Code 1:

```
%option noyywrap
%{
   #include<stdio.h>
%}

%%
\n { printf("Welcome");}
%%

int main(){
   printf("Enter key is to be pressed!");
   yylex();
   return 0;
}
```

Output:

```
pc-5@pc5-HP-280-G4-MT-Business-PC:~/Desktop$ ./a.out
Enter key is to be pressed!
Welcome
```

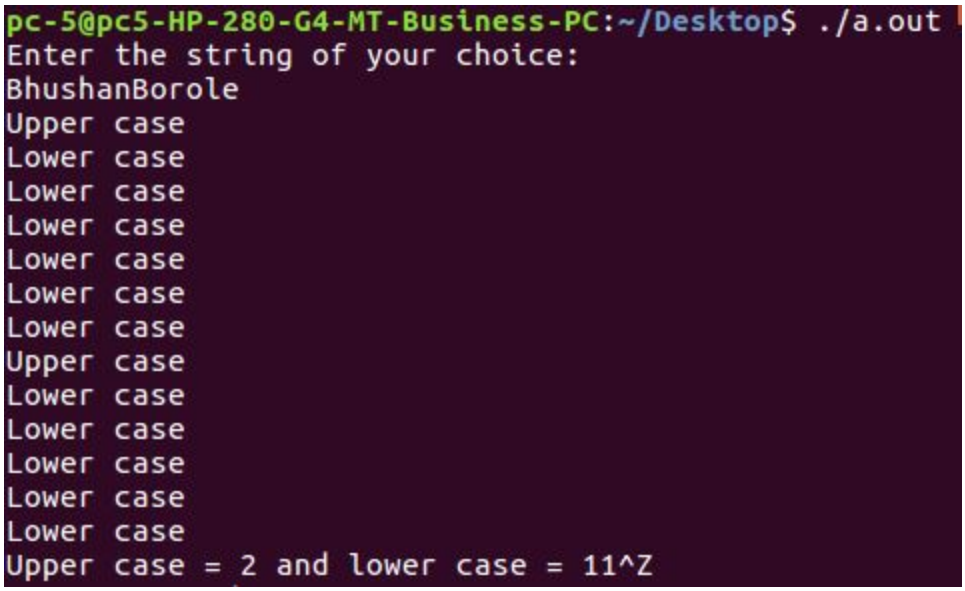
Code 2:

```
%option noyywrap
%{
   #include<stdio.h>
   int lower = 0;
   int upper = 0;
%}

%%
[A-Z] {printf("Upper case\t\n"); upper++;}
[a-z] {printf("Lower case\t\n"); lower++;}
\n {printf("Upper case = %d and lower case = %d", upper, lower);}
%%

int main(){
   printf("Enter the string of your choice: \n");
   yylex();
   return 0;
}
```

Output:



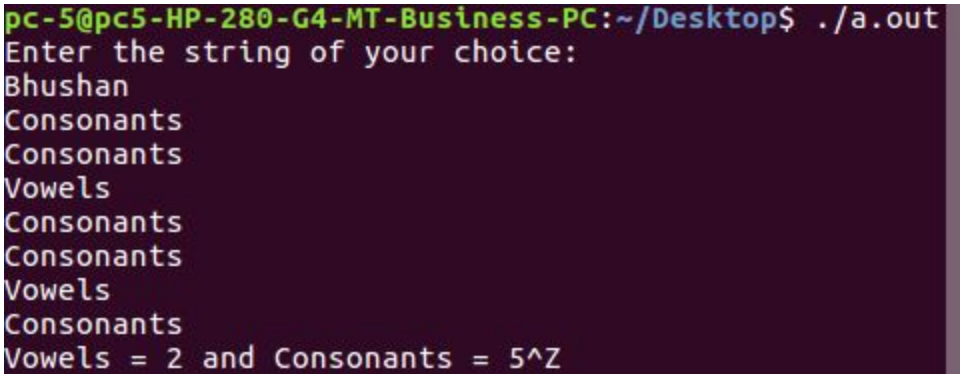
Code 3:

```
%option noyywrap
%{
   #include<stdio.h>
   int vowel = 0;
   int consonants = 0;
%}

%%
[aeiouAEIOU] {printf("Vowels\t\n"); vowel++;}
[^aeiouAEIOU\n] {printf("Consonants\t\n"); consonants++;}
\n { printf("Vowels = %d and Consonants = %d",vowel,consonants);}
%%

int main(){
   printf("Enter the string of your choice: \n");
   yylex();
   return 0;
}
```

Output:



A)Write a lex program to count no. of characters, words, lines, spaces.

CODE:

```
%{
#include<stdio.h>
int words = 0;
int space = 0;
int characters = 0;
int lines = 0;
%}

%%
[ ]+ {space++; words++;}
[^\t\n] {characters++;}
[\n] {lines++; words++;printf("Space = %d; Word = %d, Characters = %d; Lines = %d",
space, words, characters, lines);}
%%

int yywrap(){
        return 1;
}

int main(){
        printf("Enter String: ");
        yylex();
        return 0;
}
```

OUTPUT:

```
bhushan-borole:~/Desktop/spcc$ lex spcc_4a.l
bhushan-borole:~/Desktop/spcc$ cc lex.yy.c -ll
bhushan-borole:~/Desktop/spcc$ ./a.out
Enter String: SFIT is in Borivali
Space = 3; Word = 4, Characters = 16; Lines = 1
```

B) Write a lex program to implement a Calculator.

CODE:

```
%option noyywrap

%{
#include <stdio.h>
int op = 0;
float a,b;
%}

dig [0-9]+|([0-9]*)"."([0-9]+)
add "+"
sub "-"
mul "*"
div "/"
ln \n

%%

{dig} {digi();}
{add} {op = 1;}
{sub} {op = 2;}
{mul} {op = 3;}
{div} {op = 4;}
{ln} {printf("\n Result = %2f", a);}

%%
int digi(){
        if (op == 0){
        a = atof(yytext);
        }
        else{
        b = atof(yytext);
        switch(op){
        case 1: a = a + b; break;
        case 2: a = a - b; break;
        case 3: a = a * b; break;
        case 4: a = a / b; break;
        }
        op = 0;
        }
```

```
}

int main(){
        printf("Enter Expression: ");
        yylex();
        return 0;
}
```

OUTPUT: