1. Describe python built in data structure?

Python built in data structures are

- **List:**

List is used to store the variables with the different data types. List stores elements in a continous memory location. It can access random retrieaval of the elements. The indexing starts from 0.

Example: mylist = [1, “pr”, 1.02]

- **Tuple:**

The only difference between list and tuple is list is mutable and tuple is immutable

Example: tuple = (1, 2, 3)

- **Dictionary:**

Dictionary is used to store the variables as key-value pair. Every key is unique for every particular value.

Example: dict = {1: “py”, 2:”or”}

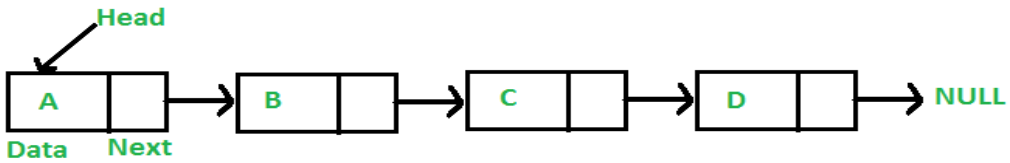
2. Describe the python user data strucure?

Python user defined data structure

- **Linked list:**

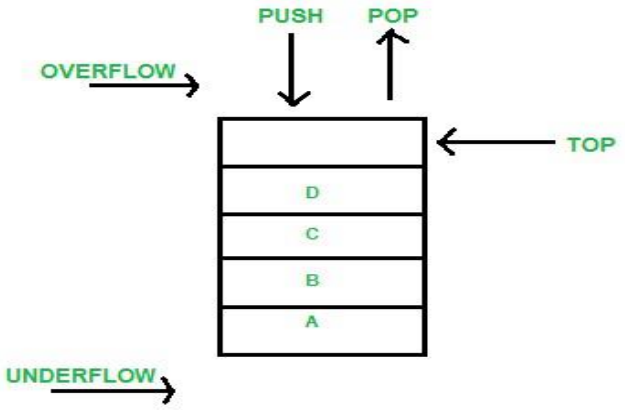
Linked list is a linear data structure. It stores the elements in a uncontinous manner. It has both data and pointer and pointer shows

the address of the next variable as mentioned below



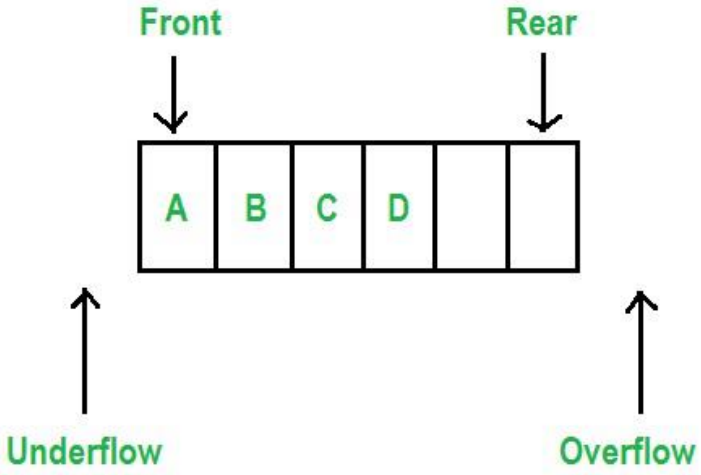
- **Stack:**

Stack is also a linear data structures and it follows LIFO method which is last in first out. Both insert and delete operations happened at only single node



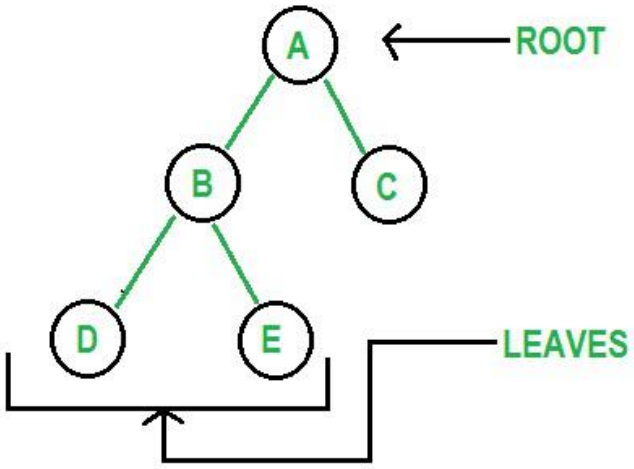
- **Queue:**

Queue is also a linear data structure in which it follows FIFO operations. And insertion and deletion opeartions are happened at different nodes



