ;

SS : SWITCH('E')"{' CV '}'
;

CV : CASE E ':' S1 BREAK ';'
   | CASE E ':' S1 BREAK ';' CV
   |  CASE E ':' S1 BREAK ';'  DEFAULT ':' S1
   ;
AS :  id '=' E
   ;

E : E'+'E
  |E'-'E
  |E'*'E
  |E'/'E
  |E'^'E
  |'-' E %prec uminus
  |id
  |NUM
  ;
IFS: IF('BE')"{'S1'}'
   ;

BE : BE OR BE
   | BE AND BE
   | NOT BE
   |id relop id
   |TRUE
   |FALSE
   ;

IFES : IF('BE')"{'S1'}'ELSE'{'S1'}'
     ;
```

```
WS : WHILE '('BE')"{'S1'}'
   ;

DWS : DO '{'S1'}'WHILE'('BE')";'
   ;

FORS : FOR'('IS';'BE';'MS')"{'S1'}'
     ;

IS : AS
   | IS ',' AS
   ;

MS : IS
   | id INC
   | INC id
   | id DEC
   | DEC id
   ;

%%
void main()
{
yyparse();
}
int yyerror(char *msg)
{
 printf("%s\n",msg);
}
```

OUTPUT: