0.0.1 Question 1(a): Define linear data structure and give its examples. (03 marks)

Ans 1(a): A linear data structure is a type of data organization where elements are arranged in a sequential manner, with each element directly linked to its adjacent elements. Key characteristics of linear data structures include:

- Elements are organized in a linear or sequential order.
- Each element has a unique predecessor and successor, except for the first and last elements.
- Data can be traversed in a single run, i.e., in one pass.

Examples of linear data structures:

1. **Array**: A collection of elements stored in contiguous memory locations.
2. **Linked List**: A sequence of nodes where each node contains data and a reference to the next node.
3. **Stack**: Follows Last-In-First-Out (LIFO) principle for element access.
4. **Queue**: Follows First-In-First-Out (FIFO) principle for element access.

```
print("Hello")
```

0.0.2 □□□□□□□ 1(□): □□□□□□ □□□□□ □□□□□□□□□□ □□□□□□□□□□□□□ □□□□ □□□□ □□□□□ □□□□□□□□ □□□□. (□□)

□□□□□ **1(□):** □□□□□□ □□□□□ □□□□□□□□□□ □ □□□□□ □□□□□□□□ □□ □□□□□□□ □□ □□□□□□ elements □□□□□□□ □□□□□ □□□□□□□□□□ □□□□ □□, □□□□□□ □□□□□ element □□□□□ □□□□□□□□□□ elements □□□□□ □□□□□ □□□□□ □□□□□□□□□ □□□□ □□. □□□□□□ □□□□□ □□□□□□□□□□□□□ □□□□□□ □□□□□□□□□□□□□□□□□ □□□□□□ □□:

- Elements □□□□□□ □□□□□ □□□□□□□ □□□□□□□□ □□□□□□□□□□ □□□□ □□.
- □□□□□ element □□ □□□□□□ □□□□□□□□□□ □□□□ □□□□□□□□ □□□□ □□, □□□□□□ □□ □□□□□□ □□□□ □□□□□□□ elements.
- □□□□□□□ □□ □ run □□□□, □□□□□ □□ □□ □□□□□□□ traverse □□□□ □□□□□ □□.

□□□□□□ □□□□□ □□□□□□□□□□□□□ □□□□□□□□:

1. **Array**: □□□□ □□□□□□ □□□□□□□□□□ □□□□□□□□□ elements □□ □□□□.
2. **Linked List**: nodes □□ □□□□□ □□□□□□ □□□□□ node □□□□ □□□□□ □□□□ □□□□□□ node □□ □□□□□□□ □□□□ □□.
3. **Stack**: Element access □□□□□ Last-In-First-Out (LIFO) □□□□□□□□□□□□ □□□□□□□ □□.
4. **Queue**: Element access □□□□□ First-In-First-Out (FIFO) □□□□□□□□□□□□ □□□□□□□ □□.

```
print("Hello")
```

0.0.3