S.No: 38	Exp. Name: ***Write a C program to Convert an Infix expression into Postfix expression***	Date:2023-06-24

Aim:

Source Code:

Infix2PostfixMain.c

```
#include<stdlib.h>
#include<string.h>
#include<stdio.h>
#include<ctype.h>
#define STACK_MAX_SIZE 20
char stack [STACK_MAX_SIZE];
int top = -1;
int isEmpty()
{
   if(top<0)
   return 1;
   else
   return 0;
}
void push(char x)
{
   if(top == STACK_MAX_SIZE - 1)
   {
      printf("Stack is overflow.\n");
   }
   else
   {
      top = top + 1;
      stack[top] = x;
   }
}
char pop()
{
   if(top < 0)
   {
      printf("Stack is underflow : unbalanced parethesis\n");
      exit(0);
   }
   else
   return stack[top--];
}
int priority(char x)
{
   if(x == '(')
   return 0;
   if(x == '+' || x == '-')
   return 1;
   if(x == '*' || x =='/' || x == '%')
   return 2;
}
void convertInfix(char * e)
```


ID: 224G1A0540

Srinivasa Ramanujan Institute of Technology

```
{
   int x;
   int k=0;
   char * p = (char *)malloc(sizeof(char)*strlen(e));
   while(*e !='\0')
   {
      if(isalnum(*e))
      p[k++]=*e;
      else if(*e == '(')
      push(*e);
      else if(*e == ')')
      {
         while(!isEmpty() && (x = pop()) !='(')
         p[k++]=x;
      }
      else if(*e == '+' || *e == '-' || *e == '*' || *e == '/' || *e == '%')
      {
         while(priority(stack[top]) >= priority(*e))
         p[k++]=pop();
         push(*e);
      }
      else
      {
         printf("Invalid symbols in infix expression. Only alphanumeric and { '+', '-
','*', '%%', '/' } are allowed.\n");
         exit(0);
      }
      e++;
   }
   while(top != -1)
   {
      x=pop();
      if(x == '(')
      {
         printf("Invalid infix expression : unbalanced parenthesis.\n");
         exit(0);
      }
      p[k++]=x;
   }
   p[k++]='\0';
   printf("Postfix expression : %s\n",p);
}
int main()
{
   char exp[20];
   char *e, x;
   printf("Enter the expression : ");
   scanf("%s",exp);
   e = exp;
   convertInfix(e);
}
```

Execution Results - All test cases have succeeded!

Test Case - 1

User Output
Enter the expression : A+B*(C-D)
Postfix expression : ABCD-*+

Test Case - 2
User Output
Enter the expression : A+B*C
Postfix expression : ABC*+