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IT250 Lab Assignment 5

Q1) Write the Lex Program which will erase all the Comments in the given C program.

CODE

```
%{
#include<stdio.h>
int i=0;
%}
%%
"//".*\n              { }   //for single line comments
"/*"[^*/]*"*/"        { }   //for multi line comments
.  {
    if(!i)
    {
        printf("\n");
        printf("\n");
        printf("Output:\n\n");
        i=1;
    }
    ECHO; }
%%
int main(int argc, int **argv)
{
    printf("Enter Code:\n\n");
    yylex();
    printf("\n");
    return 0;
}

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

OUTPUT

Test Case 1

```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ lex 1.l
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ cc lex.yy.c
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter Code:

#include<stdio.h>
int main()
{
// Statement 1
/* Statement 2
Statement 3
*/
return 0;
}




Output:

#include<stdio.h>
int main()
{

return 0;
}
```

Test Case 2

```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ lex 1.l
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ cc lex.yy.c
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter Code:

#include <stdio.h>

int main() {
    // This is a single-line comment
    printf("Hello, world!\n");

    /*This is a multi-line comment.
    It spans multiple lines and can be used
    for longer explanations or commenting out
    blocks of code.
*/

    return 0;
}


Output:

#include <stdio.h>

int main() {
        printf("Hello, world!\n");



    return 0;
}
```

Test Case 3

```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ lex 1.l
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ cc lex.yy.c
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter Code:

#include <stdio.h>

int main() {
    // This is a single-line comment
    printf("Single line comment\n");

    /*
    This is a multi-line comment
    It spans multiple lines and can be used
    for longer explanations or commenting out
    blocks of code
    */
    printf("Multi-line comment\n");

    // Single-line comment after code
    printf("End of program\n");

    return 0;
}


Output:

#include <stdio.h>

int main() {
        printf("Single line comment\n");


    printf("Multi-line comment\n");

        printf("End of program\n");

    return 0;
}
```

Q2) Write the Lex Program to check the input which is the URL, whether it's valid or not

CODE

```
%{
#include<stdio.h>
#include<stdlib.h>
int valid=0;
%}
letter  [a-z|A-Z]
digit   [0-9]
protocol        ["http://"|"https://"|""]
domainname      [".org"|".in"|"com"|".net"]
character       ['_'|'*'|'$'|'#']
%%
{protocol}?+"www."+({letter}|{digit}|{character})({letter}|{digit}|{character})*+{domainname}
{ valid=1;}
"\n" {
    if(valid==1)
        printf("\nValid URL\n");
    else
        printf("\nInvalid URL\n");
    exit(0);
}
%%
int main()
{
    printf("Enter URL: ");
    yylex();
    return 0;
}
int yywrap(void) {
        return 1;
}
```

OUTPUT

```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ lex 2.l
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ cc lex.yy.c
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter URL: https://www.example.com

Valid URL
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter URL: https://www.stackoverflow.com/questions/12345

Valid URL
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter URL: https://www.example.in

Valid URL
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter URL: www.abc.com

Valid URL
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter URL: http://www.google.com

Valid URL
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter URL: nithin.xdadge

Invalid URL
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter URL: 7837r538

Invalid URL
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter URL: nithin@gmail.com

Invalid URL
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter URL: www.facebook.com

Valid URL
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter URL: www.twitter.in

Valid URL
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$
```

Q3) Write the Lex Program to count all the tokens from the given input file.

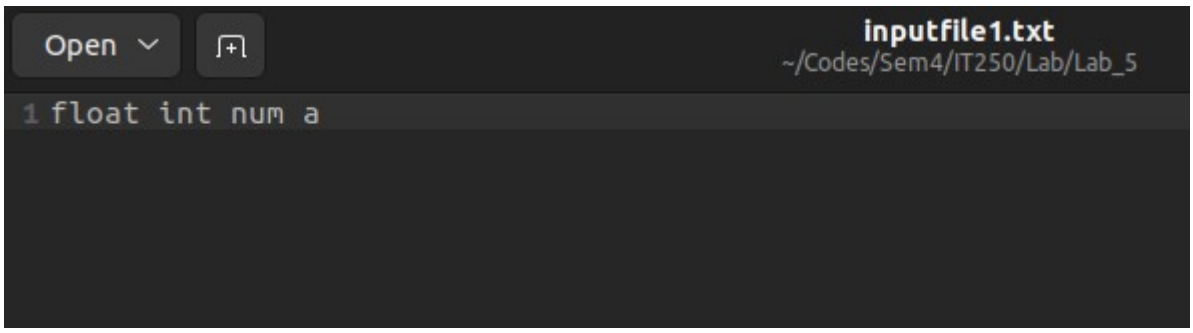
CODE

