## Aim:

Write a Program to evaluate given Postfix expression.

**Constraint:** The entered expression must be a valid postfix expression, according to the test scenarios.

## Source Code:

PostfixEvaluation.c

```c
#include<stdio.h>
#include<ctype.h>
int stack[20];
int top=-1;
void push(int x);
int pop();
void push(int x)
{

    top++;
    stack[top]=x;
}
int pop()
{
    int r;
    r=stack[top];

    top--;
    return r;
}
void main()
{
    char exp[30];
    int i,v,n1,n2;
    printf("Enter the postfix expression ::");
    gets(exp);
    for(i=0;exp[i]!='\0';i++)
    {
        if(isalpha(exp[i]))
        {
            printf("Enter the value of %c:",exp[i]);
            scanf("%d",&v);
            push(v);
    }

        else if(isdigit(exp[i]))
        {
            push(exp[i]-'0');
    }

        else
        {
            n2=pop();
            n1=pop();
            switch(exp[i])
```

```c
        {
            case '+':
            {
                push(n1+n2);
                break;
            }
            case '-':
            {
                push(n1-n2);
                break;
            }
            case '*':
            {
                push(n1*n2);
                break;
            }
            case '/':
            {
                push(n1/n2);
                break;
            }
            case '%':
            {
                push(n1%n2);
                break;
            }
            case '^':
            {
                push(n1^n2);
                break;
            }
            default:
            printf("Enter valid option\n");
        }
    }

    }
    printf("The result of expression %s = %d\n",exp,stack[top]);
}
```

## Execution Results - All test cases have succeeded!

| Test Case - 1 |
|---|
| User Output |
| Enter the postfix expression :: ab+cd-* |
| Enter the value of a: 2 |
| Enter the value of b: 3 |
| Enter the value of c: 2 |
| Enter the value of d: 4 |
| The result of expression ab+cd-* = -10 |

| Test Case - 2 |
|---|
| User Output |

```
Enter the postfix expression :: a*b*c
Enter the value of a: 1
Enter the value of b: 2
Enter the value of c: 3
The result of expression a*b*c = 3
```