# Circularly Linked Lists

## Lecture 22
## Section 17.5

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# Outline

# Circularly Linked Lists

## Definition (Circularly Linked List)

A circularly linked list is a doubly linked list in which one additional node (the “dummy” node) is allocated, whose pointers serve as the head and tail pointers. The dummy node’s `m_value` data member is not used.

# Circularly Linked List Data Members

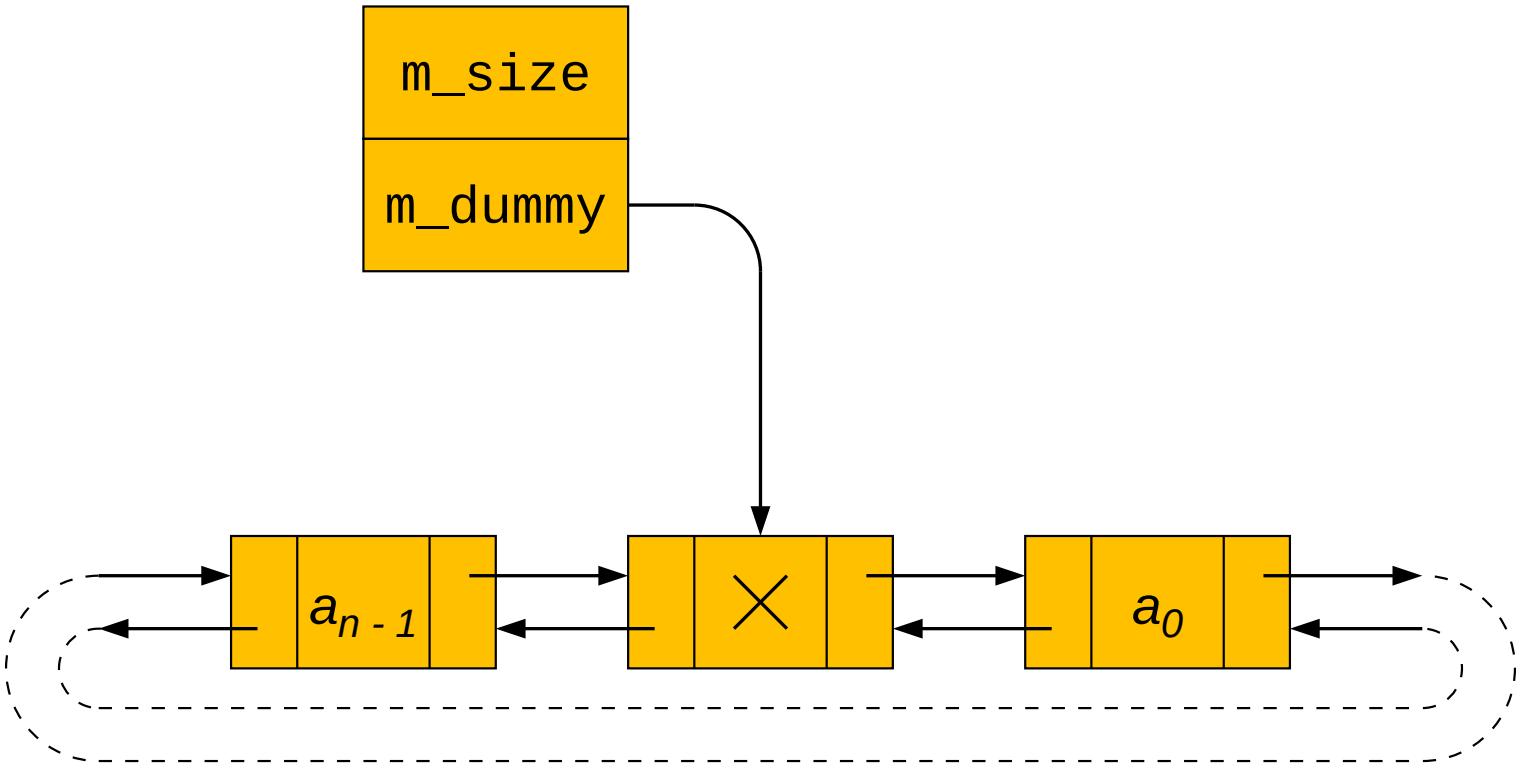
## `CircLinkedList` Data Members

- **`int`** `m_size` - The number of elements in the list.
- `DoublyLinkedListNode* m_dummy` - A pointer to the dummy node.

# Circularly Linked List Nodes

- A `CircularlyLinkedList` uses `DoublyLinkedListNode`s.
- The dummy node is always allocated–even in an empty list!

# Circularly Linked List Nodes



# Outline

# Implementing Member Functions

- Write the `insert()` function.
- Write the `remove()` function.

# Outline

# Benefits of this Implementation

- The `m_next` pointer of the last node points to the dummy node, so it is not null.
- The `m_prev` pointer of the first node points to the dummy node, so it is not null.
- In fact, none of the pointers in the structure is null!
- Since there are no null pointers, the code in the member functions contains no special cases!

# Outline

# Assignment

## Homework

- Read Section 17.5.