Last man standing

You need to be alert to (usually minor) changes that may be made to the assignment statement or to the guidelines after the assignment is first put up. Refresh this frame and re-read the assignment carefully before you make your final submission.
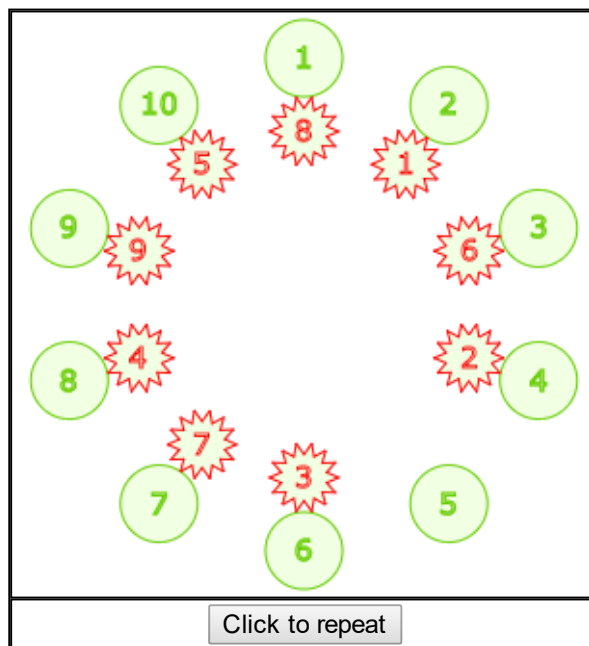
Scheme

- We start with *n* people numbered 1 to *n* around a circle
- We eliminate every second remaining person until only one survives

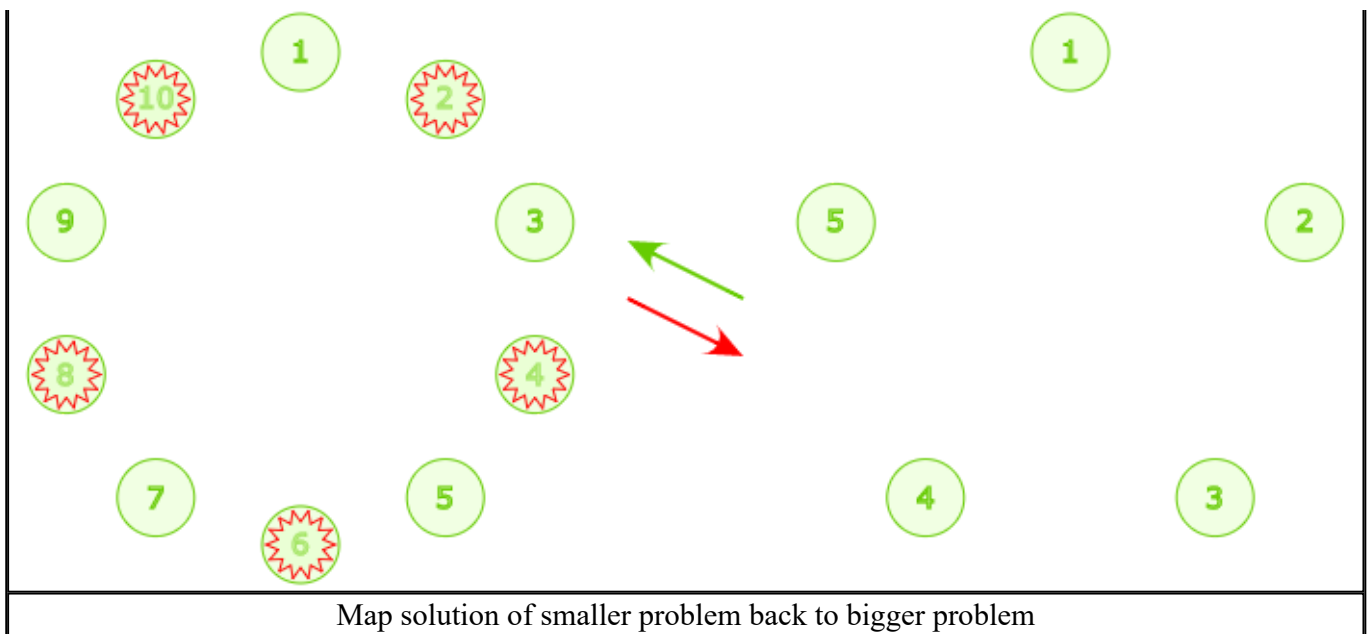Task is to compute the position of the survivor as $V(n)$.

