

NATIONAL INSTITUTE OF TECHNOLOGY SILCHAR

Cachar, Assam

B.Tech. VIth Sem

Subject Code: CS-316

Subject Name: Compiler Design Lab

Submitted By:

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Branch : CSE – B

1. Write a lex program to count the number of comments in a C program, and then delete the comments.

→ **CODE:**

```
%{
    #include <stdio.h>
    #include <stdlib.h>
    int commentCount = 0;
    FILE *out;
}%
%s commentText

%%
"/*" {BEGIN commentText;}
<commentText>"*/" {BEGIN 0; ++commentCount;}
<commentText>\n {}
<commentText>. {}
"//".* {++commentCount;}
.|\\n {fprintf (out, "%s", yytext);}
%%

int yywrap(){
    return 1;
}

int main(){
    yyin = fopen("C_TestFileIn.c", "r");
    out = fopen("C_TestFileOut.c", "w");
    yylex();
    printf ("NUMBER OF COMMENTS = %d\\n\\n", commentCount);
    fclose (out);
    system ("pause");
    return 0;
}
```

OUTPUT:



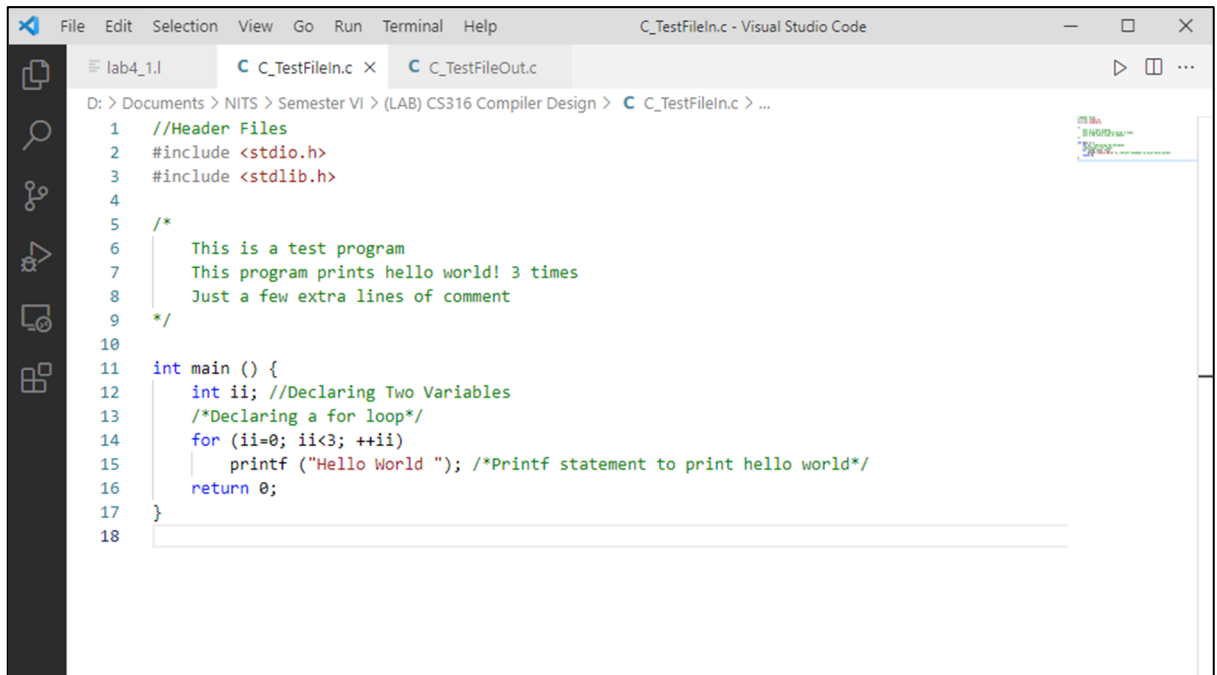
```

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL
PS D:\Documents\NITS\Semester VI\LAB) CS316 Compiler Design> flex lab4_1.1
PS D:\Documents\NITS\Semester VI\LAB) CS316 Compiler Design> gcc lex.yy.c
PS D:\Documents\NITS\Semester VI\LAB) CS316 Compiler Design> ./a.exe
NUMBER OF COMMENTS = 5

Press any key to continue . . .
PS D:\Documents\NITS\Semester VI\LAB) CS316 Compiler Design>

