# DSA assignment #02
Modified Josephus Problem Implementation

Problem Description:

During the Jewish revolt against Rome, Josephus and 39 of his companions were hiding in a cave from the Romans. With defeat looming, they decided, like the rebels at Masada, that they would rather die than become Roman slaves. They made the decision to form a circle. One man was assigned as number one, and they proceeded to kill every second man clockwise... According to the account, Josephus was an expert mathematician, so he immediately figured out where he should sit in order to be the last to leave. But when the moment came, instead of murdering himself, he sided with the Romans.

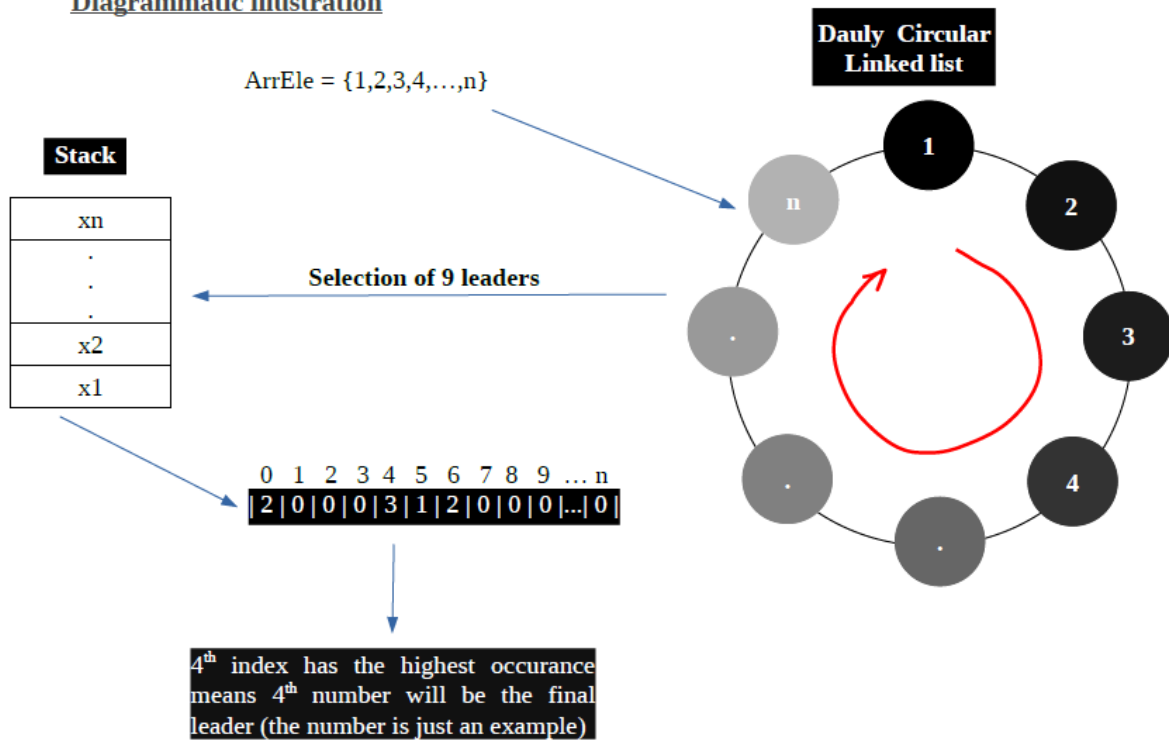**Question**: If there are 16 people, which position will Joseph choose to save himself?
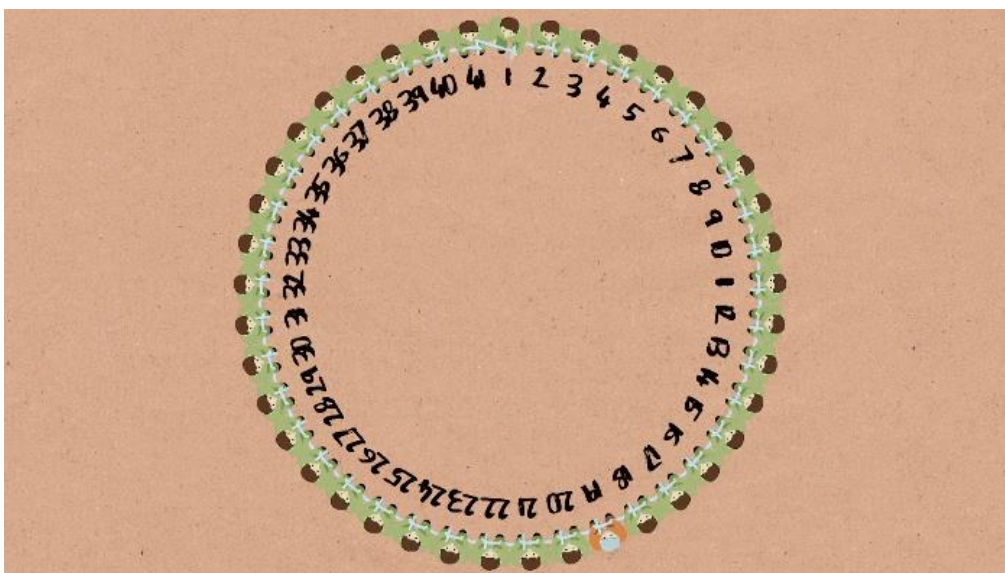
I have slightly changed the elimination criteria in order to make this assignment.

New description:

The immediate clockwise killing after skipping **"m"** people is no longer used. Now we will repeat the process of selecting the leader (the last one) and saving the record in the stack **"n"** times. The number **"n"** denotes the number of comrades in the circle. When a leader is chosen, the number of skipped comrades "m" is updated (**m**++). In other words, the value of **"m"** in the first leader pick will be 1. Similarly, the value of "m" in the selection of the second leader will be 2, and so on until the ninth leader is chosen. Now you find out which leader is chosen most frequently, using information from the stack.

Diagrammatic illustration

Stack

ArrEle = {1,2,3,4,...,n}

Dauly Circular Linked list

Selection of 9 leaders

| xn |
| . |
| . |
| . |
| x2 |
| x1 |

n

1

2

3

4

0 1 2 3 4 5 6 7 8 9 ... n
| 2 | 0 | 0 | 0 | 3 | 1 | 2 | 0 | 0 | 0 |...| 0 |

4th index has the highest occurance means 4th number will be the final leader (the number is just an example)

Instructions:

- Implement this problem using data structures such as **Arrays**, **Dually Circular Linked List** and **Stack**.
- Implement using C++
- Do not use built-in functions
- Do not copy from each other

The end
Best of luck