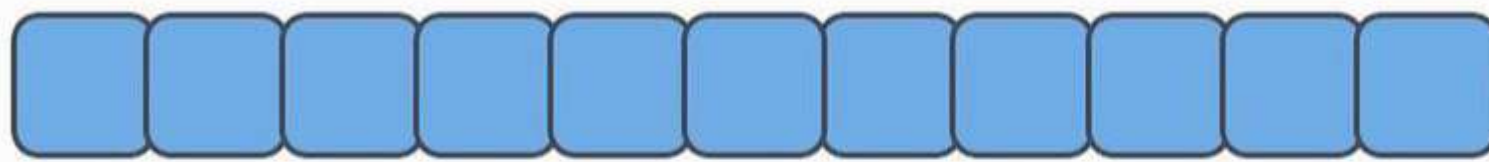
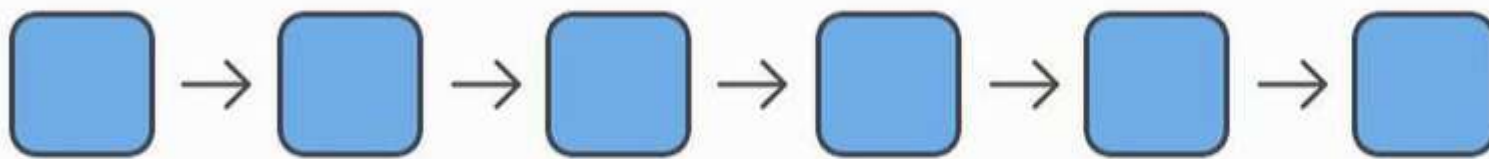


Types of Data Structures

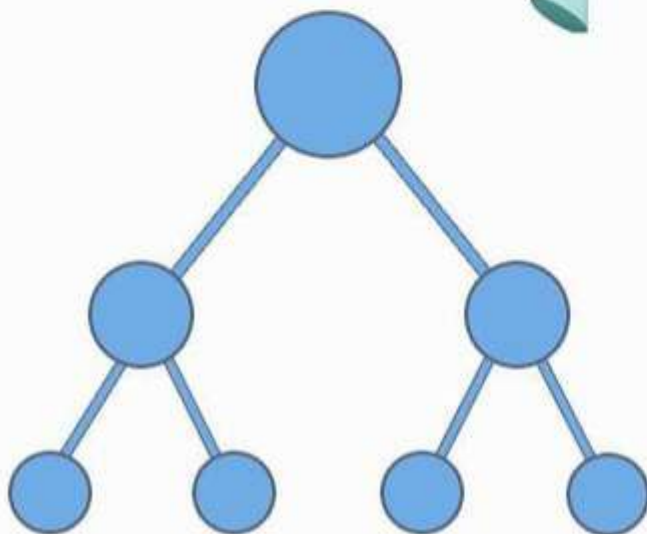


Array

AK



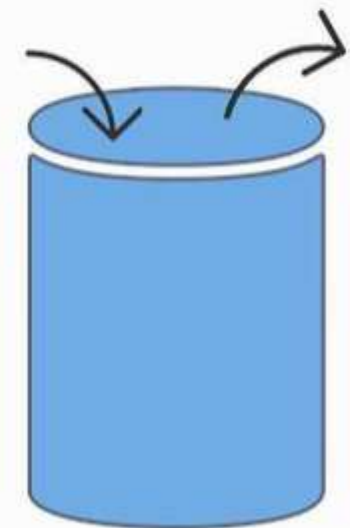
Linked List



Tree



Queue

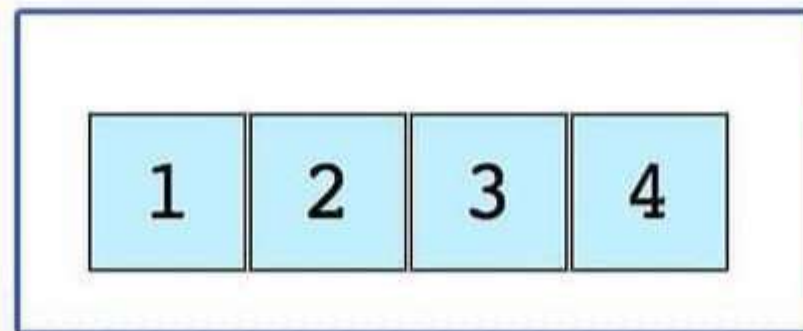


Stack

1 Array

An array is a data structure that contains a group of elements. Typically these elements are all of the same data type, such as an integer or string.

