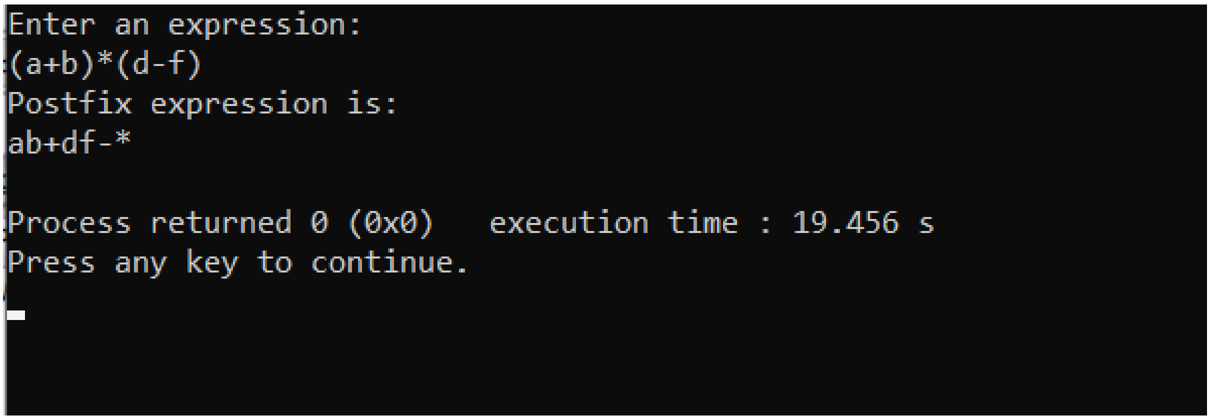
# DS Lab-3 Infix to Postfix conversion

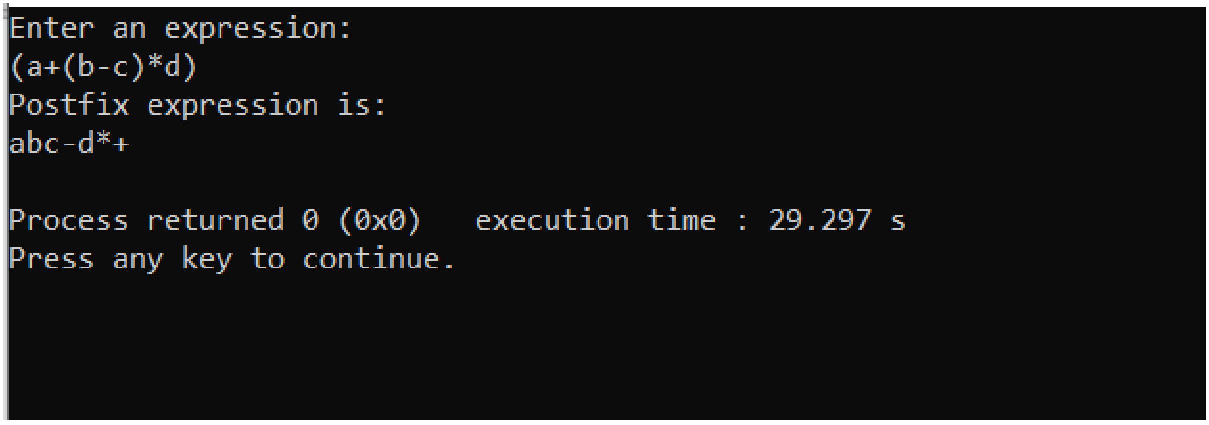
**WAP to convert a given valid parenthesized infix arithmetic expression to postfix expression. The expression consists of single character operands and the binary operators + (plus), - (minus), * (multiply) and / (divide)**

```
#include<stdio.h>
#include<stdlib.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[]){
    int top,j,i;
    char s[30],postfix[30];
    char 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';
    printf("Postfix expression is:\n");
    puts(postfix);
}
int main()
{
    char exp[30];
    printf("Enter an expression:\n");
    gets(exp);
    infix_postfix(exp);
    return 0;
}
```

## Output:



```
Enter an expression:
(a+b)*(d-f)
Postfix expression is:
ab+df-*

Process returned 0 (0x0)   execution time : 19.456 s
Press any key to continue.
```



```
Enter an expression:
(a+(b-c)*d)
Postfix expression is:
abc-d*+

Process returned 0 (0x0)   execution time : 29.297 s
Press any key to continue.
```