Example, n=10

- Let 10 people stand in a circle.
- The elimination order is: 2, 4, 6, 8, 10, 3, 7, 1, 9 .
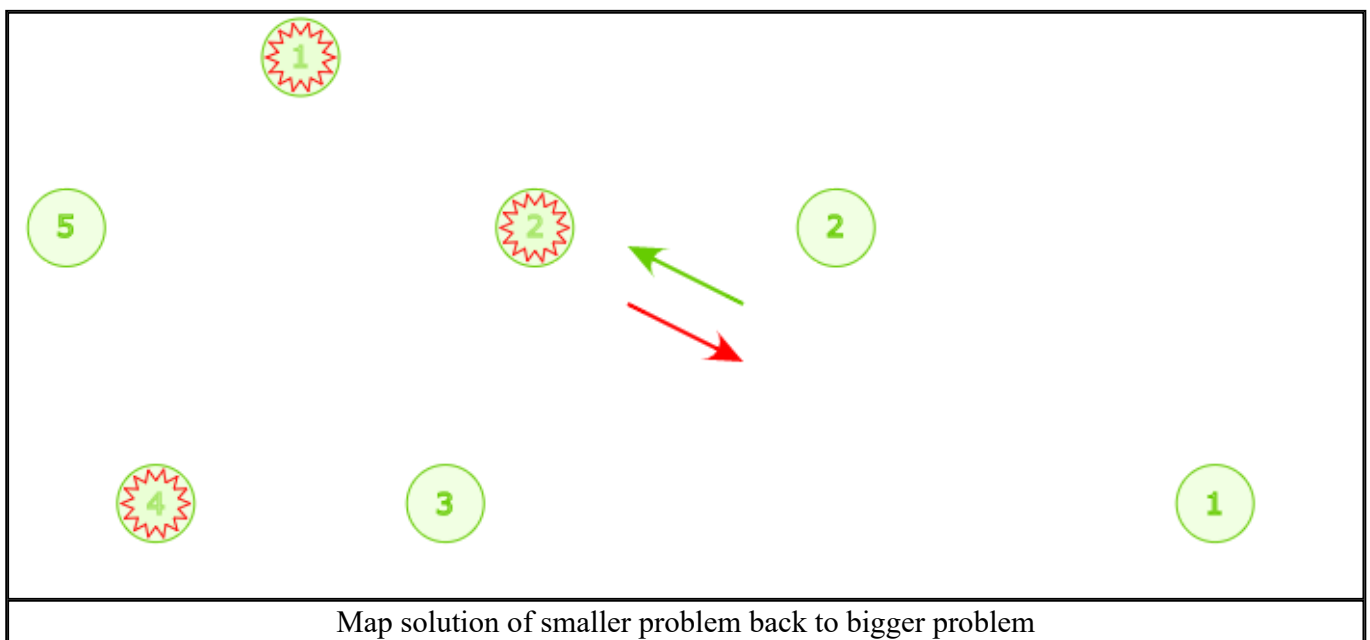- So, we have $V(10) = 5$

Click to repeat

Solution approach

Reduction for even number of people

Map solution of smaller problem back to bigger problem

Reduction for odd number of people

Map solution of smaller problem back to bigger problem

Assignment statement

Write a program to generate the elimination order according to the given scheme, but preferably without using an array (or linked list), and thereby determine the survivor.

Check both programmatically and analytically whether the survivor position can be obtained as: $V(2^m + l) = 2l + 1$, for $m \geq 0$ and $0 \leq l < 2m$.

Marking Guidelines

Assignment marking is to be done only **after** the deadline expires, as submissions gets blocked after the assignment is marked.

Program for elimination order	5
Generating elimination order without using an array	5
Programmatic check of formula for for survivor position	5

Analytical check of formula for for survivor position (to be given in the report)	**5**
Total Marks	*20*

Assignment submission

You need to submit a program file for the assignment and the report.

Use electronic submission via the WBCM link

You should keep submitting your incomplete assignment from time to time after making some progress, as you can submit any number of times before the deadline expires.

Warning

Cases of copying will be dealt with seriously and severely, with recommendation to the Dean to de-register the student from the course.