

ASSIGNMENT-3

Lexical Analyzer

Q1. A story writer wishes to recheck his story. In order to recheck he needs to find all those words which are followed by '?' and '!'. Write a lex program that can solve his problem.

Q2. Write a lex program to design a DFA over input {0,1}, which accept odd no. of 0s or even no. of 1s but not both together.

Q3. Write a lex program to design a DFA over input {a,b}, which accepts all the words containing odd number of 'b'.

Q4. Given a text file, write a lex program to search an input word in the file. If the word is present then count the total number of its occurrences, and replace every odd occurrence of the word with your roll number.

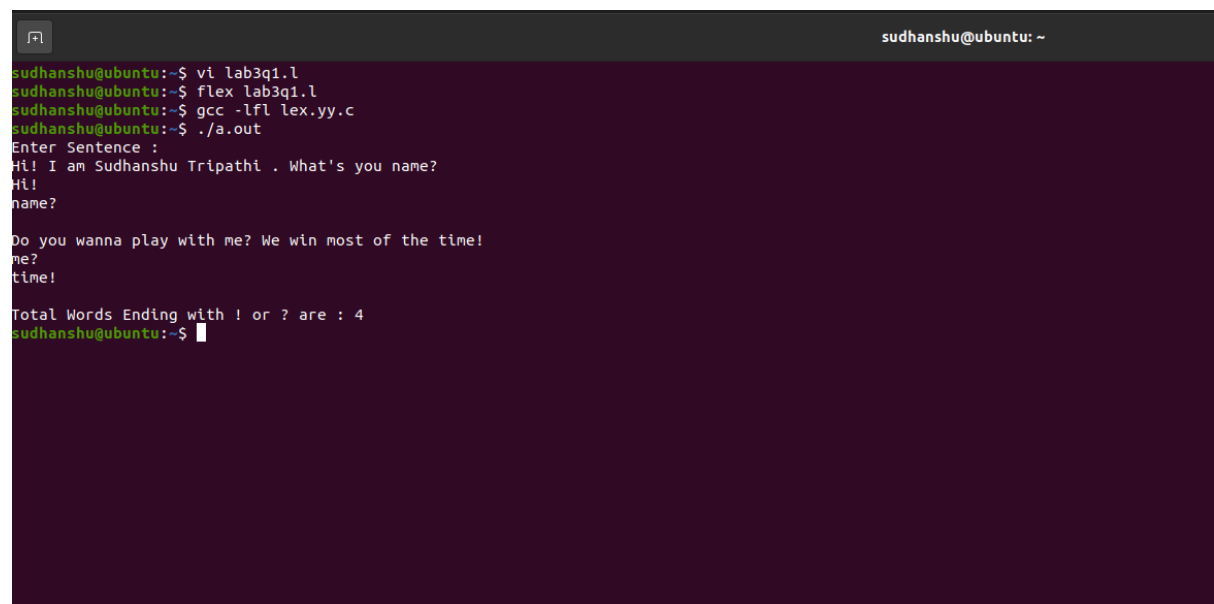
Program 1

```
%{  
#include<stdio.h>  
int count=0;  
%}  
  
%%  
[a-zA-Z0-9]*(\?|!) {printf("%s \n",yytext);count++;}  
.  
{ continue;}  
<<EOF>> { return 0; }  
  
%%
```

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

```
int main(){
printf("Enter Sentence : \n"); yylex();
printf("Total Words Ending with ! or ? are : %d\n",count);
}
```

Output



```
sudhanshu@ubuntu:~$ vi lab3q1.l
sudhanshu@ubuntu:~$ flex lab3q1.l
sudhanshu@ubuntu:~$ gcc -lfl lex.yy.c
sudhanshu@ubuntu:~$ ./a.out
Enter Sentence :
Hi! I am Sudhanshu Tripathi . What's you name?
Hi!
name?

Do you wanna play with me? We win most of the time!
me?
time!

Total Words Ending with ! or ? are : 4
sudhanshu@ubuntu:~$
```

Program 2

```
%{
%}
```

%s OE OO EO

%%

<INITIAL>0 BEGIN OE;

<INITIAL>1 BEGIN EO;

