LAB-2

1- WAP to convert a given valid parenthesized infix arithmetic expression to postfix expression. The expression consists of single character operands and the binary operators + (plus), - (minus), * (multiply) and / (divide).

```c
#include<stdio.h>
#include<string.h>
int F(char symbol)
{
        switch(symbol)
        {
        case '+':
        case '-': return 2;
        case '*':
        case '/':return 4;
        case '^':
        case '$':return 5;
        case '(':return 0;
        case'#':return -1;
        default:return 8;
}
}
int G(char symbol)
{
        switch(symbol)
        {
        case '+':
        case '-': return 1;
        case '*':
        case '/':return 3;
        case '^':
        case '$':return 6;
        case '(':return 9;
        case')':return 0;
        default:return 7;
}
}
void infix_postfix(char infix[],char postfix[])
{
        int top,i,j;
```

```c
        char s[30],symbol;
        top=-1;
        s[++top]='#';
        j=0;
        for(i=0;i<strlen(infix);i++)
        {
                symbol = infix[i];
                while(F(s[top])>G(symbol))
                {
                        postfix[j]=s[top--];
                        j++;
                }
                if(F(s[top])!=G(symbol))
                s[++top]=symbol;
                else
                top--;
        }
        while(s[top]!='#')
        {
                postfix[j++]=s[top--];
        }
        postfix[j]='\0';
}
int main()
{
        char infix[20];
        char postfix[20];
        printf("Enter the valid infix expression\n");
        scanf("%s",infix);
        infix_postfix(infix,postfix);
        printf("The postfix expression is:\n");
        printf("%s\n",postfix);
}
```

```
Enter the valid infix expression
x^y^z-M+N+p/Q
The postfix expression is:
xyz^^M-N+pQ/+

Process returned 0 (0x0)   execution time : 27.318 s
Press any key to continue.
```

```
Enter the valid infix expression
((a+b)*c-(d-e))^(f+g)
The postfix expression is:
ab+c*de--fg+^

Process returned 0 (0x0)   execution time : 28.070 s
Press any key to continue.
```

```
Enter the valid infix expression
(A+(B-C)*D)
The postfix expression is:
ABC-D*+

Process returned 0 (0x0)   execution time : 23.282 s
Press any key to continue.
```