EXCERSISES

1.Write a regular definition to display a line of string for following lex:

a)All strings of digits at most one repeated digit.

Code :

```
%option noyywrap
%{
        #include<stdio.h>
        #include<stdlib.h>
        int count[10] = {0,0,0,0,0,0,0,0,0,0};
        int valid = 1;
%}

%%
[0-9] {count[atoi(yytext)]++;}
\n {return 0;}
. {valid = 0; return 0;}
%%

int main()
{
        yylex();
        if(valid == 0)
                printf("Invalid entry\n");
        else {
                int rep = 0;
                for(int i = 0; i < 10; ++i) {
                        if(count[i] > 1)
                                rep++;
                }
                if(rep > 1)
                        printf("Doesn't satisfy the given condition..\n");
                else
                        printf("Contains atmost one repetitive digit..\n",yytext);
        }

        return 0;
}
```

Output :

```
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>lex p1.l

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>gcc lex.yy.c

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>a.exe
12234567890
Contains atmost one repetitive digit..

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>a.exe
2019103573
Doesn't satisfy the given condition..

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>a.exe
CEG2019
Invalid entry

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>a.exe
8610047532
Contains atmost one repetitive digit..

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>
```

b)All string of a's and b's with an even number of a's and odd number of b's.

Code :

```
%option noyywrap
%{
    #include<stdio.h>
    int i, a=0, b=0, ans=0;
%}

%%
[ab]* {
    for(i=0; i<yyleng; i++) {
        if(yytext[i]=='a')
            a++;
        else if(yytext[i]=='b')
            b++;
    }
    if(((a%2)==0)&&((b%2)!=0))
        ans=1;
}
.* ;
%%

int main()
{
    yylex();
    if(ans==1)
        printf("String has even number of a's and odd number of b's\n");
    else
        printf("String does not have even number of a's and odd number of b's\n");
    return 0;
}
```

Output :

```
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>lex p2.l

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>gcc lex.yy.c

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>a.exe
aab

String has even number of a's and odd number of b's

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>a.exe
abab

String does not have even number of a's and odd number of b's

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>a.exe
aabaabaab

String has even number of a's and odd number of b's

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>a.exe
aaaabbbb

String does not have even number of a's and odd number of b's
```

c)All strings of lower case letters that contain 5 vowels in orders.

Code :

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

%%
^[b-df-hj-np-tv-z]*a[a-df-hj-np-tv-z]*e[b-hj-np tv-z]*i[b-df-np-tv-z]*o[b-df-hj-tv-z]*u[b-df-hj np-z]*$ {
        printf("String %s contains all vowels in order..\n",yytext);
}
.* {
        printf("Doesn't satisfy the given condition..\n");
}
%%

int main()
{
        yylex();
        return 0;
}
```

Output :

```
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>lex p3.l

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>gcc lex.yy.c

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>a.exe
aeiou
String aeiou contains all vowels in order..

aoieu
Doesn't satisfy the given condition..

aaeeeeiiiiioooouuuuu
String aaeeeeiiiiioooouuuuu contains all vowels in order..

engineering
Doesn't satisfy the given condition..

bacterio
Doesn't satisfy the given condition..

helloworld
Doesn't satisfy the given condition..
```

2.Write a lex program to match any string of one or more digits with an optional prefix of + or -

Code :

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

%%
^("+"|"-")?[0-9]+ {
        printf("Match Found\n");
}
.* {
        printf("Match not Found\n");
}
%%

int main()
{
        yylex();
        return 0;
}
```

Output :

```
D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>lex p4.l

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>gcc lex.yy.c

D:\STUDIES\SEM 5\CD\LAB\CODE\LAB 3\SPOT>a.exe
+32
Match Found

ab-
Match not Found

-73
Match Found

89-
Match not Found

55
Match Found

21+
Match not Found
```