```
%{
#include <stdio.h>
int keywords = 0;
int numbers = 0;
int identifiers = 0;
int operators = 0;
int puncutations = 0;
int invalid = 0;
int newline = 0;
%}

%%

(auto|break|case|char|const|continue|default|do|double|else|enum|extern|float|for|goto|if|int|long|
register|return|short|signed|sizeof|static|struct|switch|typedef|union|unsigned|void|volatile|while)
[ \t]+ {keywords++;}

[0-9]+[ \t]+ {numbers++;}

[0-9]+[a-zA-Z_0-9]*[ \t]+ {invalid++;}

[a-zA-Z_][a-zA-Z0-9_]*[ \t]+ {identifiers++;}

[+|-|*|/|>|<|>=|<=|==|!=][ \t]+ {operators++;}

[{}().,;:%&|^!~=<>?][ \t]+ {puncutations++;}

[\n] {newline++;}

. {invalid++;}


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

```
int main() {

    FILE *filePtr = fopen("inputfile1.txt", "r");
    if (!filePtr) {
        printf("Error: Cannot open file \n");
        return -1;
    }

    yyin = filePtr;

    yylex();
    fclose(filePtr);

    int count=keywords + numbers + identifiers + operators + puncutations
    printf("\nTotal Number of Tokens are: %d\n", count);

    return 0;
}
```

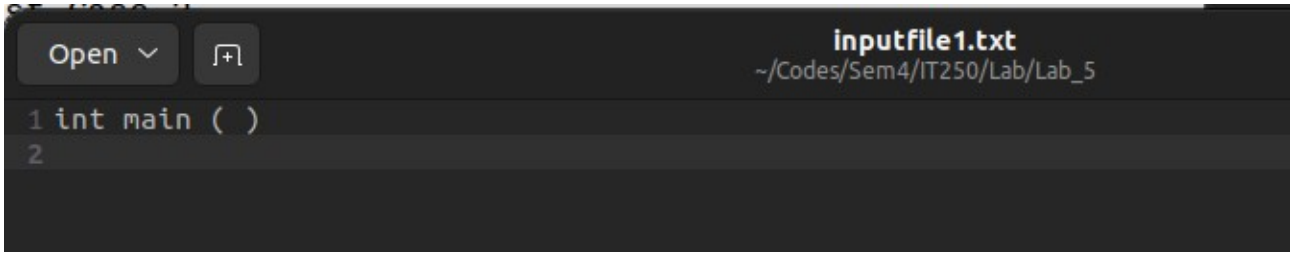
OUTPUT

Test Case 1




```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ lex 3.l
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ cc lex.yy.c
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out

Total Number of Tokens are: 4
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$
```

Test Case 2




```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out

Total Number of Tokens are: 4
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$
```

Test Case 3

Open

inputfile1.txt
~/Codes/Sem4/IT250/Lab/Lab_5

```
1 main ( )
2 {
3 int a = 5 ;
4 printf ( " %d ", a ) ;
5 }
6
```

```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out

Total Number of Tokens are: 17
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$
```

Test Case 4

Open

inputfile1.txt
~/Codes/Sem4/IT250/Lab/Lab_5

```
1 switch ( inputvalue )
2 {
3 case 1 : b = c * d ; break ;
4 default : b = c ++ ; break ;
5 }
6
```

```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out

Total Number of Tokens are: 26
```

Q4) Write the Lex Program to verify the entered Email is valid or not.

CODE

```
%{
#include <stdio.h>
int flag = 0;
%}

%%
[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,4} { flag = 1; }
.|\n {}

%%

int yywrap() {
    return 1;
}

int main() {
    printf("Enter Email Id: ");
    char input[256];
    scanf("%s",input);
    yy_scan_string(input);
    yylex();
    if (flag == 1)
        printf("Valid Email Id\n");
    else
        printf("Not Valid Email Id\n");
    return 0;
}
```

OUTPUT

```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ lex 4.l
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ cc lex.yy.c
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter Email Id: sureshnithin1729@gmail.com
Valid Email Id
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter Email Id: nithins.221me139@gmail.com
Valid Email Id
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter Email Id: hopkins$mail.com
Not Valid Email Id
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter Email Id: support123@website.com
Valid Email Id
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter Email Id: alice+bob@example.net
Valid Email Id
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter Email Id: sam@@example.com
Not Valid Email Id
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter Email Id: bob@website
Not Valid Email Id
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter Email Id: jane_doe@gmail
Not Valid Email Id
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter Email Id: @company.com
Not Valid Email Id
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$ ./a.out
Enter Email Id: info@company.co.uk
Valid Email Id
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_5$
```