Data Structures

Array: An array is a collection of items stored at contiguous memory locations.

Index values

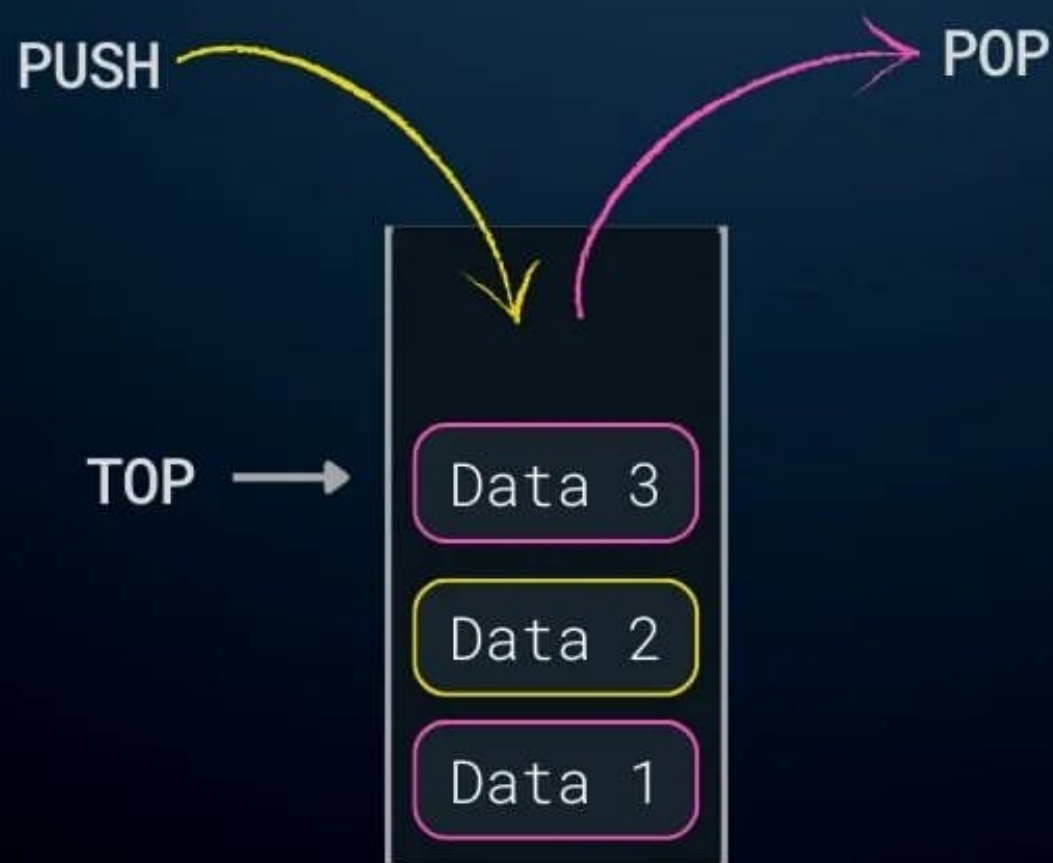| 0	1	2	3	4	5	6
2	4	6	8	10	12	14

50 51 52 53 54 55 56

Memory Locations

Array store data items that have similar data types

Stack

A stack is a linear data structure that follows the principle of Last In First Out (LIFO)

PUSH

POP

TOP →

Data 3

Data 2

Data 1

→ TOP will points top element of the stack

Queue

A Queue is a linear data structure that follows the principle of first In First Out (FIFO)

Front

Enqueue

| 2 | 4 | 6 | 8 | 10 | 12 | 14 |
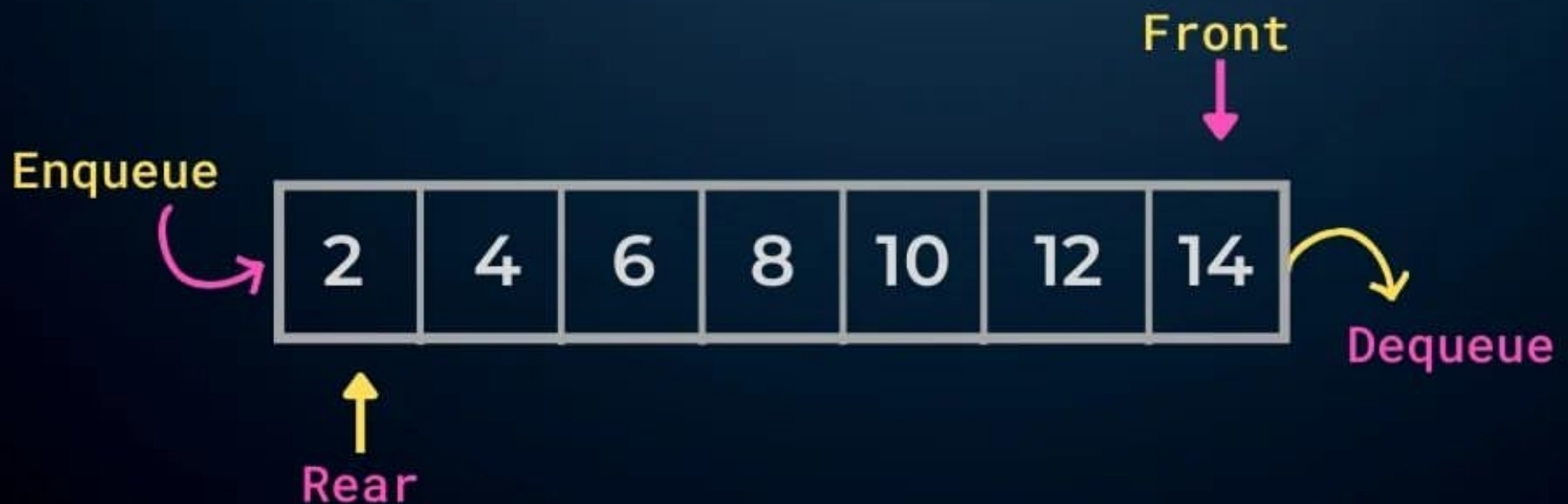
Dequeue

