



Parshvanath Charitable Trust's
A. P. SHAH INSTITUTE OF TECHNOLOGY
(Approved by AICTE New Delhi & Govt. of Maharashtra, Affiliated to University of Mumbai)
(Religious Jain Minority)

Department of Computer Engineering

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Semester: II

Class / Branch: S.E C-2

Subject: Data structures

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Experiment No:-2

Aim: Conversion of infix to postfix.

Program:

```
#include<stdio.h>
#include<conio.h>
#include<ctype.h>
#include<string.h>
#include<stdlib.h>
#define MAX 100
char st[MAX];
int top = -1;
void push(char st[], char);
char pop(char st[]);
void InfixToPostfix(char source[], char target[]);
int getPriority(char);
int main()
{
    int i;
    char infix[MAX],postfix[MAX];
    //clrscr();
```

```

printf("\nEnter any infix expression : ");
scanf("%s",infix);
InfixToPostfix(infix, postfix);
printf("\nThe corresponding postfix expression is : ");
for(i = 0; postfix[i]!='\0';i++)
printf("%c",postfix[i]);
getch();
return 0;
}

void InfixToPostfix(char source[], char target[])
{
int i=0, j=0;
char temp;
strcpy(target, "");
while (source[i]!='\0')
{
if(source[i]=='(')
{
push(st,source[i]);
i++;
}
else if (source[i]==')')
{
while((top!=-1)&&(st[top]!='('))
{
target[j]=pop(st);
j++;
}
if(top== -1)
{
printf("\nINCORRECT EXPRESSION");
exit(1);
}
temp = pop(st);
i++;
}
else if(isdigit(source[i])||isalpha(source[i]))
{
target[j]=source[i];
j++;
i++;
}
else
if(source[i]=='+'||source[i]=='-'||source[i]=='*'||source[i]=='/'
||source[i]=='%') {

```

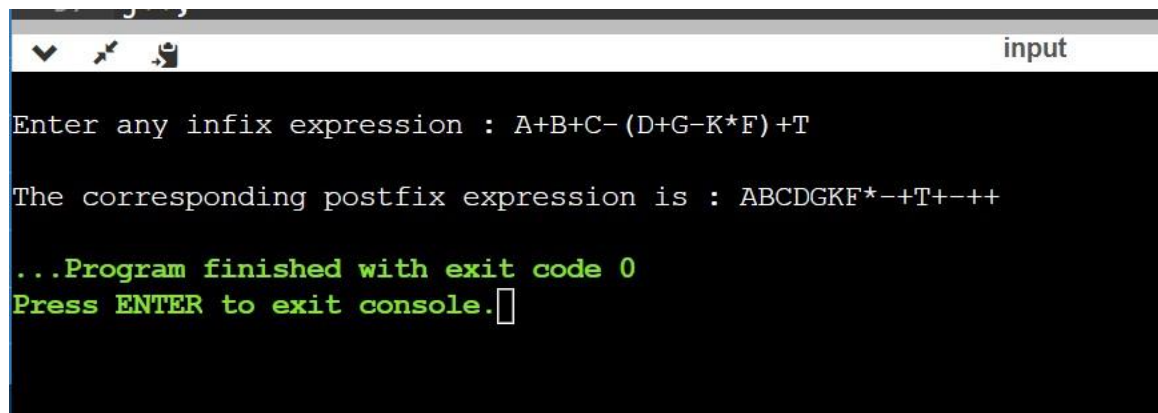
```

while((top!=-1)&&(st[top]!='(')&&(getPriority(st[top])>(getPriority(source[i]))) {
    target[j]=pop(st);
    j++;
}
push(st,source[i]);
i++;
}
else
{
    printf("\nINCORRECT ELEMENT IN EXPRESSION");
    exit(1);
}
}
while((top!=-1)&&(st[top]!='('))
{
    target[j] = pop(st);
    j++;
}
target[j]='\0';
}
int getPriority(char op)
{
    if(op=='/' || op=='*' || op=='%')
        return 1;
    else if(op=='+' || op=='-')
        return 0;
}
void push(char st[],char val)
{
    if(top==MAX-1)
        printf("\n STACK OVERFLOW");
    else
    {
        top++;
        st[top]=val;
    }
}
char pop(char st[])
{
    char val=' ';
    if(top==-1)
        printf("\n STACK UNDERFLOW");
    else
    {

```

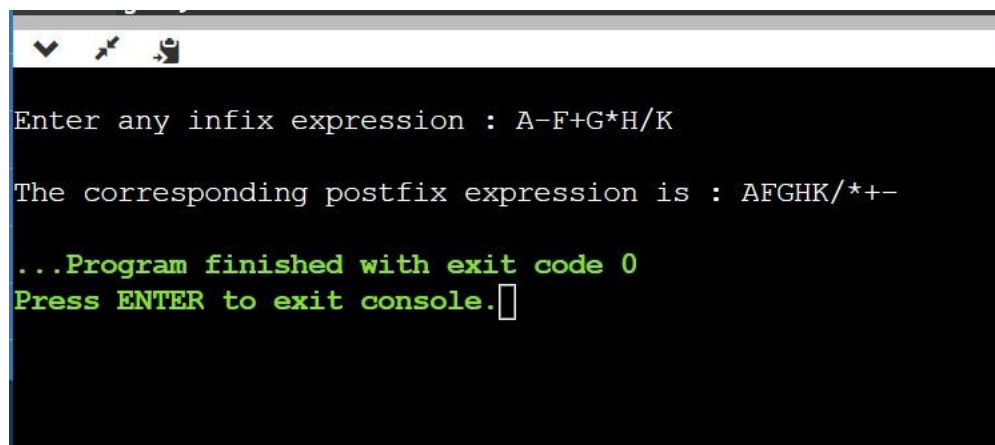
```
val= st[top];  
top--;  
}  
return val;  
}
```

Output:



A screenshot of a terminal window with a title bar that includes a close button, a maximize button, and a button labeled 'input'. The terminal has a black background with white text. It displays the prompt 'Enter any infix expression : ' followed by the input 'A+B+C-(D+G-K*F)+T'. Below this, it shows 'The corresponding postfix expression is : ABCDGKF*--+T+--+'. At the bottom, it says '...Program finished with exit code 0' and 'Press ENTER to exit console.' with a cursor.

```
input  
Enter any infix expression : A+B+C-(D+G-K*F)+T  
The corresponding postfix expression is : ABCDGKF*--+T+--  
...Program finished with exit code 0  
Press ENTER to exit console.
```



A screenshot of a terminal window with a title bar that includes a close button, a maximize button, and a button labeled 'input'. The terminal has a black background with white text. It displays the prompt 'Enter any infix expression : ' followed by the input 'A-F+G*H/K'. Below this, it shows 'The corresponding postfix expression is : AFGHK/*+-'. At the bottom, it says '...Program finished with exit code 0' and 'Press ENTER to exit console.' with a cursor.

```
input  
Enter any infix expression : A-F+G*H/K  
The corresponding postfix expression is : AFGHK/*+-  
...Program finished with exit code 0  
Press ENTER to exit console.
```

**Conclusion: The input infix expression is converted into a
Postfix expression using stack.**