<INITIAL>\n {BEGIN INITIAL; printf("Accepted\n");}

<OE>0 BEGIN INITIAL;

<OE>1 BEGIN OO;

<OE>\n {BEGIN INITIAL; printf("Not Accepted\n");}

<OO>0 BEGIN EO;

<OO>1 BEGIN OE;

<OO>\n {BEGIN INITIAL; printf("Accepted\n");}

<EO>0 BEGIN OO;

<EO>1 BEGIN INITIAL;

<EO>\n {BEGIN INITIAL; printf("Not Accepted\n");}

%%

void main()

{

yylex();

}

Output

```
sudhanshu@ubuntu: ~  
sudhanshu@ubuntu:~$ vi lab3q2.l  
sudhanshu@ubuntu:~$ flex lab3q2.l  
sudhanshu@ubuntu:~$ gcc -lfl lex.yy.c  
sudhanshu@ubuntu:~$ ./a.out  
0011  
Accepted  
1010  
Accepted  
1101  
Accepted  
1000  
Accepted  
00011  
Not Accepted  
001  
Not Accepted  
0  
Not Accepted  
1  
Not Accepted  
10  
Accepted  
sudhanshu@ubuntu:~$
```

Program 3

%{

%}

%s F

%%

<INITIAL>a BEGIN INITIAL;

<INITIAL>b BEGIN F;

<INITIAL>\n {BEGIN INITIAL; printf("Not Accepted\n");}

<F>b BEGIN INITIAL;

<F>a BEGIN F;

<F>\n {BEGIN INITIAL; printf("Accepted\n");}

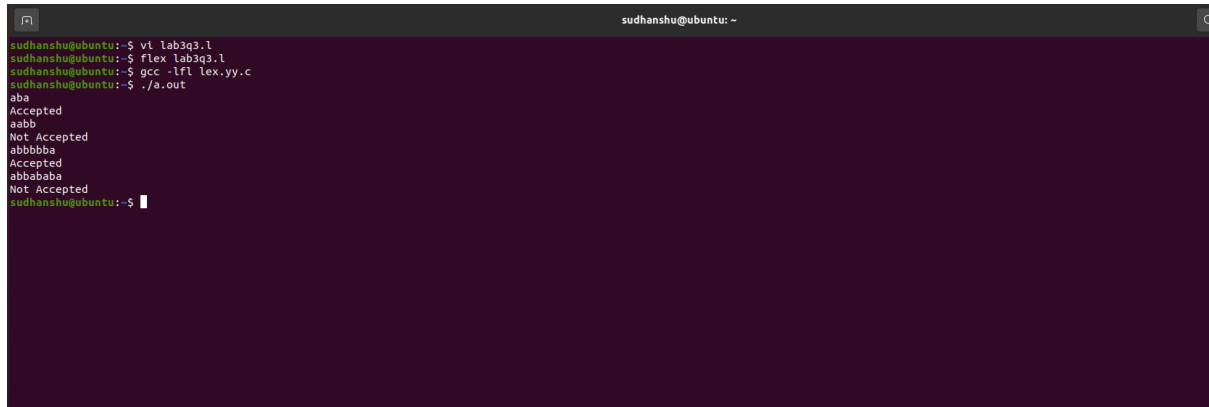
%%

void main()

{

```
yylex();  
}
```

Output



```
sudhanshu@ubuntu:~$ vi lab3q3.l  
sudhanshu@ubuntu:~$ flex lab3q3.l  
sudhanshu@ubuntu:~$ gcc -lfl lex.yy.c  
sudhanshu@ubuntu:~$ ./a.out  
aba  
Accepted  
aabb  
Not Accepted  
abbbba  
Accepted  
abbababa  
Not Accepted  
Not Accepted  
sudhanshu@ubuntu:~$
```

Program 4

```
%{  
  
#include<stdio.h>  
  
#include<string.h>  
  
  
char replace_with [] = "Sudhanshu"; char replace [] ="XXX";  
  
int count = 0;  
  
  
%}  
  
  
%%
```

```
[a-zA-Z]+ { if(strcmp(yytext, replace)==0)
count++;
if(strcmp(yytext, replace)==0 && count%2!=0) fprintf(yyout, "%s",
replace_with);
else
fprintf(yyout, "%s", yytext);}
.      fprintf(yyout, "%s", yytext);
%%
```

```
int yywrap()
```

```
{
```

```
return 1;
```

```
}
```

```
int main()
```

```
{
```