Rear

From the Rear, elements are added to the Queue

From the Front, elements are removed from the Queue

Linked list
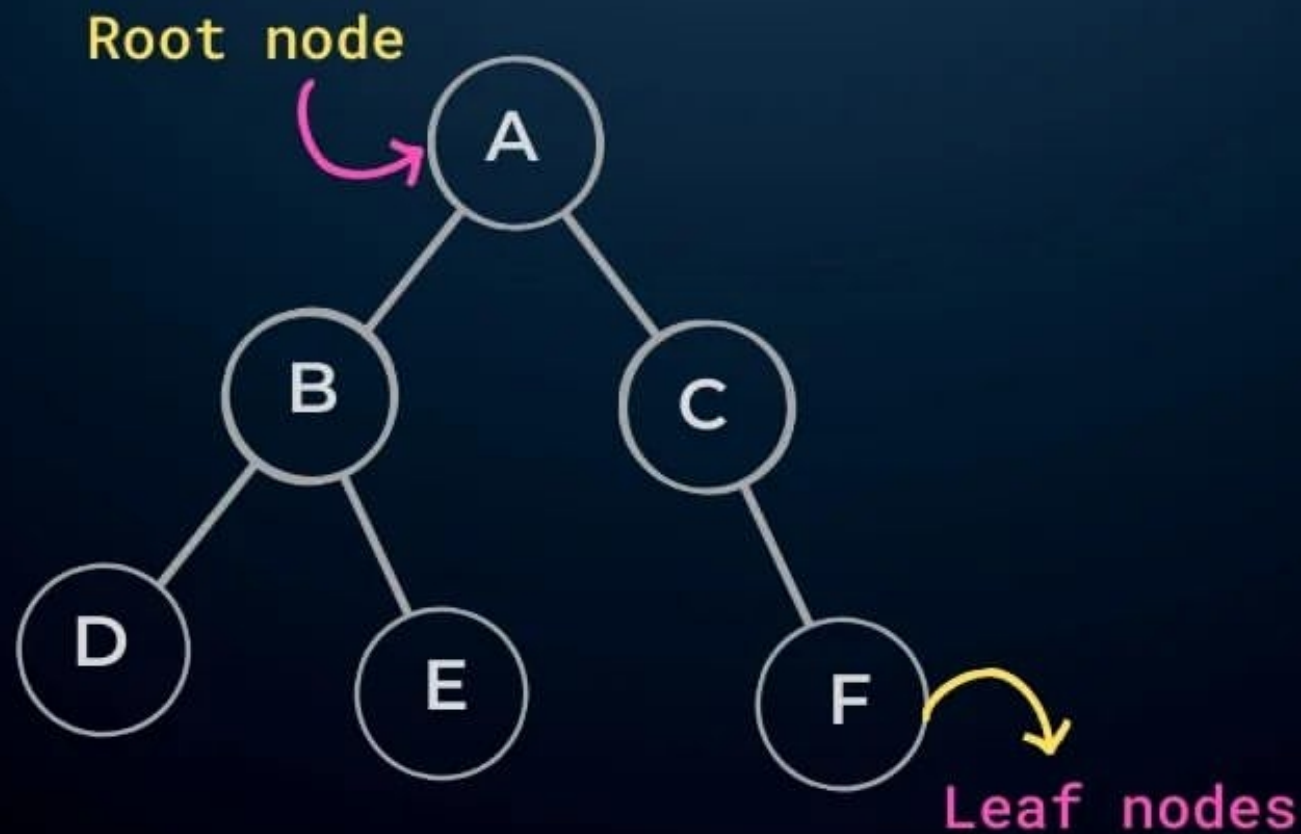
In simple words, a linked list consists of nodes where each node contains a data field and a reference(link) to the next node in the list.

