**Pointer Techniques**

**Fast and Slow Pointer Technique, Tortoise and Hare Algorithm or Floyd’s Cycle Detection Algorithm**

Used to detect traits in directional data structures like array, singly-linked list, or a graph. Slow pointer and fast pointer are simply the names given to two pointer variables. Slow pointer travels the linked list one node at a time where as a fast pointer travels the linked list two nodes at a time.

This concept can be used in cases like detecting a loop in a graph, finding the middle node of a linked list (better time complexity), flattening a linked list etc.

Finding if structure is cyclic. Start slow and fast pointers at same element and traverse nodes with different speeds, if the structure is cyclic they will meet at one point or the other

Slow

Fast

Slow

Fast

Slow

Fast

Slow

Fast