

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>
    int cmtnum = 0;
    FILE *out;
%}
%s C

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

int yywrap(){
    return 1;
}

int main(){
    yyin = fopen("in.c", "r");
    out = fopen("out.c", "w");
    yylex();
    printf ("comment: %d\\n\\n", cmtnum);
    fclose (out);
    return 0;
}
```

OUTPUT:

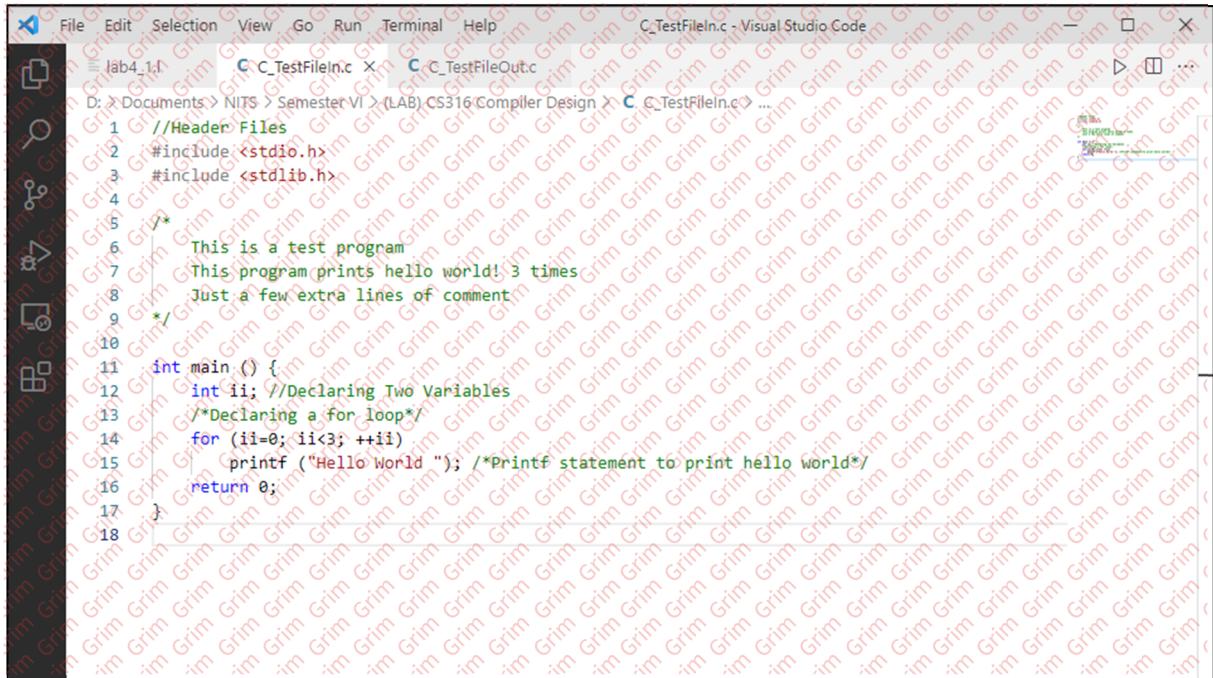
The screenshot shows a terminal window with the following output:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design> flex lab4_1.l
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>
```

