

## DS LAB

### Program and Output

Mallika Prasad

1BM19CS081

#### ***Program-***

```
#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;
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 valid infix expression \n");

scanf("%s",infix);

infix_postfix(infix,postfix);

printf("the postfix expression is \n");

printf("%s\n", postfix);

return 0;
}

```

## Output-



The screenshot shows a C++ IDE with a file named 'main.cpp'. The code in the editor is as follows:

```

81
82 s[++top]='#';
83
84 j=0;
85
86 for(i=0;i<strlen(infix);i++)
87 {
88     {
89     symbol=infix[i];
90     while(F(s[top])>G(symbol))
91     {
92     while(F(s[top])>G(symbol))
93     {

```

The IDE's output window shows the following text:

```

enter valid infix expression
((a+b)*c-(d-e))^(f+g)
the postfix expression is
ab+c*de--fg+^
...Program finished with exit code 0
Press ENTER to exit console.

```

The output window also shows a green checkmark icon in the bottom right corner, indicating successful execution.

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main.cpp  
81  
82 s[++top]='#';  
83  
84 j=0;  
85  
86 for(i=0;i<strlen(infix);i++)  
87 {  
88  
89  
90 symbol=infix[i];  
91  
92 while(F[s[top]]>G(symbol))  
93

Language C++

input  
enter valid infix expression  
a+b\*(c^d-e)^(f+g\*h)-i  
the postfix expression is  
abcd^e-fgh\*+^\*+i-  
  
...Program finished with exit code 0  
Press ENTER to exit console