```

// C_TestFileIn.c file

A screenshot of the Visual Studio Code editor interface. The title bar shows 'C_TestFileIn.c - Visual Studio Code'. The file explorer on the left shows a project named 'lab4_1.l' with two files: 'C_TestFileIn.c' and 'C_TestFileOut.c'. The main editor area displays the code for 'C_TestFileIn.c'. The code includes header files, a multi-line comment, and a main function that declares a variable 'ii', loops from 0 to 2, and prints 'Hello World ' three times.

```
D: > Documents > NITS > Semester VI > (LAB) CS316 Compiler Design > C_TestFileIn.c > ...
1 //Header Files
2 #include <stdio.h>
3 #include <stdlib.h>
4
5 /*
6  This is a test program
7  This program prints hello world! 3 times
8  Just a few extra lines of comment
9  */
10
11 int main () {
12     int ii; //Declaring Two Variables
13     /*Declaring a for loop*/
14     for (ii=0; ii<3; ++ii)
15         printf ("Hello World "); /*Printf statement to print hello world*/
16     return 0;
17 }
18
```

//C_TestFileOut.c file

A screenshot of the Visual Studio Code editor interface. The title bar shows 'C_TestFileOut.c - Visual Studio Code'. The file explorer on the left shows the same project 'lab4_1.l' with the same two files. The main editor area displays the code for 'C_TestFileOut.c'. The code includes header files and a main function that declares a variable 'ii', loops from 0 to 2, and prints 'Hello World ' three times.

```
D: > Documents > NITS > Semester VI > (LAB) CS316 Compiler Design > C_TestFileOut.c > ...
1
2 #include <stdio.h>
3 #include <stdlib.h>
4
5
6
7 int main () {
8     int ii;
9
10     for (ii=0; ii<3; ++ii)
11         printf ("Hello World ");
12     return 0;
13 }
14
```

2. Write a lex program to count the number of keywords, operators, identifiers, comments and then delete the comments.

➔ CODE:

```
%{
    #include <stdio.h>
    #include <stdlib.h>
    int commentCount = 0, keywordCount = 0, operatorCount = 0,
    identifierCount = 0;
    int headerfileCount = 0, separatorCount = 0;
    FILE *out;
}%
%s commentText

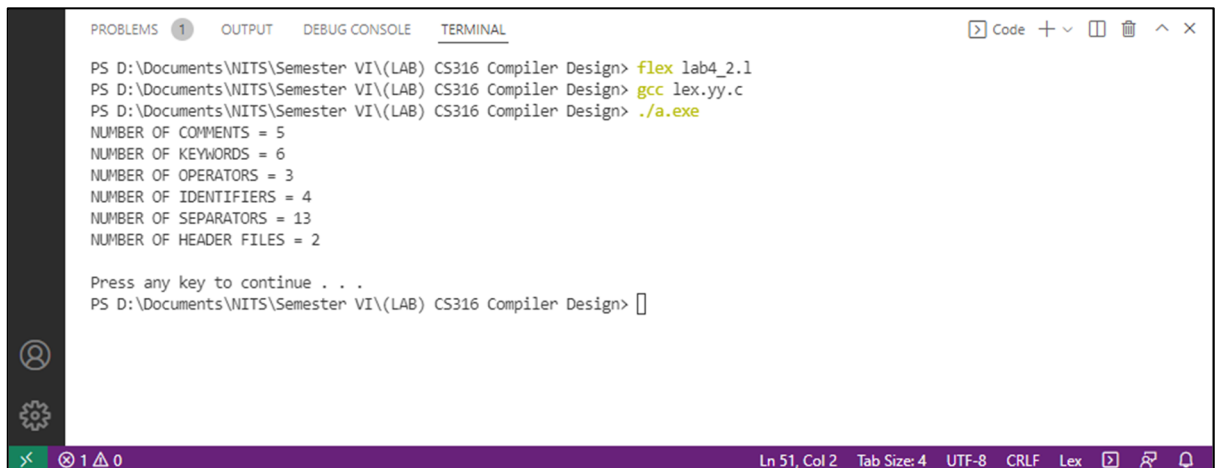
%%
"/*" {BEGIN commentText;}
<commentText>"*/" {BEGIN 0; ++commentCount;}
<commentText>[a-zA-Z0-9]* {};
<commentText>\n {};
<commentText>. {};
"//".* {++commentCount;}
\n {fprintf (out, "%s", yytext);}
"auto"|"double"|"main"|"int"|"struct" {++keywordCount; fprintf (out,
"%s", yytext);}
"break"|"else"|"long"|"switch"|"case"|"printf" {++keywordCount; fprintf
(out, "%s", yytext);}
"enum"|"register"|"typedef"|"char" {++keywordCount; fprintf (out, "%s",
yytext);}
"for"|"signed"|"void"|"do"|"if" {++keywordCount; fprintf (out, "%s",
yytext);}
"extern"|"return"|"union"|"continue" {++keywordCount; fprintf (out,
"%s", yytext);}
"static"|"while"|"default"|"goto" {++keywordCount; fprintf (out, "%s",
yytext);}
"sizeof"|"volatile"|"const"|"float"|"short" {++keywordCount; fprintf
(out, "%s", yytext);}
"#include" [ \<a-zA-Z\>]* {++headerfileCount; fprintf (out, "%s",
yytext);}
\".*\" {fprintf (out, "%s", yytext);}
[{};] {++separatorCount; fprintf (out, "%s", yytext);}
[,()] {++separatorCount; fprintf (out, "%s", yytext);}
[+!-/*%] {++operatorCount; fprintf (out, "%s", yytext);}
[a-zA-Z][a-zA-Z0-9_]* {++identifierCount; fprintf (out, "%s", yytext);}
. {fprintf (out, "%s", yytext);}
%%
```

```

int yywrap(){
    return 1;
}

int main(){
    yyin = fopen("C_TestFileIn.c", "r");
    out = fopen("C_TestFileOut.c", "w");
    yylex();
    printf ("NUMBER OF COMMENTS = %d\n", commentCount);
    printf ("NUMBER OF KEYWORDS = %d\n", keywordCount);
    printf ("NUMBER OF OPERATORS = %d\n", operatorCount);
    printf ("NUMBER OF IDENTIFIERS = %d\n", identifierCount);
    printf ("NUMBER OF SEPARATORS = %d\n", separatorCount);
    printf ("NUMBER OF HEADER FILES = %d\n\n", headerfileCount);
    fclose (out);
    system ("pause");
    return 0;
}

