2 Lecture - CS301

Important Subjective

1. **What is an array-based list?**
   Answer: An array-based list is a data structure that stores a collection of elements in a contiguous block of memory, where each element can be accessed using an index.

2. **What is a linked-list based list?**
   Answer: A linked-list based list is a data structure that stores a collection of elements as nodes, where each node contains an element and a reference to the next node in the list.

3. **What is the difference between an array-based list and a linked-list based list?**
   Answer: An array-based list uses a fixed-size array to store the elements, while a linked-list based list uses a dynamic data structure composed of nodes. The main difference is that arrays offer efficient random access to elements, while linked lists offer efficient insertion and deletion operations.

4. **What is the time complexity of accessing an element in an array-based list?**
   Answer: The time complexity of accessing an element in an array-based list is O(1).

5. **What is the time complexity of accessing an element in a linked-list based list?**
   Answer: The time complexity of accessing an element in a linked-list based list is O(n).

6. **What is the advantage of using a linked-list based list over an array-based list?**
   Answer: The main advantage of using a linked-list based list is that it offers efficient insertion and deletion operations, which can be expensive in an array-based list.

7. **What is the disadvantage of using a linked-list based list over an array-based list?**
   Answer: The main disadvantage of using a linked-list based list is that it offers inefficient random access to elements, which can be expensive in an array-based list.

8. **What is dynamic resizing of a list?**
   Answer: Dynamic resizing of a list refers to the ability of a list to grow or shrink in size as elements are added or removed.

9. **How is dynamic resizing achieved in an array-based list?**
   Answer: Dynamic resizing in an array-based list is achieved by allocating a new, larger array when the existing array becomes full, and copying the elements from the old array to the new array.

10. **How is dynamic resizing achieved in a linked-list based list?**
    Answer: Dynamic resizing in a linked-list based list is achieved by allocating new nodes as needed and updating the references between nodes.