Circularly-linked lists

- The next field in the last node in a singly-linked list is set to NULL.
- Moving along a singly-linked list has to be done in a watchful manner.
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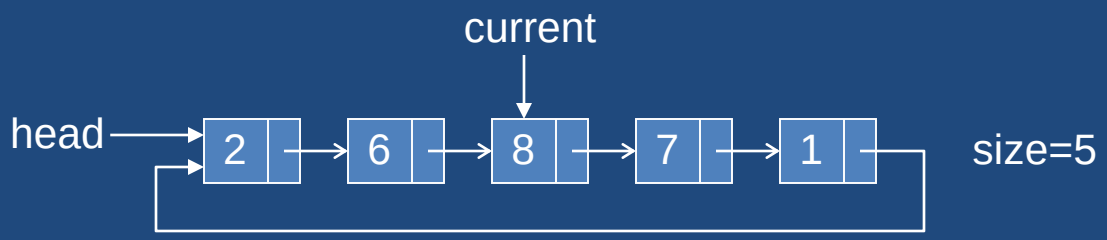
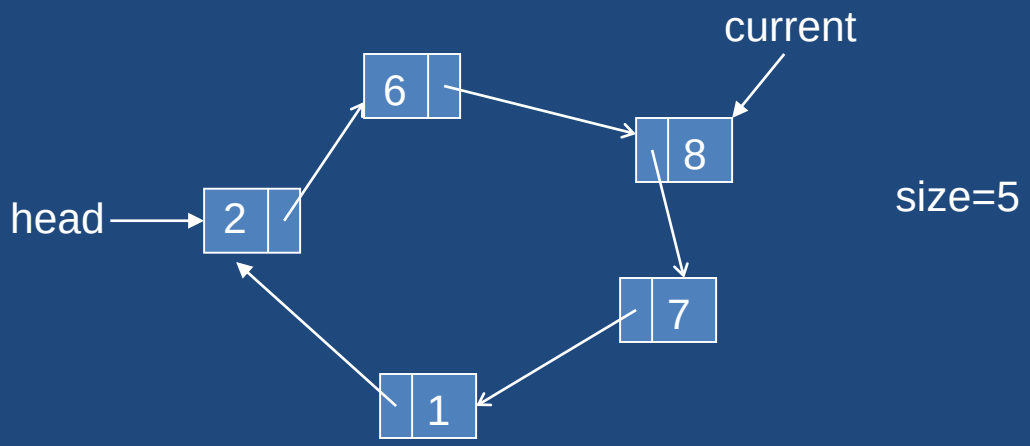
Cicularly Linked List

- Two views of a circularly linked list:





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- The count starts with the fifth and the next person to go is the fourth in count.
- Eventually, a single person remains.

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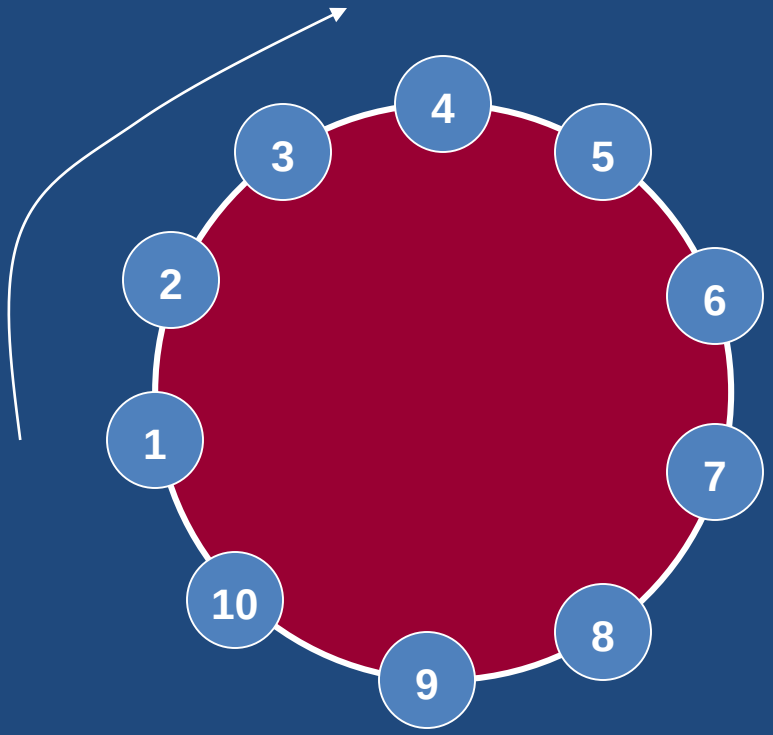

