Lecture 6-ADTs linked lists

1. What is an Abstract Data Type (ADT)?
A. A way of organizing and storing related data items.
B. A mathematical description of a collection with a set of supported operations.
C. A specific implementation of a data structure.
D. A type of algorithm used for sorting.
Answer: B

2. What is a Data Structure?
A. A definition for expected operations and behavior.
B. A way of organizing and storing related data items.
C. A type of algorithm used for sorting.
D. A mathematical description of a collection.
Answer: B

3. What is an example of an ADT?
A. Linked List
B. Array
C. List
D. Stack
Answer: C

4. What is an interface in Java?
A. A class that inherits from another class.
B. A construct that defines a set of methods a class promises to implement.
C. A type of data structure.
D. A type of algorithm.
Answer: B

5. What is the difference between an ArrayList and a LinkedList in terms of memory allocation?
A. ArrayList uses more memory than LinkedList.
B. LinkedList uses more memory than ArrayList due to pointers.
C. Both use the same amount of memory.
D. ArrayList is more compact than LinkedList.
Answer: B

6. What is the time complexity of accessing an element in an ArrayList?
A. O(N)
B. O(log N)
C. O(1)
D. O(N log N)
Answer: C

7. What is the time complexity of accessing an element in a LinkedList?
A. O(1)
B. O(log N)
C. O(N)
D. O(N log N)
Answer: C

8. What is the time complexity of inserting an element at an arbitrary position in an ArrayList?
A. O(1)
B. O(log N)
C. O(N)
D. O(N log N)
Answer: C

9. What is the time complexity of inserting an element at an arbitrary position in a LinkedList?
A. O(1)
B. O(log N)
C. O(N)
D. O(N log N)
Answer: C

10. What is a common use case for LinkedLists?
A. Random access operations.
B. Static datasets.
C. Dynamic datasets with frequent edits.
D. Sorting algorithms.
Answer: C