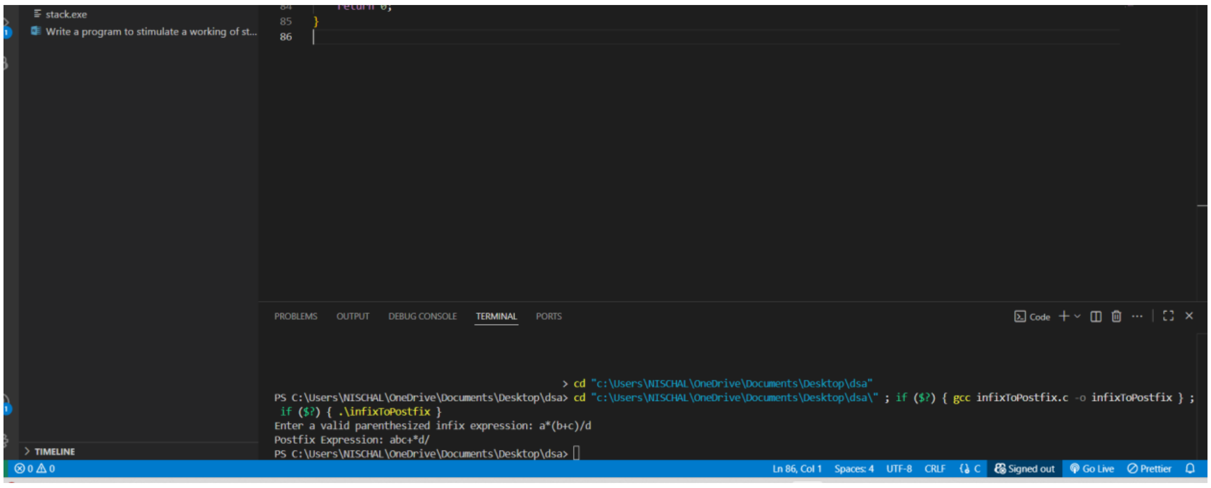
WAP to convert a given valid parenthesized infix arithmetic expression to postfix expression. The expression consists of single character operands and the binary operators + (plus), - (minus), * (multiply) and / (divide)

```
#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];
```

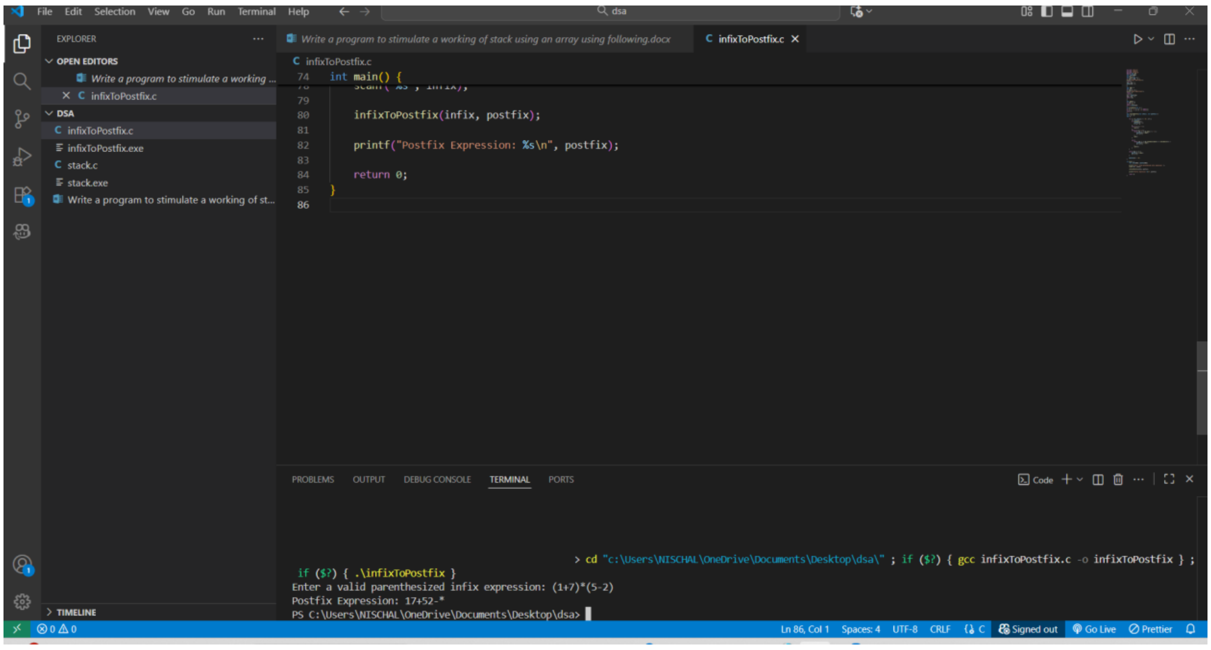
```c
}
int precedence(char c) {
if (c == '+' || c == '-') return 1;
if (c == '*' || c == '/') return 2;
return 0;
}
void infixToPostfix(char infix[], char postfix[]) {
int i, k = 0;
char c;

    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



```
    return 0;
}
```

```
                                                 > cd "c:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa"
PS C:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa> cd "c:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa\" ; if ($?) { gcc infixToPostfix.c -o infixToPostfix } ;
 if ($?) { .\infixToPostfix }
Enter a valid parenthesized infix expression: a*(b+c)/d
Postfix Expression: abc+*d/
PS C:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa>
```



```
int main() {
    infixToPostfix(infix, postfix);

    printf("Postfix Expression: %s\n", postfix);

    return 0;
}
```

```
                                                  > cd "c:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa\" ; if ($?) { gcc infixToPostfix.c -o infixToPostfix } ;
 if ($?) { .\infixToPostfix }
Enter a valid parenthesized infix expression: (1+7)*(5-2)
Postfix Expression: 17+52-*
PS C:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa>
```