Josephus Problem

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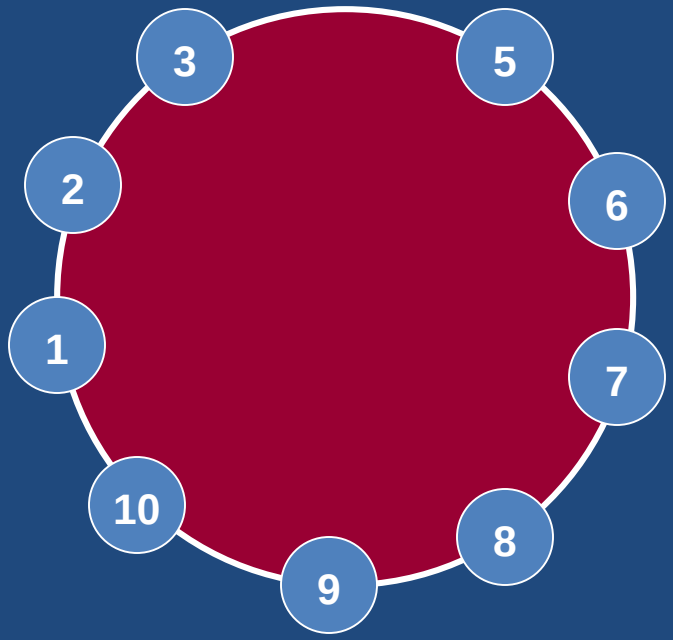
eliminated

4



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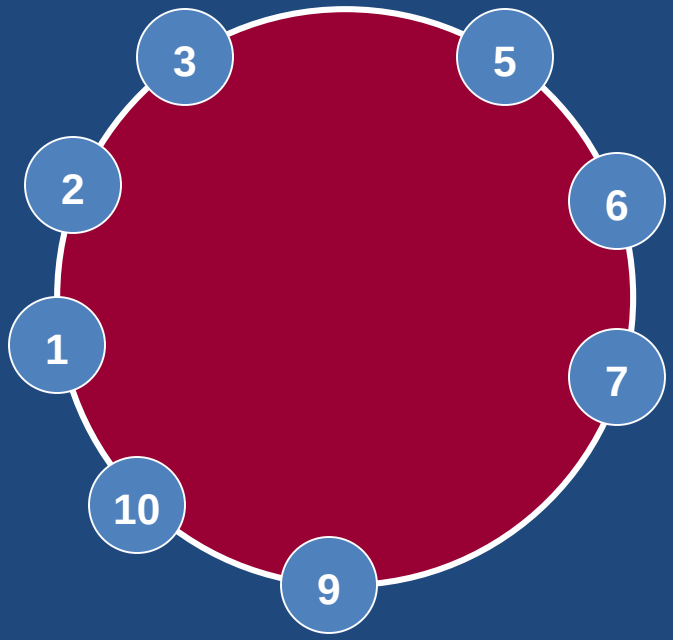

eliminated

4

8

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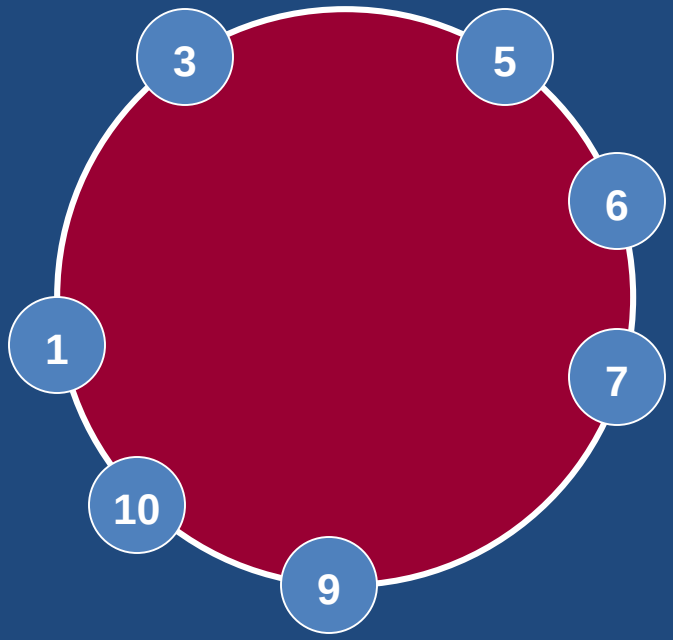