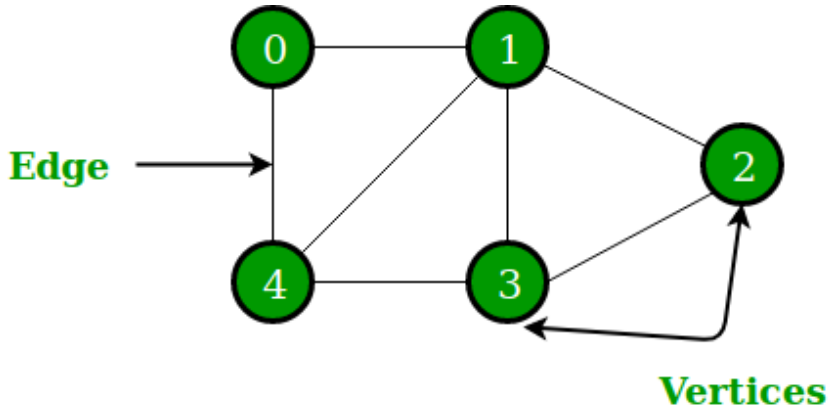
- **Tree :**

Trees are non-linear data structures but it forms a hyerarchial data structures and the upper most node is called Root node every node has childrens and lower most node is called leaves



- **Graphs :**

Graphs are non-linear data structures which consists node and edges. Sometimes nodes are also reffered as vertices and edges



3. Describe the stages involved in writing an algorithm?

→**Step1:** Identify the problem
→**Step2:** Analyze the problem
→**Step3:** Implement the problem
→**Step4:** Experiment the problem with different solutions and logics
→**Step5:** Select the best solution

4. Outline the components of a good algorithm?

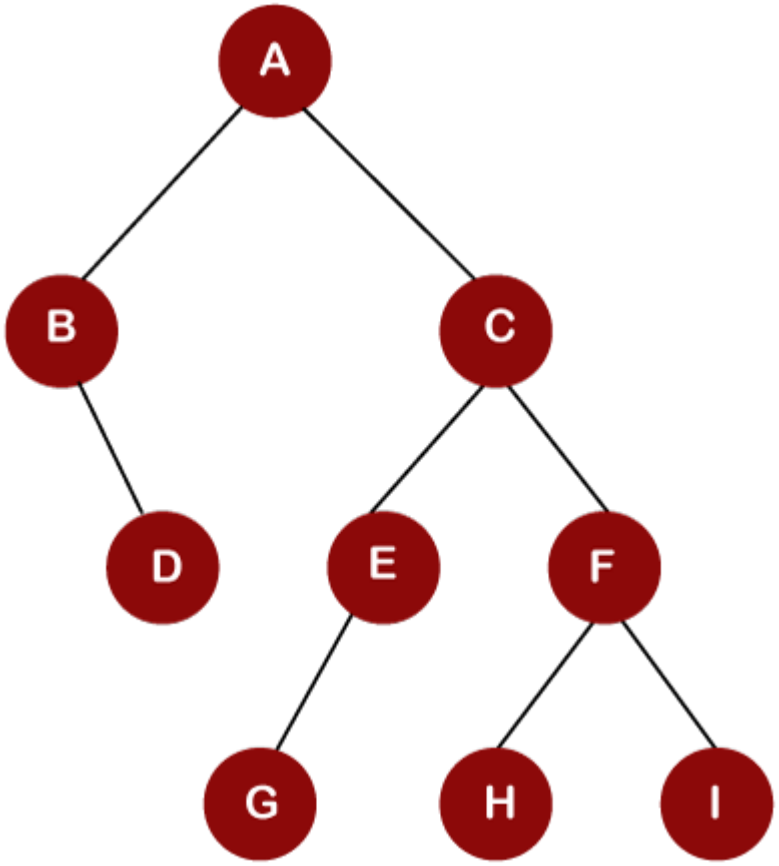
✓ Input specified
✓ Output specified
✓ Definiteness
✓ Effectiveness
✓ Finiteness
✓ Independent

5. Describe the tree traversal method?

Travelling through each and every node in the tree is called tree traversal method. Tree is a non linear data structures which has different ways to visite the node again and again. There are 3 different ways of traversing the tree

- **Inorder traversal:**

Inorder traversal is a technique which follows the Left root right. That means left node is traversed first and root is traversed and then right node is traversed



Example :

- **Post order:**

  It follows left right root

Example :

- **Preorder :**

  It follows root left right

Example:

6. Explain the difference between inorder and post order traversal?

The only difference between inorder and post order traversal is inorder traversal follows **Left root right** and post order traversal follows **Left right root**