PRACTICAL- **5**

AIM: Write a regular expression for following languages and use it in lex program.

1. The language of all strings contains exactly two 0's

```
%{
    #include<stdio.h>
%}
%
[1]*0[1]*0[1]* printf("valid");
.* printf("Invalid");
%%
int main()
{
    yylex();
   return 0;
}
int yywrap()
{
return 1;
}
```

```
~/pruthvi$ vi prac5_1
~/pruthvi$ lex prac5_1
~/pruthvi$ gcc lex.yy.c
~/pruthvi$ ./a.out
10101
valid
^C
```

2. The language of all strings contains atleast two 0's

```
%{
    #include<stdio.h>
%}
%%
[1]*0+[1]*0+[1]* printf("valid");
.* printf("Invalid");
%%
int main()
{
    yylex();
  return 0;
}
int yywrap()
{
return 1;
}
~
```

```
~/pruthvi$ vi pra5_2
~/pruthvi$ lex pra5_2
~/pruthvi$ gcc lex.yy.c
~/pruthvi$ ./a.out
1010100
Invalid
101010
Invalid
10101
valid
1001001
valid
^C
```

3. The language of all strings ending in 1 and not containing 00

```
%{
    #include<stdio.h>
%}
%%
(01|1)* printf("valid");
.* printf("Invalid");
%%
int main()
{
     yylex();
    return 0;
}
int yywrap()
{
return 1;
}
```

```
~/pruthvi$ vi pra5_3
~/pruthvi$ lex pra5_3
~/pruthvi$ gcc lex.yy.c
~/pruthvi$ ./a.out
10010
Invalid
1010101
valid
101010
Invalid
11011
valid
```

4. String with odd number of 1's

```
%{
    #include<stdio.h>
%}
%%
(0*1(0|10*1)*)|((0|10*1)*1) printf("Valid");
.* printf("Invalid");
%%
int main()
{
    yylex();
    return 0;
}
int yywrap()
{
    return 1;
}
~
```

```
~/pruthvi$ vi pra5_4
~/pruthvi$ lex pra5_4
~/pruthvi$ gcc lex.yy.c
~/pruthvi$ ./a.out
110110
Invalid
111011011
Valid
^C
```

5. The language of all strings that do not end with 01

```
%{
    #include<stdio.h>
%}
%%
((0|1)*(11|10|00))|0|1 printf("valid");
.* printf("Invalid");
%%
int main()
{
     yylex();
    return 0;
}
int yywrap()
{
return 1;
}
```

```
~/pruthvi$ vi prac5_5
~/pruthvi$ lex prac5_5
~/pruthvi$ gcc lex.yy.c
~/pruthvi$ ./a.out
0011
valid
101010
valid
101001
Invalid
```

6. The language of all string not containing 00

```
%{
    #include<stdio.h>
%}
%%
(0?(10|1)*) printf("valid");
.* printf("Invalid");
%%
int main()
{
    yylex();
   return 0;
}
int yywrap()
{
return 1;
}
```

```
~/pruthvi$ ~/pruthvi$ vi pra5_6
~/pruthvi$ lex pra5_6
~/pruthvi$ gcc lex.yy.c
~/pruthvi$ ./a.out
10101101
valid
001010
Invalid
0101101
valid
```

7. The language of all string containing either 10 or 001

```
%{
      #include<stdio.h>
%}
%%
(0|1)*(10|001)(0|1)* printf("valid");
.* printf("Invalid");
%%
int main()
{
      yylex();
     return 0;
}
int yywrap()
{
return 1;
}
```

```
~/pruthvi$ vi prac5_5
~/pruthvi$ vi prac5_7
~/pruthvi$ lex prac5_7
~/pruthvi$ gcc lex.yy.c
~/pruthvi$ ./a.out
101010
valid
010101
valid
001001
valid
11110
valid
011111
Invalid
```