eliminated

4

8

2

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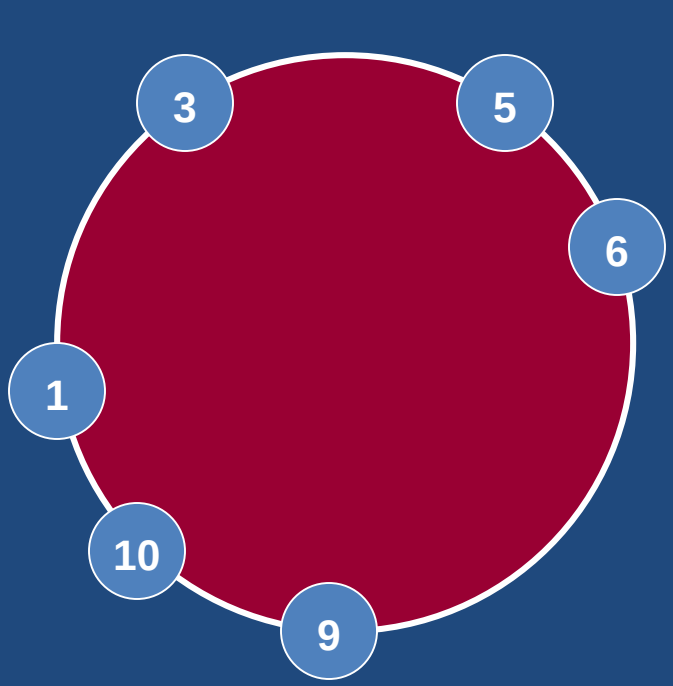

eliminated

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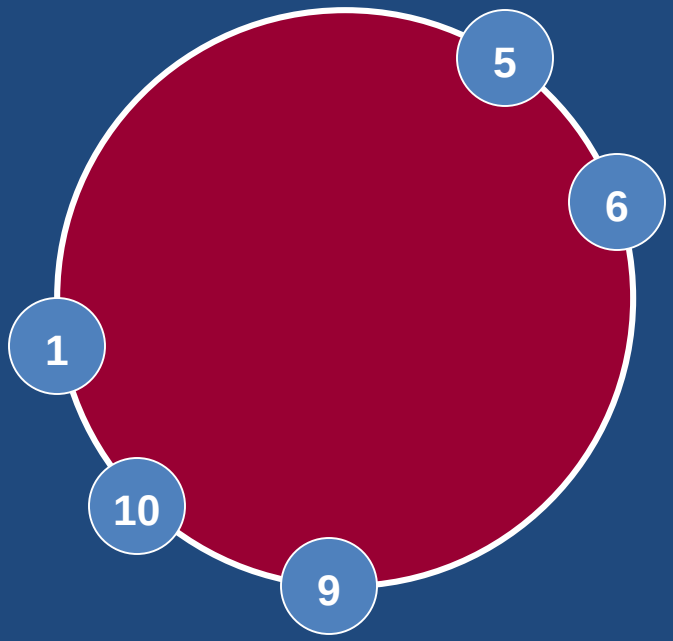

eliminated

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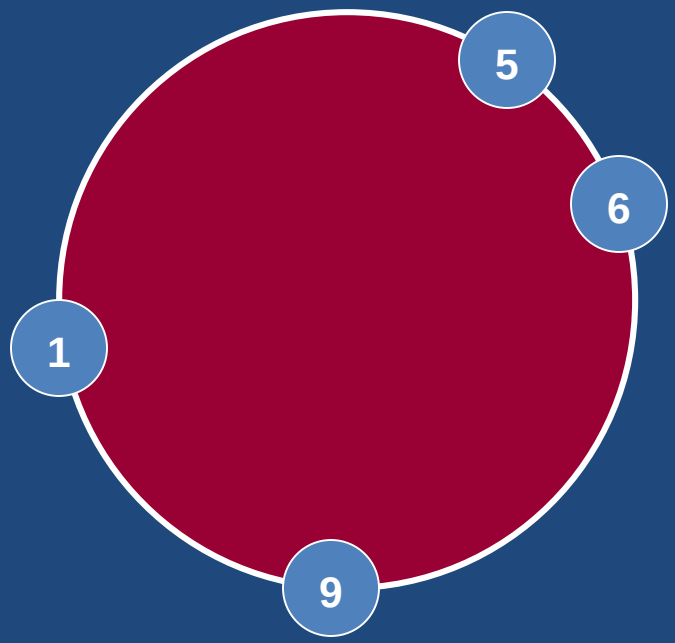

