

2CS701 Compiler Construction

Lab-7 Task

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Aim: To implement grammar rules for control statements and loop control.

Code:

Lex file:

```
%{
#include <stdio.h>
#include "y.tab.h"
%}
alpha [A-Za-z]
digit [0-9]

%%
[\\t\\n]
if return IF;
then return THEN;
else return ELSE;
while return WHILE;
for return FOR;
do return DO;

{digit}+ return NUM;
{alpha}({alpha}|{digit})* return ID;
```

```

"<=" return LE;
">=" return GE;
"==" return EQ;
"!=" return NE;
"||" return OR;
"&&" return AND;
. return yytext[0];
%%

```

YACC file:

```

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

int yylex();
void yyerror(char*);
int yywrap();
%}

%token ID NUM IF THEN LE GE EQ NE OR AND ELSE WHILE FOR DO
%right '='
%left AND OR
%left '<' '>' LE GE EQ NE
%left '+' '-'
%left '*' '/'
%right UMINUS
%left '!'

%%

S: ST {printf("Input accepted\n");exit(0);};
ST: IF('E2') ST1
    | IF('E2') ST1 ELSE ST1
    | WHILE('E2') '{ST1;}'
    | FOR('E';'E2';'E') '{ST1;}'
    | DO '{ST1;}' WHILE('E2')
    ;
ST1 : ST
    | 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
  | ID
  | NUM
;
E2 : E<'E
    | E>'E
    | E LE E
    | E GE E
    | E EQ E
    | E NE E
    | E OR E
    | E AND E
    | ID
    | NUM
;
%%

```

```

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

void yyerror(char *s)
{
fprintf(stderr, "%s\n",s);
}

```

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

Output:

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS D:\nirma\7th sem\2CS701 Compiler Construction\lab\prac 7> bison -dy 18BCE101_P7.y
conflicts: 1 shift/reduce
PS D:\nirma\7th sem\2CS701 Compiler Construction\lab\prac 7> flex 18BCE101_P7.l
PS D:\nirma\7th sem\2CS701 Compiler Construction\lab\prac 7> gcc lex.yy.c y.tab.c
PS D:\nirma\7th sem\2CS701 Compiler Construction\lab\prac 7> a.exe
a.exe : The term 'a.exe' is not recognized as the name of a cmdlet, function, script file, or operable program. Check
the spelling of the name, or if a path was included, verify that the path is correct and try again.
At line:1 char:1
+ a.exe
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (a.exe:String) [], CommandNotFoundException
+ FullyQualifiedErrorId : CommandNotFoundException

Suggestion [3,General]: The command a.exe was not found, but does exist in the current location. Windows PowerShell does
not load commands from the current location by default. If you trust this command, instead type: ".\a.exe". See "get-he
lp about_Command_Precedence" for more details.
PS D:\nirma\7th sem\2CS701 Compiler Construction\lab\prac 7> |
```

```
C:\> Command Prompt

H:\sem_7\Compiler Construction\Practical 7>a.exe
if(i>8) then i=1;;
Input accepted.

H:\sem_7\Compiler Construction\Practical 7>a.exe
if() then i=1;
syntax error

H:\sem_7\Compiler Construction\Practical 7>a.exe
if(i>8) i=1;
syntax error

H:\sem_7\Compiler Construction\Practical 7>_
```

C:\> Command Prompt

```
H:\sem_7\Compiler Construction\Practical 7>a.exe  
if(i>9) then i=1; else j=10;  
Input accepted.
```

```
H:\sem_7\Compiler Construction\Practical 7>a.exe  
if(i>9) then i=1 else j=10;  
syntax error
```

```
H:\sem_7\Compiler Construction\Practical 7>_
```

C:\> Select Command Prompt

```
H:\sem_7\Compiler Construction\Practical 7>a.exe  
while(a>1){a=a-1;;}  
Input accepted.
```

```
H:\sem_7\Compiler Construction\Practical 7>a.exe  
while(){a=a-1;;}  
syntax error
```

```
H:\sem_7\Compiler Construction\Practical 7>a.exe  
while(){a=a-1};  
syntax error
```

```
H:\sem_7\Compiler Construction\Practical 7>_
```

```
H:\sem_7\Compiler Construction\Practical 7>a.exe  
do{a=a-1;}while(a>1);  
Input accepted.
```

```
H:\sem_7\Compiler Construction\Practical 7>a.exe  
do{a=a-1;}while();  
syntax error
```

```
H:\sem_7\Compiler Construction\Practical 7>a.exe  
do{a=a-1}while(a>1);  
syntax error
```

```
H:\sem_7\Compiler Construction\Practical 7>a.exe  
for( i=1; i<3 ; i=i+1 ) {j=j+10;};  
Input accepted.
```

```
H:\sem_7\Compiler Construction\Practical 7>a.exe  
for( i=1; i<3 ; ) {j=j+10;};  
syntax error
```

```
H:\sem_7\Compiler Construction\Practical 7>a.exe  
for( i=1; i<3 i=i+1 ) {j=j+10;};  
syntax error
```

```
H:\sem_7\Compiler Construction\Practical 7>a.exe  
for( i=1; ; i=i+1 ) {j=j+10;};  
syntax error
```

```
H:\sem_7\Compiler Construction\Practical 7>
```