

## 2CS701 Compiler Construction

Practical 7	
Rollno: 19BCE236	Name: Samariya Darsh
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**Aim:** To implement grammar rules for control statements and loop control

### Code:

P7.y

```
%{
#include <stdio.h>
#include <stdlib.h>
%}
%token ID NUM IF LE GE EQ NE OR AND ELSE B WHILE DO FOR EIF
%right '='
%left AND OR
%left '<' '>' LE GE EQ NE
%left '+' '-'
%left '*' '/'
%left '!'
%%
S : ST {printf("\nSyntax is Valid");exit(0);};
ST : IF '(' COND B ST1 '}' IF2
    | IF '(' COND B ST1 '}'
    | FOR '(' E ';' COND ';' E B ST1 '}'
    | WHILE '(' COND B ST1 '}'
    | DO '{' ST1 '}' WHILE '(' COND B
    ;
IF2 : EIF '(' COND B ST1 '}' IF2
    | ELSE '{' ST1 '}'
    | EIF '(' COND B ST1 '}'
    ;
ST1 : E ';' ST1 | E ';'
E : ID '=' E
    | E '+' E
    | E '-' E
    | E '*' E
    | E '/' E
    | E '<' E
    | E '>' E
    | E LE E
    | E GE E
    | E EQ E
    | E NE E
```

```

| E OR E
| E AND E
| '(' E ')'
| ID
| NUM
;
COND : E '<' E
| E '>' E
| E LE E
| E GE E
| E EQ E
| E NE E
| E OR E
| E AND E
| ID
| NUM
;
%%
void main()
{
printf("\nEnter loop or if else statement:\n");
yyparse();
}
void yyerror()
{
printf("\nSyntax is Invalid\n\n");
}

```

P7.1

```

%{
#include "y.tab.h"
%}
alpha [A-Za-z]
digit [0-9]
%%
[\\t] ;
[\\n] ;
"exit" return 0;
if return IF;
else return ELSE;
while return WHILE;
do return DO;
for return FOR;
"else if" return EIF;
[0-9]+ return NUM;
{alpha}({alpha}|{digit})* return ID;
"<=" return LE;

```

```

">=" return GE;
"==" return EQ;
"!=" return NE;
"||" return OR;
"&&" return AND;
"){" return B;
") {" return B;
")\n{" return B;
");" return B;
";}" return B;
" " ;
. return yytext[0];
%%
int yywrap()
{
return 1;
}

```

### Output:

```
D:\Sem 7\CC\Practicals\practical-7>bison -dy p7.y
```

```
D:\Sem 7\CC\Practicals\practical-7>flex p7.l
```

```
D:\Sem 7\CC\Practicals\practical-7>gcc lex.yy.c y.tab.c
```

```
D:\Sem 7\CC\Practicals\practical-7>a.exe
```

```
Enter loop or if else statement:
```

```
if(x<10)
```

```
{
```

```
y=10;
```

```
}
```

```
;
```

```
Syntax is Valid
```