#include<stdio.h> //standard I/O header file

#include<stdlib.h> //standard library header file

#include<ctype.h>

#include<string.h>

#define max 100 //declaring the size to 5

int top=-1, a[max];

void push(char x) //push function

{

a[++top]=x;

}

char pop() //pop function

{

if(top==-1)

return -1;

else

return a[top--];

}

int prcd(char c) //precedence function

{

if(c==')') //checks the condition and enters the while loop

return 0;

else if(c=='+'||c=='-') //checks the condition and enters the while loop

return 1;

else if(c=='\*'||c=='/') //checks the condition and enters the while loop

return 2;

}

void strrev(char \*exp)

{

char temp[50];

int size=strlen(exp);

temp[size--]='\0';

int i=0;

while(exp[i]!='\0')

{

temp[size]=exp[i];

i++;

size--;

}

strcpy(exp,temp);

}

void infixtoprefix(char infix[max],char prefix[max]) //infix to prefix function

{

char temp,x; //declaring temporary element

int i=0,j=0;

strrev(infix);

while(infix[i]!='\0') //checks the condition and enters the while loop

{

temp=infix[i];

if(isalnum(temp)) //checks the condition and enters the while loop

{

prefix[j++]=temp;

}

else if(temp==')') //checks the condition and enters the while loop

push(temp);

else if(temp=='(') //checks the condition and enters the while loop

{

while((x=pop())!=')') //checks the condition and enters the while loop

{

prefix[j++]=x;

}

}

else //checks the condition and enters the while loop

{

while(prcd(a[top])>=prcd(temp)) //checks the condition and enters the while loop

{

prefix[j++]=pop();}

push(temp);

}

i++;

}

while(top!= -1) //checks the condition and enters the while loop

prefix[j++]=pop();

prefix[j]='\0';

strrev(prefix);

}

int main() //main fuction

{

char infix[max],prefix[max];

printf("Enter the infix expression\n"); //printing statement

scanf("%s",infix);

printf("The infix expression is %s\n",infix); //printing statement

infixtoprefix(infix, prefix);

printf("The prefix expression is %s\n",prefix); //printing statement

return 0;

}