Homework #2

CS 500.001

Spring 2020

Intensive Programming Review

50 Points
Due: 02/20/2020, 11:59 PM

1. Write a program in Java to implement the following problem:
   Let there is *n* number of children standing in a circle playing a game. Arbitrarily one of them is designated as number 1 and others are numbered in a counter-clockwise fashion starting from the child with number 1. Then they choose a lucky number, say *m*. After that, they start counting from the child designated number 1 and counting proceeds in a clockwise manner until the *m*-th child is identified. Then the *m*-th child is eliminated from the circle and as a result the circle shrinks and then the counting for the next round begins. Consequently, after *n - 1* round of counting, only one child will be left, and this child is declared the winner of the game. **Use Singly Circular Linked List to implement this problem.** You can use Java Scanner class to take inputs from the user. The sample inputs/ outputs are given below:

   Sample inputs and outputs:
   (User's inputs are shown in **bold**)

   Enter the number of children: **5**
   The child designated as number 1: 3
   Enter the lucky number: **4**
   The winner is 1

2. Write a program in Java to take a mathematical expression (infix expression). Convert the infix expression to postfix expression, and then evaluate the postfix expression and print the final result. You can use Java ***Scanner*** class to take inputs from the user. The sample inputs/ outputs are given below:

   Sample inputs and outputs:
   (User's inputs are shown in **bold**)

   Enter the mathematical expression: **5+4*3-8/2**
   The postfix expression: 543*+82/-
   The final result: 13

Make a ZIP file of two .java files. Upload the ZIP file on WesternOnline Homework 2 page.