ALGO Tutorial 01

1. Write down the difference between an array and the structure.
- Array is a collection of homogeneous data while, structure is the collection of heterogeneous data.
- Array size is fixed but structure size is not fixed.
- Array elements are access using index while structure elements are access using dot operator.
- Array allocates static memory while structure allocated dynamic memory.
- Array element access takes less time than structure but structure element access takes more time than array.

2. Where should you use data structures?
- Data structures are used to organize and manipulate data efficiently in computer programs.
- They can be used in various application including,
  - Storing and retrieving data.
  - Storing and searching data.
  - Graph algorithms.
  - Database management.
  - AI

3. What are the types of data structures?
- Linear
  - Array
  - Linked List
  - Stack
  - Queue
- Non-Linear
  - Trees
  - Graphs

4. What is a linked list data structure?
- A linked list is a linear data structure consisting of a sequence of nodes, where each node contains data and a reference (link) to the next node in the sequence.

5. What is a recursive data structure?
- A recursive data structure is a data structure that is partially composed of smaller or simpler instances of the same data structure.

6. Compare and contrast linear data structures Vs Non-linear data structures
- Linear data structure memory utilization is inefficient but non-linear memory utilization is efficient.
- Linear data structure is in single-level but non-linear is difficult to implement.