Circular Singly Linked List

1. Insert a Node at the Beginning

Problem: Write a function to insert a node at the beginning of a circular singly linked list.

Explanation:

- Input: Existing list 1 -> 2 -> 3 -> (head) and new node with value 0
- Output: 0 -> 1 -> 2 -> 3 -> (head)

2. Insert a Node at the End

Problem: Write a function to insert a node at the end of a circular singly linked list.

Explanation:

- Input: Existing list 1 -> 2 -> 3 -> (head) and new node with value 4
- Output: 1 -> 2 -> 3 -> 4 -> (head)

3. Delete a Node from the Beginning

Problem: Write a function to delete a node from the beginning of a circular singly linked list.

Explanation:

- Input: 1 -> 2 -> 3 -> (head)
- Output: 2 -> 3 -> (head)

4. Delete a Node from the End

Problem: Write a function to delete a node from the end of a circular singly linked list.

Explanation:

- Input: 1 -> 2 -> 3 -> (head)
- Output: 1 -> 2 -> (head)

5. Find the Length of the Circular Singly Linked List

Problem: Write a function to find the length of a circular singly linked list.

Explanation:

- Input: 1 -> 2 -> 3 -> (head)
- Output: 3

6. Traverse and Print the Circular Singly Linked List

Problem: Write a function to traverse and print all the elements of a circular singly linked list.

Explanation:

- Input: 1 -> 2 -> 3 -> (head)
- Output: 1 2 3

7. Search for an Element

Problem: Write a function to search for an element in a circular singly linked list.

Explanation:

- Input: List 1 -> 2 -> 3 -> (head), element 2
- Output: true

8. Split a Circular Singly Linked List into Two Halves

Problem: Write a function to split a circular singly linked list into two halves.

Explanation:

- Input: 1 -> 2 -> 3 -> 4 -> 5 -> 6 -> (head)
- Output: Two lists: 1 -> 2 -> 3 -> (head) and 4 -> 5 -> 6 -> (head)

9. Convert a Circular Singly Linked List to a Circular Doubly Linked List

Problem: Write a function to convert a circular singly linked list to a circular doubly linked list.

Explanation:

- Input: 1 -> 2 -> 3 -> (head)
- Output: 1 <-> 2 <-> 3 <-> (head)