G Lakshmi Sai Bhargavi
AP19110010405

Compiler Design Lab - Week - 4

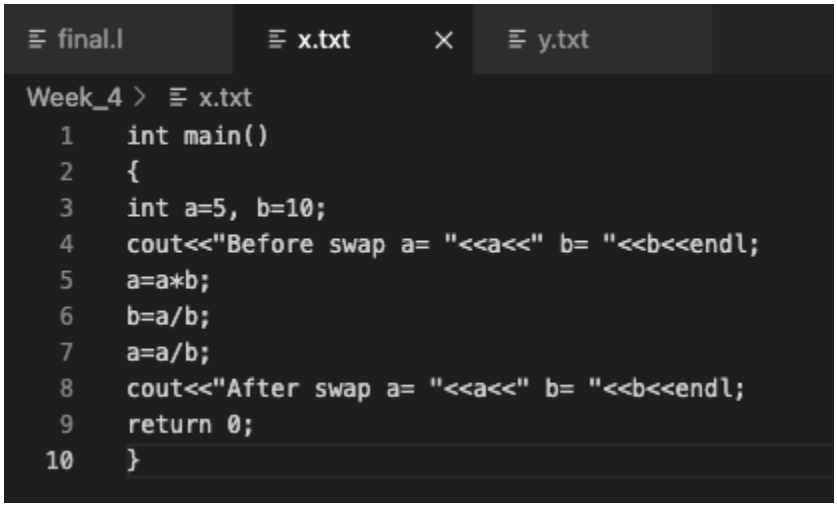
⇒ **Final LEX program:**

```
digit [0-9]*
id [a-zA-Z][a-zA-Z0-9]*
num digit*\.digit*
%{
#include<stdio.h>
#include<string.h>
int i=0,j=0,cnt=0,n=0,com=0,scom=0;
char st[10][10];
int look_up(char st[10][10],char *id,int n);
%}
%%
\n {scom=0;n++;}
"//" {scom=1;fprintf(yyout,"\n single line comment\n\n");}
"/*" {com=1;fprintf(yyout,"\n comment start\n");}
"*/" {com=0;fprintf(yyout,"\n comment end\n");}
int |
float |
char |
double |
void {if(!com&&!scom) fprintf(yyout," \n %s is keyword",yytext);}
"<=" {if (!com&&!scom) fprintf(yyout,"\n %s is Relational operator Lessthan or Equal to",yytext);}
"<" {if(!com&&!scom) fprintf(yyout,"\n %s is Relational operator Lessthan",yytext);}
">=" {if(!com) fprintf(yyout,"\n %s is Relational operator Greaterthan or Equal to",yytext);}
">" {if(!com&&!scom) fprintf(yyout,"\n %s is Relational operator Greaterthan",yytext);}
"==" {if(!com&&!scom) fprintf(yyout,"\n %s is Relational operator Equal to",yytext);}
"!=" {if (!com&&!scom) fprintf(yyout,"\n %s is Relational operator Not Equal to",yytext);}
{id} {if(!com&&!scom){ fprintf(yyout,"\n %s is identifier",yytext);
cnt++;if(!look_up(st,yytext,i))strcpy(st[i++],yytext);  }}
{num} {if(!com&&!scom) fprintf(yyout,"\n %s is float",yytext);}
{digit} {if (!com&&!scom) fprintf(yyout,"\n %s is digit",yytext);}
.
%%

int main()
{
yyin =fopen("x.txt","r");
yyout =fopen("y.txt","w");
yylex();
printf("\n the contents of symbol table are :\n");
```

```
for(j=0;j<i;j++)
printf("\n %s",st[j]); printf("\n\n");
return 0;
}
int yywrap()
{
return 1;
}
int look_up(char st[10][10],char *id,int n)
{
for(j=0;j<n;j++)
if(!strcmp(st[j],id))
return 1;
return 0;
}
```

