Quiz-1

CLO-1 (Employ linear data structures to solve computing problems.)

Question 1: Insert an element at the end of a Singly Linked List (4)

Given a singly linked list with the nodes `10 -> 20 -> 30`.

Task: Insert the value 40 at the end of the list.

Visual Representation: Show the linked list before and after the insertion.

Pseudo Code: Write a function insert_at_end(value) that inserts the value 40 at the end of the list.

Question 2: Insert an element before a specific value in a Singly Linked List (4)

Given: A singly linked list with nodes `5 -> 15 -> 25 -> 35`.
Task: Insert the value `10` before the node with the value `15`.

- **Visual Representation**: Show the linked list before and after insertion.
- **Pseudo Code**:
    o Write a function `insert_before(value, target)` to insert `10` before `15`.

Question 3: Insert an Element at a Specific Position in a Doubly Linked List (4)

Given: A doubly linked list with nodes `100 <-> 200 <-> 300`.
Task: Insert the value `150` between `100` and `200`.

- **Visual Representation**: Show the doubly linked list before and after insertion.
- **Pseudo Code**:
    o Write a function `insert_at_position(value, position)` to insert `150` after the first node.

Question 4: Traverse a Singly Linked List (4)

Given: A singly linked list with nodes `8 -> 16 -> 32 -> 64`.
Task: Write pseudo code to **traverse** and print the values of all nodes in this list.

- **Pseudo Code**:
    o Write a function `traverse_singly(head)` to traverse and print the node values of the singly linked list.

Question 5: For each of the following operations, demonstrate how it is performed on arrays and linked lists. Write a short answer explaining the process for each structure. (4)

1- **Accessing an Element**
2- **Deleting an Element from the End**