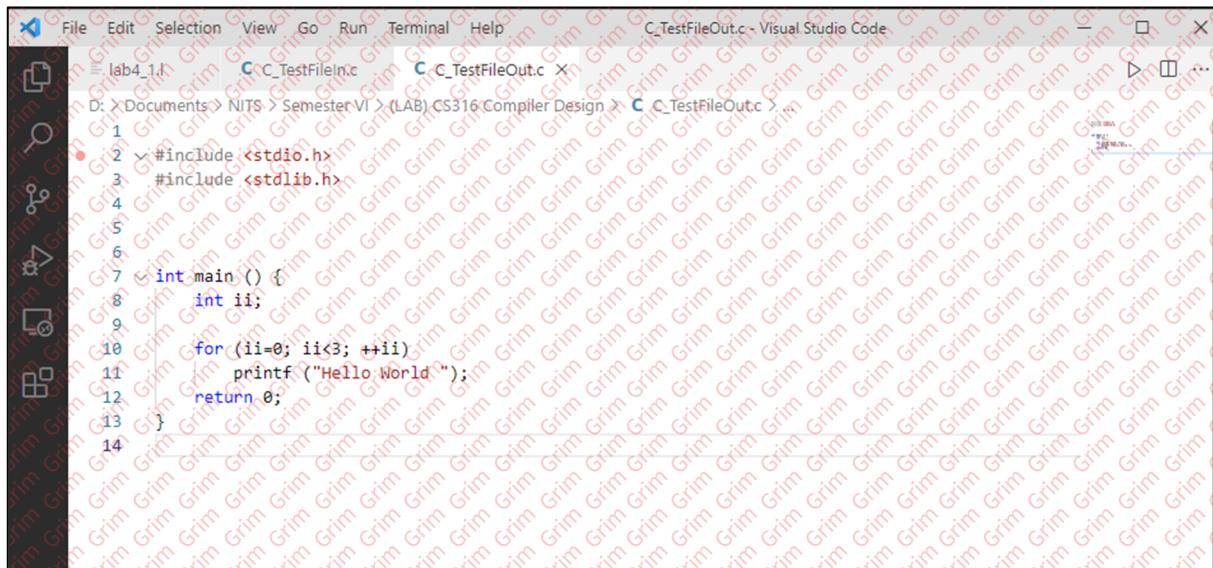
The terminal window has tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, and TERMINAL. The TERMINAL tab is active. The command line shows the execution of the Flex and GCC commands to create an executable, followed by running it and displaying the count of comments (5). The bottom status bar shows the current line (Ln 25), column (Col 13), and encoding (UTF-8).

// C_TestFileIn.c file


```

File Edit Selection View Go Run Terminal Help
C_TestFileIn.c X C_C_TestFileOut.c
D: > Documents > NITS > Semester VI > (LAB) CS316 Compiler Design > C_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
17 }
18

```

//C_TestFileOut.c file


```

File Edit Selection View Go Run Terminal Help
C_TestFileOut.c - Visual Studio Code
C_TestFileOut.c X C_C_TestFileOutc >
D: > Documents > NITS > Semester VI > (LAB) CS316 Compiler Design > C_C_TestFileOutc > ...
1
2 #include <stdio.h>
3 #include <stdlib.h>
4
5
6 int main() {
7     int ii;
8
9     for (ii=0; ii<3; ++ii)
10        printf ("Hello World ");
11
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>
int ctnum = 0, knum = 0, onum = 0, inum = 0;
FILE *out;
%}
%s C

%%
/* {BEGIN C;}
<C>*/* {BEGIN 0; ctnum++;}
<C>[a-zA-Z0-9]* {}
<C>\n {}
<C>. {}
//.* {ctnum++;}
\n {fprintf (out, "%s", yytext);}
"auto"|"double"|"main"|"int"|"struct"|"break"|"else"|"long"|"switch"|"case"|"printf"|"enum"|"register"|"typedef"|"char"|"for"|"signed"|"void"|"do"|"if"|"extern"|"return"|"union"|"continue"|"static"|"while"|"default"|"goto" {knum++; fprintf (out, "%s", yytext);}
\.*\" {fprintf (out, "%s", yytext);}
[+-/=/*] {++onum; fprintf (out, "%s", yytext);}
[a-zA-Z][a-zA-Z0-9_]* {++inum; fprintf (out, "%s", yytext);}
. {fprintf (out, "%s", yytext);}
%%

int yywrap(){
    return 1;
}

int main(){
    yyin = fopen("in.c", "r");
    out = fopen("out.c", "w");
    yylex();
    printf ("comment: %d\n", ctnum);
    printf ("keyword: %d\n", knum);
    printf ("operator: %d\n", onum);
    printf ("identifier = %d\n", inum);
    fclose (out);
    return 0;
}
```

OUTPUT:

```

PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL
PS D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design> flex lab4_2.l
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 C_TestFileIn.c X C_C_TestFileOut.c ...
D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design> C_CTestFileIn.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 }

```

// C_TestFileOut.c file

```

File Edit Selection View Go Run Terminal Help C_TestFileOut.c - Visual Studio Code
lab4_2.l 1 C C_TestFileIn.c C C_TestFileOut.c X
D:\Documents\NITS\Semester VI\LAB CS316 Compiler Design> C_CTestFileOut.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
13 }

```