Here's an image of a simple array of size 4, containing elements (1, 2, 3 and 4).

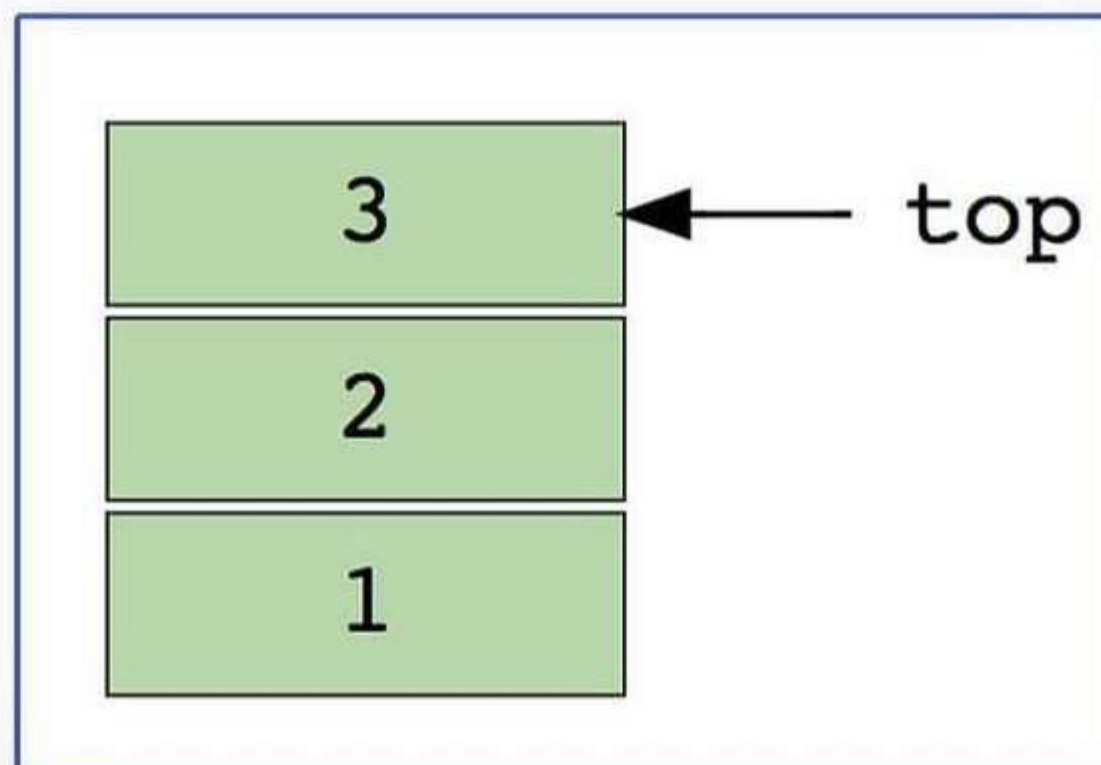


2 Stack

A stack is a data structure used to store a collection of objects. Individual items can be added and stored in a stack using a push operation.

