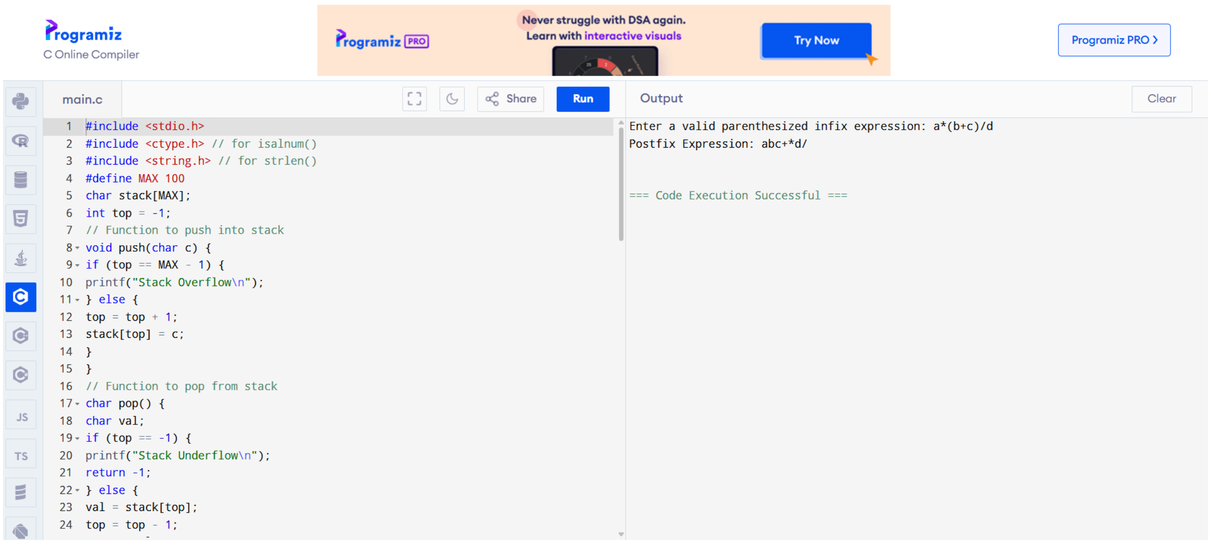
**WAP to convert a given valid parenthesized infix arithmetic expression to postfix expression. The expression consists of single character operands and the binary operators + (plus), - (minus), * (multiply) and / (divide)**

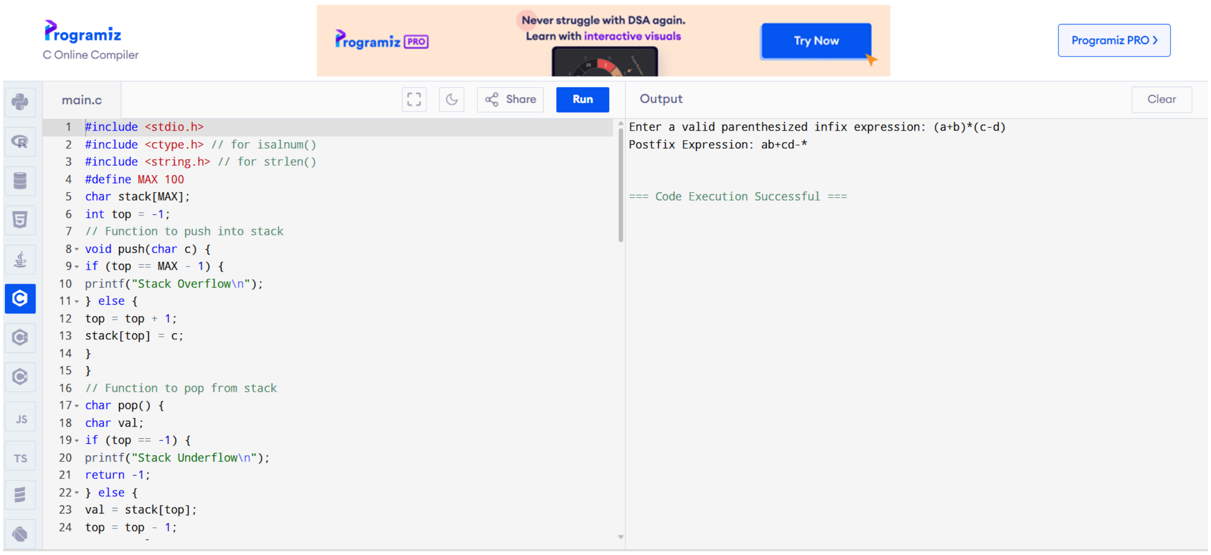
```
#include <stdio.h>
#include <ctype.h>
#include <string.h>
#define MAX 100
char stack[MAX];
int top = -1;
void push(char c) {
if (top == MAX - 1) {
printf("Stack Overflow\n");
} else {
top = top + 1;
stack[top] = c;
}
}
char pop() {
char val;
if (top == -1) {
printf("Stack Underflow\n");
return -1;
} else {
val = stack[top];
top = top - 1;
return val;
}
}
char peek() {
if (top == -1)
return '\0';
return stack[top];
}
int precedence(char c) {
if (c == '+' || c == '-') return 1;
if (c == '*' || c == '/') return 2;
if(c==’^’)return 3;
return 0;
}
void infixToPostfix(char infix[], char postfix[]) {
int i, k = 0;
char c;
for (i = 0; infix[i] != '\0'; i++) {
c = infix[i];
if (isalnum(c)) {
postfix[k] = c;
k = k + 1;
}
else if (c == '(') {
push(c);
}
else if (c == ')') {
while (top != -1 && peek() != '(') {
postfix[k] = pop();
k = k + 1;
}
pop();
}

else {
while (top != -1 && precedence(peek()) >= precedence(c)) {
postfix[k] = pop();
k = k + 1;
}
push(c);
}
}
while (top != -1) {
postfix[k] = pop();
k = k + 1;
}
postfix[k] = '\0';
}
int main() {
char infix[MAX], postfix[MAX];
printf("Enter a valid parenthesized infix expression: ");
scanf("%s", infix);
infixToPostfix(infix, postfix);
printf("Postfix Expression: %s\n", postfix);
return 0;
}
```