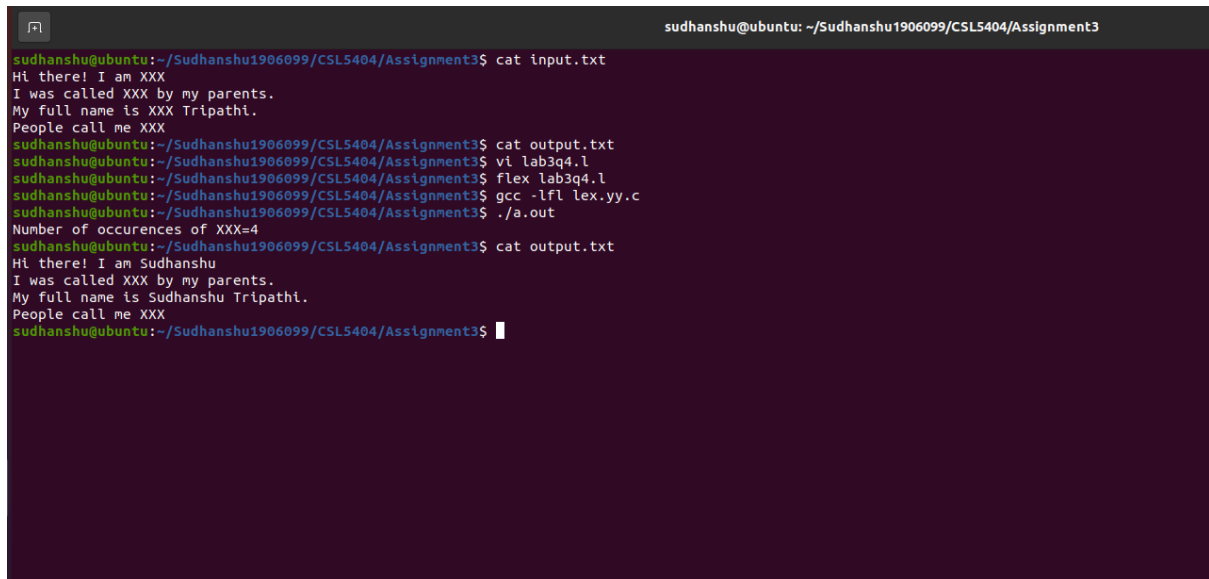
```
extern FILE *yyin, *yyout;
```

```
yyin=fopen("input.txt", "r");
```

```
yyout=fopen("output.txt", "w");
```

```
yylex());  
  
printf("Number of occurrences of %s=%d\n",replace, count);  
  
}
```

Output



```
sudhanshu@ubuntu: ~/Sudhanshu1906099/CSL5404/Assignment3  
sudhanshu@ubuntu:~/Sudhanshu1906099/CSL5404/Assignment3$ cat input.txt  
Hi there! I am XXX  
I was called XXX by my parents.  
My full name is XXX Tripathi.  
People call me XXX  
sudhanshu@ubuntu:~/Sudhanshu1906099/CSL5404/Assignment3$ cat output.txt  
sudhanshu@ubuntu:~/Sudhanshu1906099/CSL5404/Assignment3$ vi lab3q4.l  
sudhanshu@ubuntu:~/Sudhanshu1906099/CSL5404/Assignment3$ flex lab3q4.l  
sudhanshu@ubuntu:~/Sudhanshu1906099/CSL5404/Assignment3$ gcc -lfl lex.yy.c  
sudhanshu@ubuntu:~/Sudhanshu1906099/CSL5404/Assignment3$ ./a.out  
Number of occurrences of XXX=4  
sudhanshu@ubuntu:~/Sudhanshu1906099/CSL5404/Assignment3$ cat output.txt  
Hi there! I am Sudhanshu  
I was called XXX by my parents.  
My full name is Sudhanshu Tripathi.  
People call me XXX  
sudhanshu@ubuntu:~/Sudhanshu1906099/CSL5404/Assignment3$
```