CS 14 - Challenge Activity 1 (Josephus Problem)

Problem Description

From Wikipedia:

Josephus problem. In computer science and mathematics, the Josephus problem (or Josephus permutation) is a theoretical problem related to a certain counting-out game.

People are standing in a circle waiting to be executed. Counting begins at a specified point in the circle and proceeds around the circle in a specified direction. After a specified number of people are skipped, the next person is executed. The procedure is repeated with the remaining people, starting with the next person, going in the same direction and skipping the same number of people, until only one person remains, and is freed.

The problem — given the number of people, starting point, direction, and number to be skipped — is to choose the position in the initial circle to avoid execution.

The Josephus Problem -- I should note, this is a bit gruesome of a story. Rather than executions, I would like to modify it more like, say, Survivor: voting people off the island rather than killing people. The story has some history and can be found on Wikipedia (https://en.wikipedia.org/wiki/Josephus_problem).

Paea LePendu

Your Assignment

Use a linked list (hint: circularly linked list) to solve the Josephus problem, which is, “Who is the last person standing?"

Input:

- **n**: the number of people in the initial circle;
- a file, that contains names of people in the circle
  (each name is a string, written on a new line)
- the number of a person to start counting from;
- **k**: how many people to skip (if k = 2, then every second person is to be executed)

Output: the name of the lucky survivor

Submission/Demo Instructions

You do not need to submit your assignment. Demo it to any TA during the lab or office hours by the assigned date (see #Syllabus in Slack).

If you spent at least 3 hours, but were not able to complete the assignment, please provide the following information:

- how much time you spent,
- what you were able to accomplish,
- what remains to be done.