

Lab 4: Simulating a Simple Survivor Game with a Queue

Objective

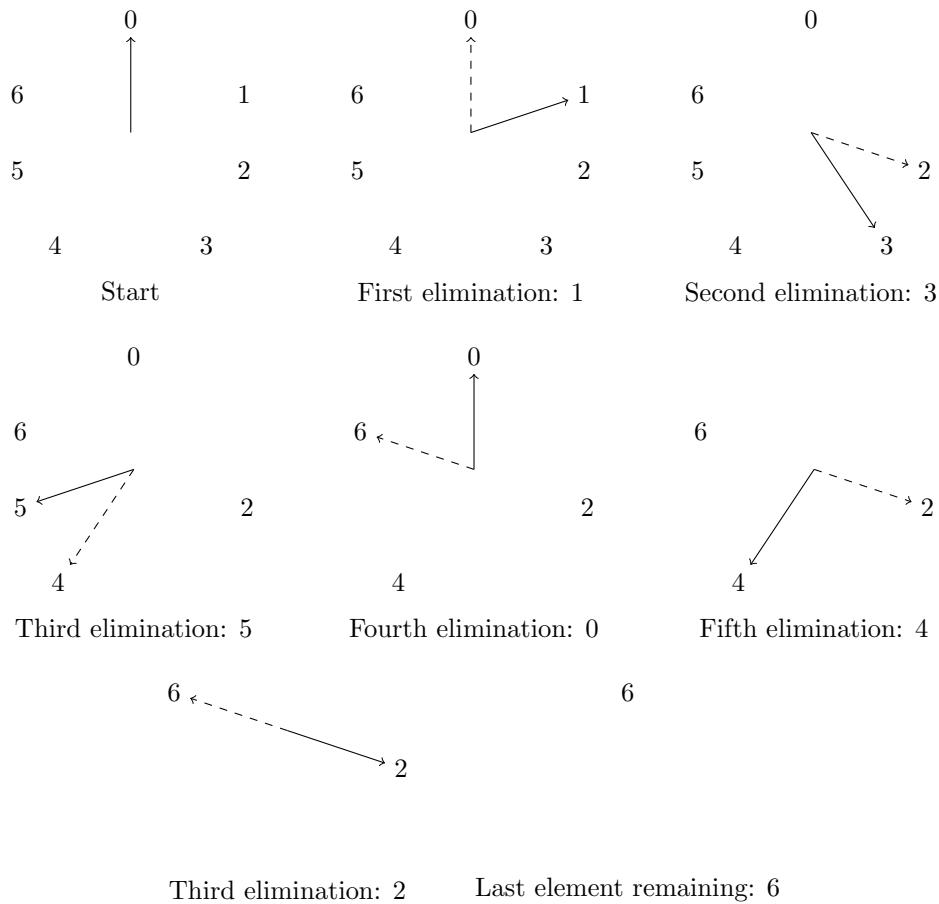
To simulate a simple survivor game with a queue.

Exercise

File `Lab4.java` contains an almost-complete application with a simple `Queue`. You need to add most of the body of the method `survivor`, which currently only prints some information.

The `survivor` method should simulate (using a queue) the survivor game. In this game, N people (numbered 0 to $N - 1$) stand in circle, then every k th person is counted out (leaves the circle), until only one person is left. At each elimination, you should print out the eliminated person's number.

For example, if there are 7 people ($N = 7$) and $k = 2$, then you should print out 1 3 5 0 4 2 6 because the circle changes as follows:



The code that you add to the `survivor` method must simulate the game using a queue to represent the circle of people. To do the eliminating, you must use the standard queue methods (`enter`, `leave`, `front`, and `isEmpty`) provided in the `Queue` class. You may not change the `Queue` class or the `main` method in any way.

Hint: You can keep eliminating until *no* people are left in the circle.

Sample output:

7 people numbered 0 to 6 stand in a circle.

Every second person is eliminated repeatedly until only one person is left.

The people are eliminated in the following order:

1 3 5 0 4 2 6 <== last person left

11 people numbered 0 to 10 stand in a circle.

Every third person is eliminated repeatedly until only one person is left.

The people are eliminated in the following order:

2 5 8 0 4 9 3 10 7 1 6 <== last person left

17 people numbered 0 to 16 stand in a circle.

Every 5-th person is eliminated repeatedly until only one person is left.

The people are eliminated in the following order:

4 9 14 2 8 15 5 12 3 13 7 1 0 6 11 16 10 <== last person left

Program ends normally.