Computer Systems Lab

Assignment-2

Date of Assignment: 10-Sept-2020 **Date of Submission: 16-Sept-2020**

1. In the assignment, we will learn how to convert an infix expression to a postfix expression. We know that the binary operators such as +, -, *, / having left-to-right associativity, i.e., **a + b + c = ((a + b) + c)**, whereas the binary operator exponent (denoted as ^) has right-to-left associativity, i.e., **a ^ b ^ c = (a ^ (b ^ c))**.

Precedence: ( ) > ^ > *, / > +, -

Write a C/C++ program that takes an Infix mathematical expression as input, and produces its equivalent Postfix expression as a comma separated form.

Input: Infix: (a – b)/c – d * e^(f–g)^(p+q)
Output: Postfix: a, b, –, c, /, d, e, f, g, –, p, q, +, ^, ^, *, –

Input: Infix: (a + b – c) * d – (e + f)
Output: Postfix: a, b, +, c, –, d, *, e, f, +, –

2. **Round-Robin Elimination Problem**: There are n people standing in a circle. In the first step, the counting starts at person 1 and proceeds around the circle, and the k-th person is eliminated. Next, the counting starts from the person next to the eliminated one, then k-1 people are skipped and the k-th person is eliminated. The elimination proceeds around the circle until the last person remains, who is the winner. Given n people and a number k, write a C program that outputs the winner.

Example 1: If n = 5 and k = 2, then the winner is person 3.

First, the person at position 2 is eliminated, then person at position 4 is eliminated, then person at position 1 is eliminated. Finally, the person at position 5 is eliminated. So the person at position 3 wins.

Example 2: If n = 7 and k = 3, then the winner is person 4.

First, the person at position 3 is eliminated, then person at position 6 is eliminated, then person at position 2 is eliminated, then person at position 2 is eliminated, then person at position 7 is eliminated. Finally, the person at position 1 is eliminated. So the person at position 4 wins.

Submission Instruction:

File Name: A2_Your Roll Number.c (A2_20CS06002.c or A2_20CS06002.cpp)
Mail to: joy@iitbbs.ac.in
Subject Line: A2_20CS06002