

## ***Task 3***

### **Task 1: Usage of hash function in python data structure?**

- Hash functions are essential components of various data structures in Python and other programming languages. They are used to efficiently map data (such as keys or values) to indices in arrays or buckets, which improves the performance of operations like insertion, retrieval, and deletion. Hash functions help distribute data evenly across the underlying storage, minimizing collisions (when two different inputs produce the same hash) and ensuring efficient access times.

### **Task 2: Graph implementation in many ways?**

- Graphs can be implemented in various ways in programming, each with its own advantages and trade-offs. Here are some common ways to implement graphs:
  - 1- **Adjacency Matrix**
  - 2- **Adjacency List**
  - 3- **Edge List**
  - 4- **Hash Map of Hash Sets**
  - 5- **Object-Oriented Representation**
  - 6- **Combinations of Data Structures**