1.What exactly is an application tree?
ANS:

Applications of trees

Storing naturally hierarchical data: Trees are used to store the data in the hierarchical structure. For example, the file system. The file system stored on the disc drive, the file and folder are in the form of the naturally hierarchical data and stored in the form of trees.

2.What is pre-order tree traversal and how does it work?
ANS:

In PreOrder traversal, **the root is visited first, followed by left subtree and the right subtree**, hence it is also known as

NLR (nod-left-right) algorithm as well. For those, who don't know what is the meaning of traversing a binary tree? It's a process to visit all nodes of a binary tree.

3.What is the problem with the Hanoi tower?

ANS:

The **Tower of Hanoi,** is a mathematical problem which consists of three rods and multiple disks. Initially, all the disks are placed on one rod, one over the other in ascending order of size similar to a cone-shaped tower.

The objective of this problem is to move the stack of disks from the initial rod to another rod, following these rules:

- A disk cannot be placed on top of a smaller disk

- No disk can be placed on top of the smaller disk.

The goal is to move all the disks from the leftmost rod to the rightmost rod. To move N disks from one rod to another, 2^N−1 steps are required. So, to move 3 disks from starting the rod to the ending rod, a total of 7 steps are required.

4.Can you explain the distinction between linear and nonlinear data structures?
ANS:

In linear data structure, data elements are sequentially connected and

each element is traversable through a single run. In non-linear data structure, data elements are hierarchically connected and are present at various levels. In linear data structure, all data elements are present at a single level.

5.What is the distinction between a list and an array?

ANS:

Both list and array are the data structure in python used to store multiple items. Let's figure out some major differences between list and array in python.

List in Python:-

The list is an important component used

to collect multiple items in a single variable. It has the ability to collect items that usually consist of elements of multiple data types. These may include character logical values, numeric values, and more.

Array in Python:-

An array is also a vital component that collects several items. Arrays are also known as data structure. Python has several in-built data structures, such as arrays.