* **Array :**

1. 2D arrays (matrices) are mainly used in **Image Processing.**
2. **RGB image** uses a 3D matrix.
3. 2D arrays are also used in **Game Design like Sudoku, Chess**.
4. The **Leader Board** of game or coding contest.

* **Stack :**

1. Used in **backtracking**, check valid parenthesis in an expression.
2. Evaluating **Infix and Postfix expressions**.
3. Used in **Recursive function calls** to store function calls and their results.
4. **Undo and Redo operations** in word processors like MS-Word, and Notepad.
5. **Browsing history** of visited websites.
6. **Call history/log** in mobile phones.
7. **Java Virtual Machine** uses a stack to store immediate calculation results.

* **Queue :**

1. Windows operating system uses circular queue to **switch between different applications**.
2. Used in **First Come First Serve** job/CPU scheduling algorithm which follows FIFO order.
3. All the **requests** are queued for the server to respond.

* **Priority Queue :**

1. Priority queue is used in **priority scheduling algorithm and interrupt handling** in OS.
2. Used in [**Huffman Coding**](https://www.programiz.com/dsa/huffman-coding)in compression algorithms.

* **Linked List :**

1. **Previous and Next Page** in Web Browser.
2. Songs in the music player are **linked** to the previous and next songs using doubly linked list.
3. Next and previous**images in a phone gallery**.
4. **Multiple Applications**running on a PC uses circular linked list.
5. Used for the **implementation of stacks, queues, trees and graphs**.

* **Graph :**

1. In **Facebook, LinkedIn** and other social networking sites, users are considered to be the vertices and the edge between them indicates that they are connected.
2. **Facebook’s**[**Graph API**](https://developers.facebook.com/docs/graph-api/) and **Google’s Knowledge API** are the best examples of grpah.
3. Google Maps, Yahoo Maps, Apple Maps uses graph to show the shortest path using **Breadth First Search (BFS).**
4. Used in **HTML DOM and React Virtual DOM**.

* **Tree :**

1. Representation structure in **File Explorer**. (Folders and Subfolders) uses N-ary Tree.
2. **Auto-suggestions** when you google something using Trie.
3. Used in **Decision based machine learning algorithms**.
4. Used in **Backtracking** to maintain the state-space tree.
5. A binary tree is used in **database indexing**to store and retrieve data in an efficient manner.
6. To implement **Heap** data structure.
7. **Binary Search Trees (BST)** can be used in **sorting algorithms**.

* **Dijkstra Algorithm :**

This algorithm is used to find the **shortest path** between two vertices in a graph in such a way that the sum of weights between the edges is minimum.

* **Prims Algorithm :**

It is a greedy algorithm to obtain a minimum spanning tree.

𝐒𝐭𝐚𝐜𝐤:  
1) UNDO option  
2) Text editor: you push letter by letter to the stack so you erase back.  
3) Recursion(inbuilt stack)  
  
𝐐𝐮𝐞𝐮𝐞:  
1) Your browser deletes the history past one month.  
2) If you delete a picture on your phone, it will be the "recently delete" folder which says "the images will be deleted permanently after one week".  
Here all the images are stored in the queue so it's easier to pop from the rear based on the image deletion date.  
3) Waiting list: during online registrations, sometimes you'll be put on the waiting list. basically, all the requests will be stored in the queue.  
  
𝐋𝐢𝐧𝐤𝐞𝐝 𝐥𝐢𝐬𝐭:  
1) Browser's Next and Previous Button: a linked list of URLs  
2) music player where you can play the next or previous song. (Doubly linked list).  
3) In the ludo game, It has to pass the chance to each player in a circular fashion (circular linked list).  
  
𝐓𝐫𝐞𝐞𝐬:  
1) File system: Folders and subfolders (N-ary tree).  
2) e-commerce websites : category -> subcategories -> products  
3) Auto-suggestion when you google (Trie)  
  
𝐆𝐫𝐚𝐩𝐡𝐬:  
1) Uber, Ola cab booking: show nearest available cars (BFS)  
2) Maven dependencies build order ( Topological sorting (DFS))  
3) While booking bus/flights, you get a list of available routes.  
4) In Facebook, users are considered to be the vertices and if they are friends then there is an edge running between them. Facebook’s Friend suggestion algorithm uses graph theory. Facebook is an example of an undirected graph.