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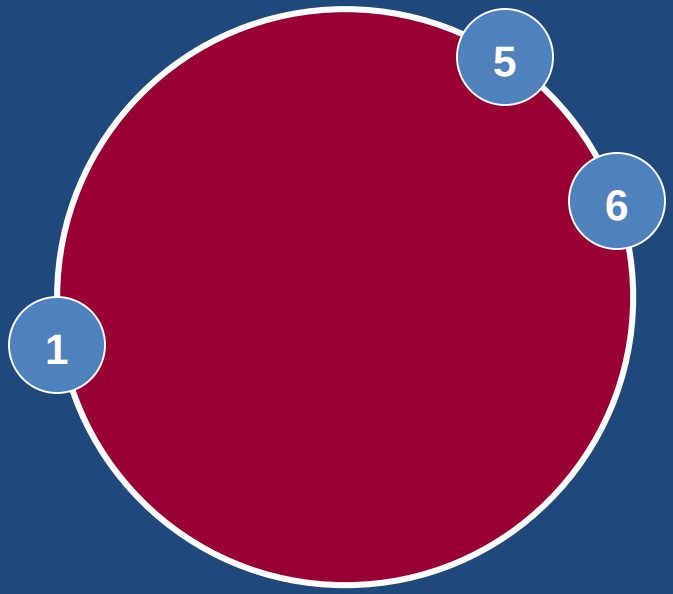

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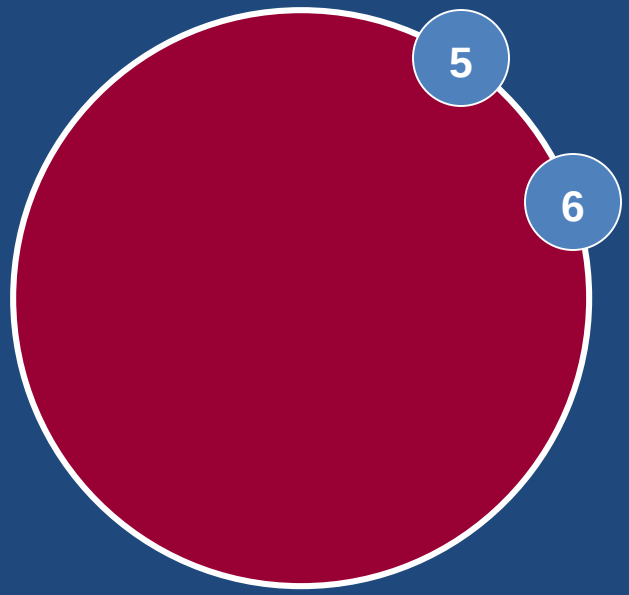

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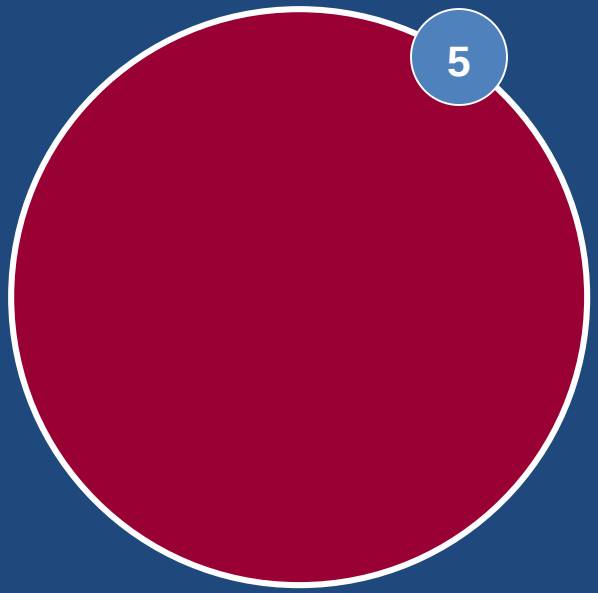

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#include "CList.cpp"
void main(int argc, char *argv[])
{
    CList list;
    int i, N=10, M=3;
    for(i=1; i <= N; i++ ) list.add(i);

    list.start();
    while( list.length() > 1 ) {
        for(i=1; i <= M; i++ ) list.next();
        cout << "remove: " << list.get() << endl;
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// Add elements in the list
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   for(i=1; i <= N; i++ ) list.add(i);

//Start josephus selection

   list.start();
   while( list.length() > 1 )
       for(i=1; i <= M; i++ ) list.next();
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       list.remove();

   cout << "leader is: " << list.get() << endl;
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- This illustrates the fact that the choice of the appropriate data structures can significantly simplify an algorithm. It can make the algorithm much faster and efficient.