## Output



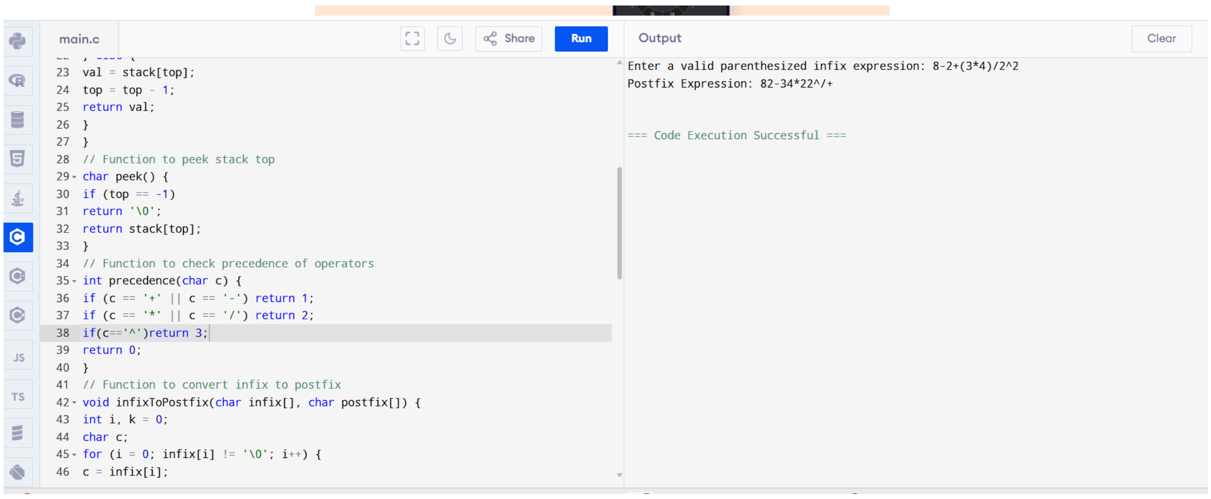
```c
#include <stdio.h>
#include <ctype.h> // for isalnum()
#include <string.h> // for strlen()
#define MAX 100
char stack[MAX];
int top = -1;
// Function to push into stack
void push(char c) {
if (top == MAX - 1) {
printf("Stack Overflow\n");
} else {
top = top + 1;
stack[top] = c;
}
}
// Function to pop from stack
char pop() {
char val;
if (top == -1) {
printf("Stack Underflow\n");
return -1;
} else {
val = stack[top];
top = top - 1;
```

```
Enter a valid parenthesized infix expression: a*(b+c)/d
Postfix Expression: abc+*d/


=== Code Execution Successful ===
```



```c
#include <stdio.h>
#include <ctype.h> // for isalnum()
#include <string.h> // for strlen()
#define MAX 100
char stack[MAX];
int top = -1;
// Function to push into stack
void push(char c) {
if (top == MAX - 1) {
printf("Stack Overflow\n");
} else {
top = top + 1;
stack[top] = c;
}
}
// Function to pop from stack
char pop() {
char val;
if (top == -1) {
printf("Stack Underflow\n");
return -1;
} else {
val = stack[top];
top = top - 1;
```

```
Enter a valid parenthesized infix expression: (a+b)*(c-d)
Postfix Expression: ab+cd-*


=== Code Execution Successful ===
```



```c
val = stack[top];
top = top - 1;
return val;
}
}
// Function to peek stack top
char peek() {
if (top == -1)
return '\0';
return stack[top];
}
// Function to check precedence of operators
int precedence(char c) {
if (c == '+' || c == '-') return 1;
if (c == '*' || c == '/') return 2;
if(c=='^')return 3;
return 0;
}
// Function to convert infix to postfix
void infixToPostfix(char infix[], char postfix[]) {
int i, k = 0;
char c;
for (i = 0; infix[i] != '\0'; i++) {
c = infix[i];
```

```
Enter a valid parenthesized infix expression: 8-2+(3*4)/2^2
Postfix Expression: 82-34*22^/+


=== Code Execution Successful ===
```