

EXPERIMENT 3

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#include<stdio.h>
#include<stdlib.h>
#include<ctype.h>
#include<string.h>

#define SIZE 100
char stack[SIZE];
int top = -1;

/*Push operation*/
void push(char item)
{
    if(top >= SIZE-1)
    {
        printf("\n Stack Overflow.");
    }
    else
    {
        top = top+1;
        stack[top] = item;
    }
}

/*Pop operation*/
char pop()
{
    char item ;

    if(top <0)
    {
        printf("stack under flow: invalid infix expression");
        getchar();
        exit(1);
    }
    else
    {
        item = stack[top];
        top = top-1;
        return(item);
    }
}
```

```

int is_operator(char symbol)
{
    if(symbol == '^' || symbol == '*' || symbol == '/' || symbol == '+' || symbol == '-')
    {
        return 1;
    }
    else
    {
        return 0;
    }
}

```

```

int precedence(char symbol)
{
    if(symbol == '^')
    {
        return(3);
    }
    else if(symbol == '*' || symbol == '/')
    {
        return(2);
    }
    else if(symbol == '+' || symbol == '-')
    {
        return(1);
    }
    else
    {
        return(0);
    }
}

```

```

void InfixToPostfix(char infix_exp[], char postfix_exp[])
{
    int i, j;
    char item;
    char x;

    push('(');
    strcat(infix_exp, "");
    i=0;
    j=0;
    item=infix_exp[i];

```

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while(item != '\0')
{
    if(item == '(')
    {
        push(item);
    }
    else if( isdigit(item) || isalpha(item))
    {
        postfix_exp[j] = item;
        j++;
    }
    else if(is_operator(item) == 1)
    {
        x=pop();
        while(is_operator(x) == 1 && precedence(x)>= precedence(item))
        {
            postfix_exp[j] = x;
            j++;
            x = pop();
        }
        push(x);

        push(item);
    }
    else if(item == ')')
    {
        x = pop();
        while(x != '(')
        {
            postfix_exp[j] = x;
            j++;
            x = pop();
        }
    }
    else
    {
        printf("\nInvalid infix Expression.\n");
        getchar();
        exit(1);
    }
    i++;

    item = infix_exp[i];
}

```

```

    }
    if(top>0)
    {
        printf("\nInvalid infix Expression.\n");
        getchar();
        exit(1);
    }

    postfix_exp[j] = '\0';
}

int main()
{
    char infix[SIZE], postfix[SIZE];

    printf("\n Enter Infix expression : ");
    gets(infix);

    InfixToPostfix(infix,postfix);
    printf(" Postfix Expression: ");
    puts(postfix);

    return 0;
}

```

```
Activities Terminal Jul 31 15:09 dl0414@ltadmin: ~
dl0414@ltadmin:~$ gcc exp4.c
exp4.c: In function 'main':
exp4.c:148:2: warning: implicit declaration of function 'gets'; did you mean 'fgets'? [-Wimplicit-function-declaration]
  148 |   gets(infix);
      |   ^~~~~
      |   fgets
/usr/bin/ld: /tmp/ccNlg0F.o: in function 'main':
exp4.c:(.text+0x3a1): warning: the 'gets' function is dangerous and should not be used.
dl0414@ltadmin:~$ ./a.out
Enter Infix expression : (a+b)*c/d*e/f+g
Postfix Expression: ab+c*d/e*f/g+
dl0414@ltadmin:~$
```