Head

| A | | B | | C | | Null |

Data   Next
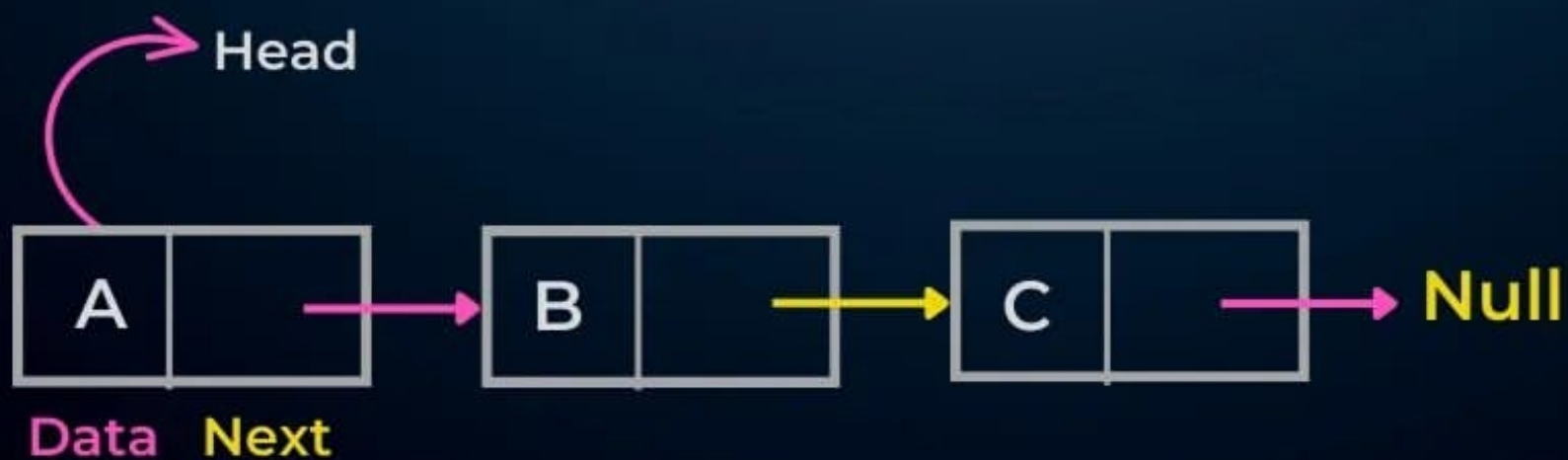
Next will store the address of the next value

Tree

A Tree is a non-linear hierarchical data structure that consists of nodes connected by edges

Root node → A

B   C

D   E   F → Leaf nodes

→ A tree data structure never forms a circle

Graph

A Graph is a non-linear data structure consisting of vertices and edges.

Vertex

A

B

C

F   Edges
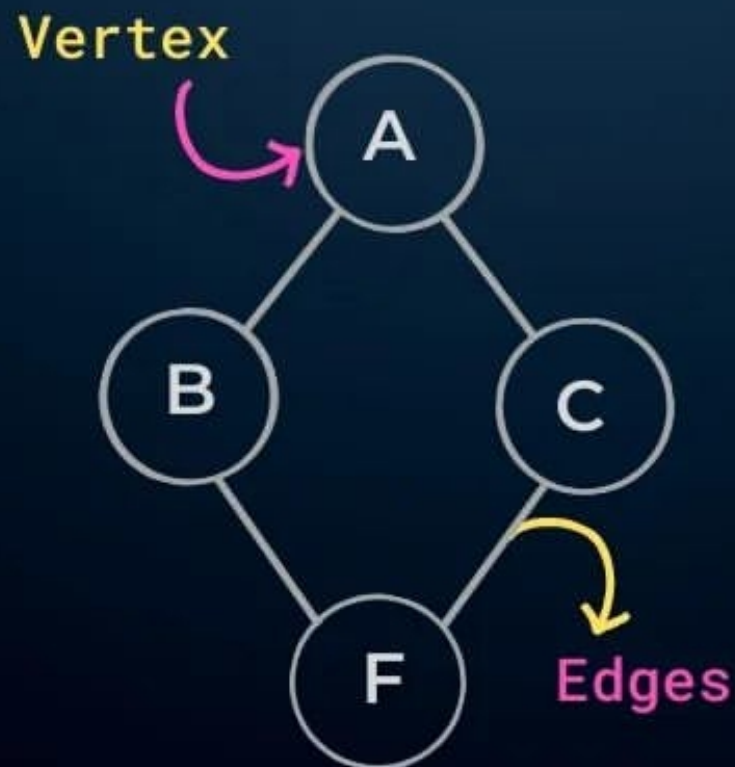
→ A graph can be seen as a cyclic tree