AK

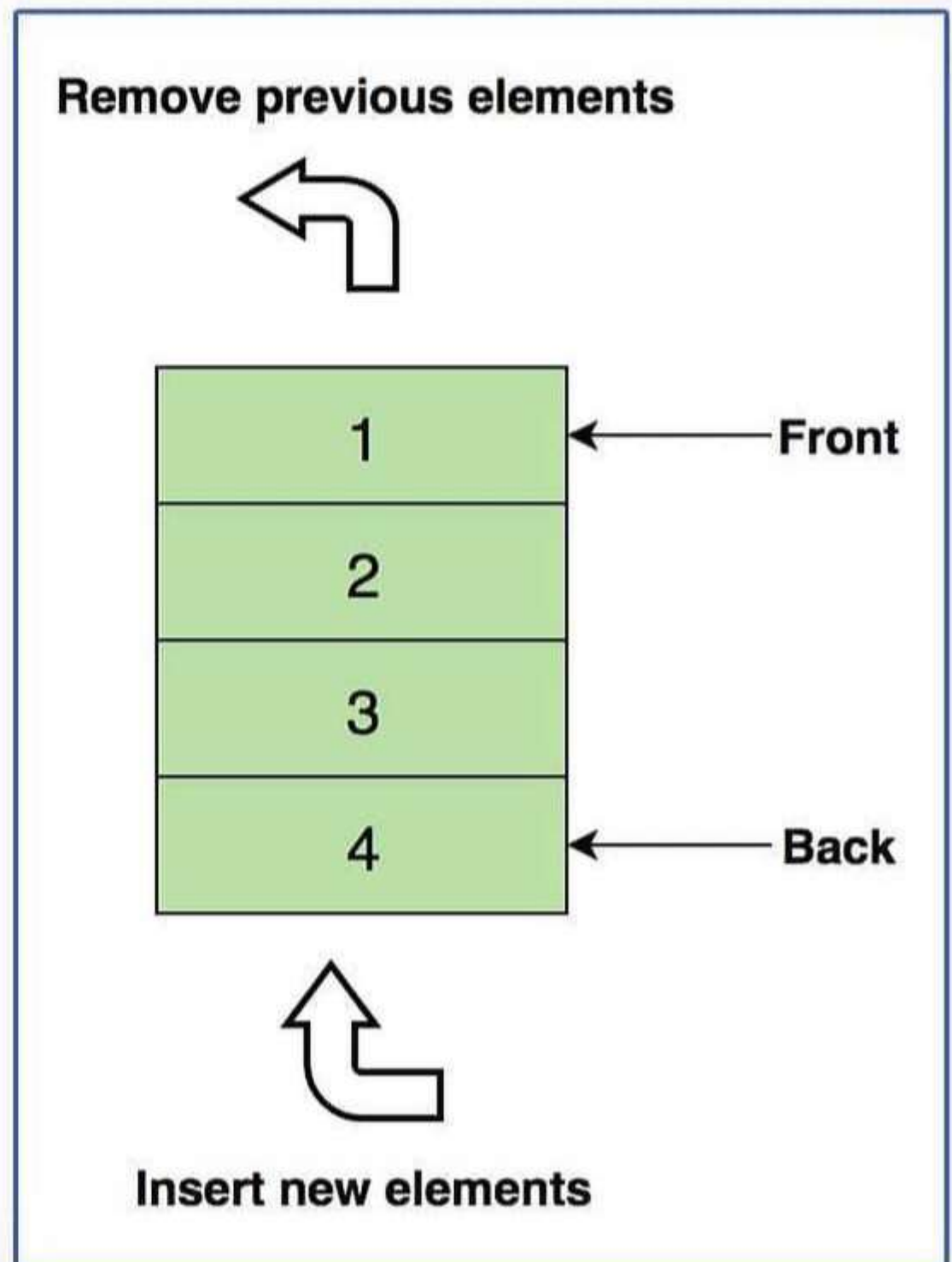
Here's an image of stack containing three data elements (1, 2 and 3), where 3 is at the top and will be removed first:



3 Queues

Queue is another linear data structure that stores the element in a sequential manner.

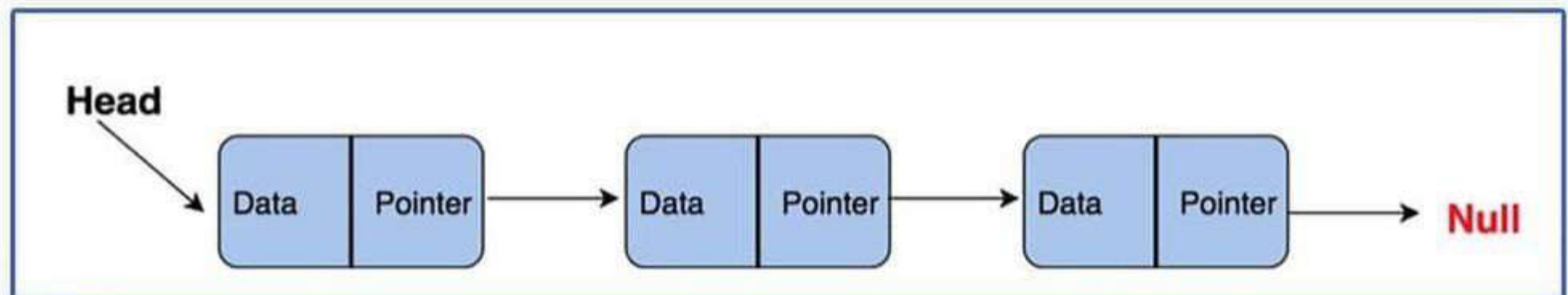
Here's an image of Queue containing four data elements (1, 2, 3 and 4), where 1 is at the top and will be removed first:



4 Linked List

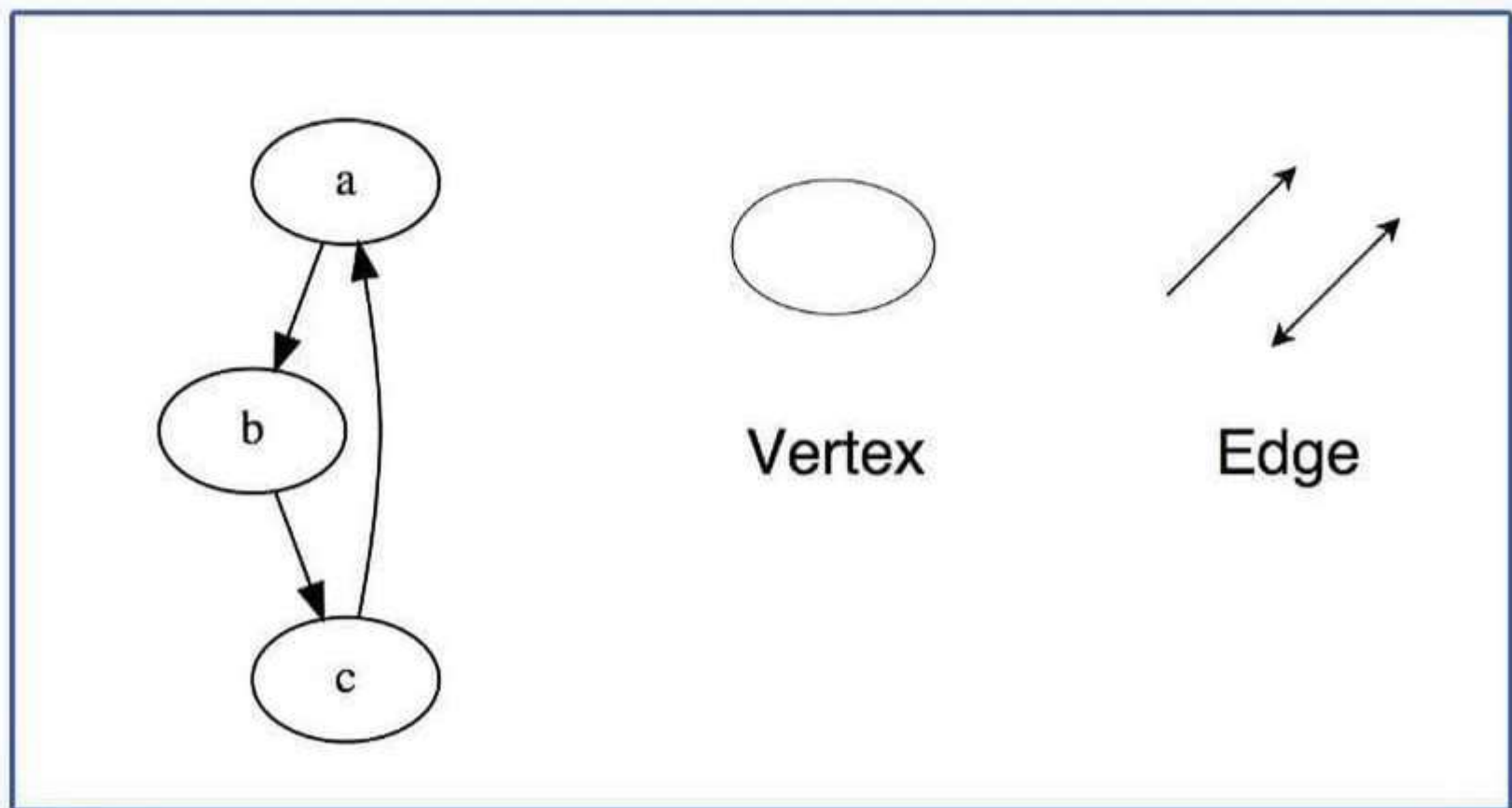
A linked list is like a chain of nodes, where each node contains information like data and a pointer to the succeeding node in the chain.

Here's a visual representation of the internal structure of a linked list:



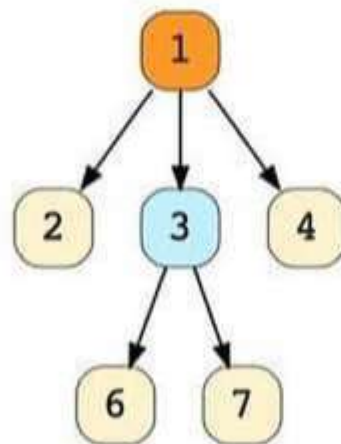
5 Graph

A graph is a set of nodes that are connected to each other in the form of a network. Nodes are also called vertices.



6 Trees

A tree is a hierarchical data structure consisting of vertices (nodes) and edges that connect them.



Root

1

Parent

1 3

Child

2 3 4 6 7

Leaf

2 4 6 7

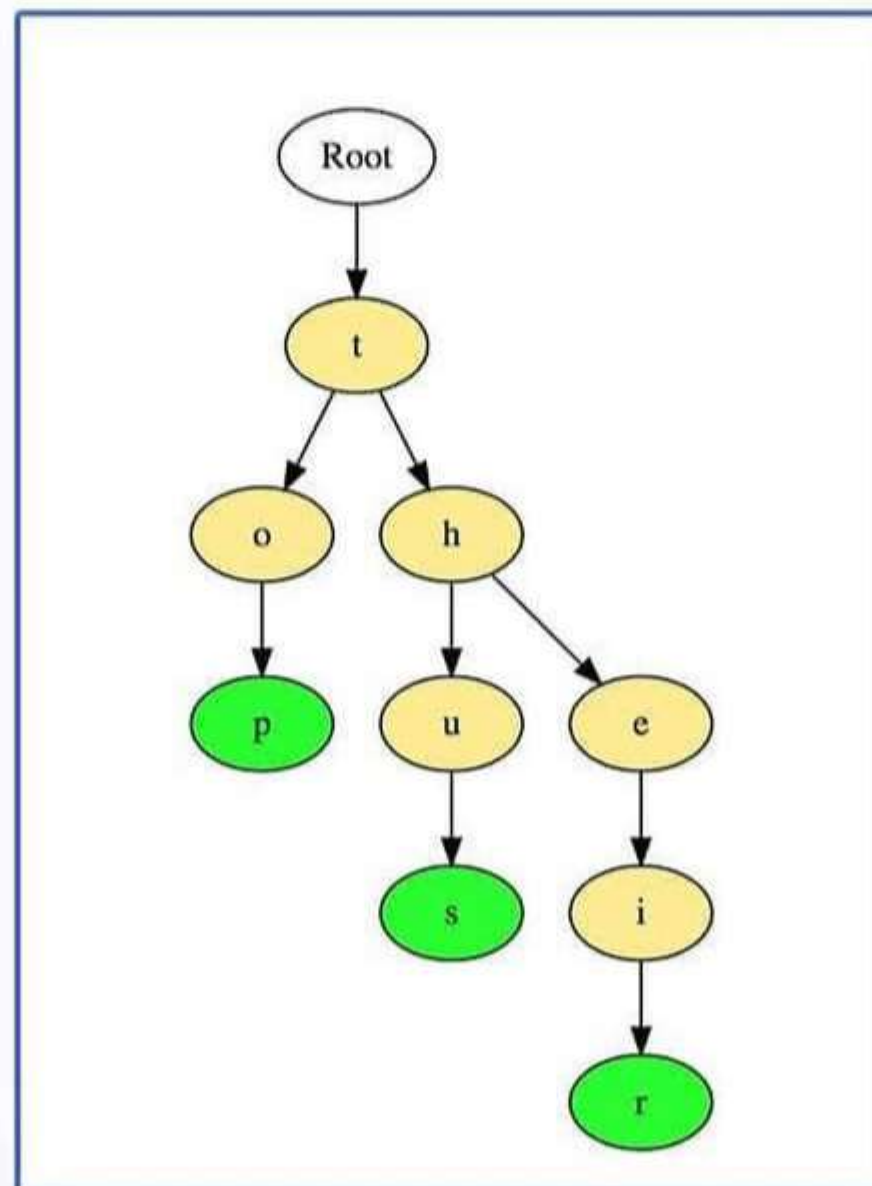
Sibling

2 3 4 6 7

7 Trie

It provides fast retrieval, and is mostly used for searching words in a dictionary, providing auto suggestions in a search engine, and even for IP routing.

AK



8 Hash

Hashing is a process used to uniquely identify objects and store each object at some pre-calculated ^{AK} unique index called its “key.”