```

OUTPUT:


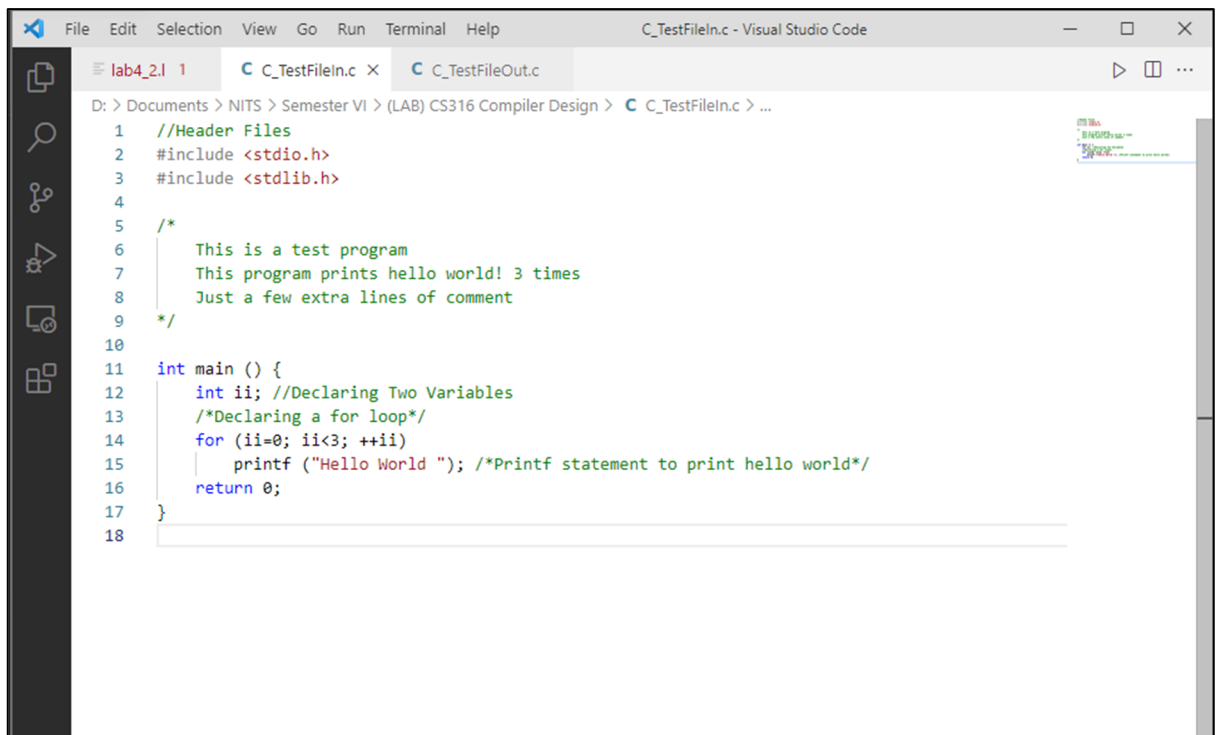
```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design> flex lab4_2.1
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design> gcc lex.yy.c
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design> ./a.exe
NUMBER OF COMMENTS = 5
NUMBER OF KEYWORDS = 6
NUMBER OF OPERATORS = 3
NUMBER OF IDENTIFIERS = 4
NUMBER OF SEPARATORS = 13
NUMBER OF HEADER FILES = 2

Press any key to continue . . .
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design> 

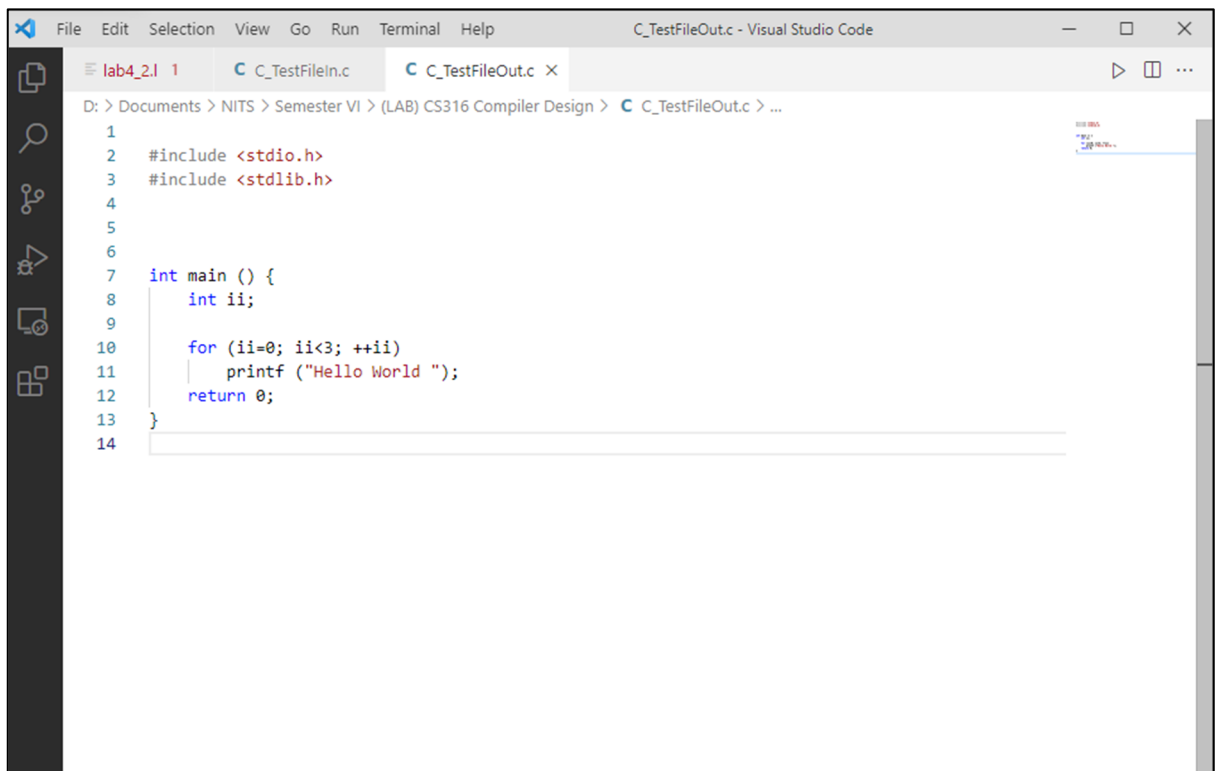
```

// C_TestFileIn.c file



```
File Edit Selection View Go Run Terminal Help C_TestFileIn.c - Visual Studio Code
lab4_2.l 1 C_TestFileIn.c C_TestFileOut.c
D: > Documents > NITS > Semester VI > (LAB) CS316 Compiler Design > C_TestFileIn.c > ...
1 //Header Files
2 #include <stdio.h>
3 #include <stdlib.h>
4
5 /*
6  This is a test program
7  This program prints hello world! 3 times
8  Just a few extra lines of comment
9  */
10
11 int main () {
12     int ii; //Declaring Two Variables
13     /*Declaring a for loop*/
14     for (ii=0; ii<3; ++ii)
15         printf ("Hello World "); /*Printf statement to print hello world*/
16     return 0;
17 }
18
```

// C_TestFileOut.c file



```
File Edit Selection View Go Run Terminal Help C_TestFileOut.c - Visual Studio Code
lab4_2.l 1 C_TestFileIn.c C_TestFileOut.c
D: > Documents > NITS > Semester VI > (LAB) CS316 Compiler Design > C_TestFileOut.c > ...
1
2 #include <stdio.h>
3 #include <stdlib.h>
4
5
6
7 int main () {
8     int ii;
9
10     for (ii=0; ii<3; ++ii)
11         printf ("Hello World ");
12     return 0;
13 }
14
```