●Circular linklist

A Circular Linked List (CLL) is a data structure in which a group of nodes are connected to form a circle, where the last node points back to the first node. This means that there is no terminating null pointer at the end of the list.

Real life uses:

operating system task schedulin

Memory Management

Game Development

Data Buffering

●Singly linked list

A singly linked list is a unidirectional linked list. So, you can only traverse it in one direction, i.e., from head node to tail node.

Real life uses:

data needs to be dynamically added or removed from a sequence

Dynamic memory allocation

Navigating back and forth through visited web pages, where each page points to the next in the browsing sequence.

●Doubly linked list

A doubly linked list is a bi-directional linked list. So, you can traverse it in both directions. Unlike singly linked lists, its nodes contain one extra pointer called the previous pointer. This pointer points to the previous node.

To create a doubly linked list, we first need to create a Node class that will be used to store our data. This Node class will have two attributes: data and next. The data attribute will be used to store the actual data that we want to store in our list, and the next attribute will be used to store a reference to the next node in the list.

Real life uses:

a web browser's "back" and "forward" navigation buttons

Implementing LRU Cache

It is used in the navigation systems where front and back navigation is required.

●Stack

Stack is a linear data structure that follows LIFO (Last In First Out) Principle, the last element inserted is the first to be popped out. It means both insertion and deletion operations happen at one end only.

Real life uses:

Undo and redo mechanism in text editors

History of web browser

●Trees

Tree data structure is a hierarchical structure that is used to represent and organize data in the form of parent child relationship. The following are some real world situations which are naturally a tree.

Real life uses:

used in databases to store and retrieve data for insertion, and deletion operations

●Graph

Graph is a non-linear data structure that represents a collection of nodes (also called vertices) connected by edges, used to model relationships and connections between different elements in a system

Real life uses:

Social Graphs, Knowledge Graphs, Path Optimization Algorithms, Recommendation Engines, and Scientific Computations