DSA LAB
Experiment number 10

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Aim: Implementation of Josephus Problem using Circular LL.

Theory:

There are n people standing in a circle waiting to be executed. The counting out begins at some point in the circle and proceeds around the circle in a fixed direction. In each step, a certain number of people are skipped and the next person is executed. The elimination proceeds around the circle (which is becoming smaller and smaller as the executed people are removed), until only the last person remains, who is given freedom. Given the total number of persons n and a number k which indicates that k-1 persons are skipped and k^{th} person is killed in circle. The task is to choose the place in the initial circle so that you are the last one remaining and so survive.

For example, if n = 5 and k = 2, then the safe position is 3. Firstly, the person at position 2 is killed, then person at position 4 is killed, then person at position 1 is killed. Finally, the person at position 5 is killed. So the person at position 3 survives.

Algorithm:

Step 1: START
Step 2: Create circular singly linked list with id and next pointer as elements of node
Step 3: Set id of node same as the position of node
Step 4: Repeat steps 5, 6 while there is more than one node in the list
Step 5:   move forward k nodes in the list
Step 6:   delete the node
Step 7: Print the id of only remaining node as winner
Step 8: EXIT