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.
- 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.