









**Program Code:**

#include <iostream>

#include <stdlib.h>

#include <string.h>

#include <ctype.h>

using namespace std;

struct node {

int data;

struct node \* next;

};

struct node \* top = NULL;

/\* create a new node with the given data \*/

struct node \* createNode(int data) {

struct node \* ptr = (struct node \* ) malloc(sizeof(struct node));

ptr -> data = data;

ptr -> next = NULL;

}

/\* push the input data into the stack \*/

void push(int data) {

struct node \* ptr = createNode(data);

if (top == NULL) {

top = ptr;

return;

}

ptr -> next = top;

top = ptr;

}

/\* pop the top element from the stack \*/

int pop() {

int data;

struct node \* temp;

if (top == NULL)

return -1;

data = top -> data;

temp = top;

top = top -> next;

free(temp);

return (data);

}

int main() {

// 6 2 \* 3 4 10 / - +

char str[100];

int i, data = -1, operand1, operand2, result;

/\* i/p postfix expr from the user \*/

cout << "Enter your postfix expression: ";

fgets(str, 100, stdin);

for (i = 0; i < strlen(str); i++) {

if (isdigit(str[i])) {

/\* if the i/p char is digit, parse character by character to get complete operand\*/

data = (data == -1) ? 0 : data;

data = (data \* 10) + (str[i] - 48);

continue;

}

/\* push the operator into the stack \*/

if (data != -1) {

push(data);

}

if (str[i] == '+' || str[i] == '-' || str[i] == '\*' || str[i] == '/') {

/\*

\* if the i/p character is an operator,

\* then pop two elements from the stack,

\* apply operator and push the result into

\* the stack

\*/

operand2 = pop();

operand1 = pop();

if (operand1 == -1 || operand2 == -1)

break;

switch (str[i]) {

case '+':

result = operand1 + operand2;

/\* pushing result into the stack \*/

push(result);

break;

case '-':

result = operand1 - operand2;

push(result);

break;

case '\*':

result = operand1 \* operand2;

push(result);

break;

case '/':

result = operand1 / operand2;

push(result);

break;

}

}

data = -1;

}

if (top != NULL && top -> next == NULL)

cout << "Output:" << top -> data;

else

cout << "You have entered wrong expression\n";

return 0;

}

**Program Output:**