⇒ **Input file : x.txt**



⇒ **Text in input file:**

```
int main()
{
int a=5, b=10;
cout<<"Before swap a= "<<a<<" b= "<<b<<endl;
a=a*b;
b=a/b;
a=a/b;
cout<<"After swap a= "<<a<<" b= "<<b<<endl;
return 0;
}
```

⇒ **Command line:**

```
TERMINAL    PROBLEMS    OUTPUT    DEBUG CONSOLE
(base) glakshmisaibhargavi@Gs-MacBook-Air 6 % cd ..
(base) glakshmisaibhargavi@Gs-MacBook-Air Week_4 % cd 4
(base) glakshmisaibhargavi@Gs-MacBook-Air CDL % cd Week_4
(base) glakshmisaibhargavi@Gs-MacBook-Air Week_4 % lex final.l
(base) glakshmisaibhargavi@Gs-MacBook-Air Week_4 % gcc lex.yy.c -o lex.yy
(base) glakshmisaibhargavi@Gs-MacBook-Air Week_4 % ./lex.yy x.txt

 the contents of symbol table are :

 main
 a
 b
 cout
 Before
 swap
 endl
 After
 return
```

⇒ **Output file:**

```
1
2    int is keyword
3    main is identifier
4    int is keyword
5    a is identifier
6    5 is digit
7    b is identifier
8    10 is digit
9    cout is identifier
10   < is Relational operator Lessthan
11   < is Relational operator Lessthan
12   Before is identifier
13   swap is identifier
14   a is identifier
15   < is Relational operator Lessthan
16   < is Relational operator Lessthan
17   a is identifier
18   < is Relational operator Lessthan
19   < is Relational operator Lessthan
20   b is identifier
21   < is Relational operator Lessthan
22   < is Relational operator Lessthan
23   b is identifier
24   < is Relational operator Lessthan
25   < is Relational operator Lessthan
26   endl is identifier
27   a is identifier
28   a is identifier
29   b is identifier
```

```
30   b is identifier
31   a is identifier
32   b is identifier
33   a is identifier
34   a is identifier
35   b is identifier
36   cout is identifier
37   < is Relational operator Lessthan
38   < is Relational operator Lessthan
39   After is identifier
40   swap is identifier
41   a is identifier
42   < is Relational operator Lessthan
43   < is Relational operator Lessthan
44   a is identifier
45   < is Relational operator Lessthan
46   < is Relational operator Lessthan
47   b is identifier
48   < is Relational operator Lessthan
49   < is Relational operator Lessthan
50   b is identifier
51   < is Relational operator Lessthan
52   < is Relational operator Lessthan
53   endl is identifier
54   return is identifier
55   0 is digit
```

⇒ **Text in output file:**

int is keyword
main is identifier
int is keyword
a is identifier
5 is digit
b is identifier
10 is digit
cout is identifier
< is Relational operator Lessthan
< is Relational operator Lessthan
Before is identifier
swap is identifier
a is identifier
< is Relational operator Lessthan
< is Relational operator Lessthan
a is identifier
< is Relational operator Lessthan
< is Relational operator Lessthan
b is identifier
< is Relational operator Lessthan
< is Relational operator Lessthan
b is identifier
< is Relational operator Lessthan
< is Relational operator Lessthan
endl is identifier
a is identifier
a is identifier
b is identifier
b is identifier
a is identifier
b is identifier
a is identifier
a is identifier
b is identifier
cout is identifier
< is Relational operator Lessthan
< is Relational operator Lessthan
After is identifier
swap is identifier
a is identifier
< is Relational operator Lessthan

< is Relational operator Lessthan
a is identifier
< is Relational operator Lessthan
< is Relational operator Lessthan
b is identifier
< is Relational operator Lessthan
< is Relational operator Lessthan
b is identifier
< is Relational operator Lessthan
< is Relational operator Lessthan
endl is identifier
return is identifier
0 is digit