**Linked Lists**

Sequential data structure of similar values.

**Problems with Arrays:**

* Fixed size(array) or worst-case insertion at end as O(n) in case of arraylist.
* Insertion and deletion are costly at beginning/middle.
* Implementation is complex for queue and deque.

**Advantages of Doubly Linked list over single:**

* Can traverse in both directions.
* Deletion of a node is O(1).
* Insert/delete before a node is O(1).
* Implements deque insertion/deletion in O(1).

**Disadvantage:** Extra space for prev reference.

**Advantages of Circular Linked list:**

* Can traverse list from any node.
* Insertion at begin and end is O(1) with just pointer tail.
* Implementing algo like round robin.

**Floyd Cycle detection**: Detect cycle using two pointers slow and fast. Increment fast twice. Distance between slow and fast increase by 1 each time , slow and fast meet when distance becomes equal to length of loop.