**Practical Implementation**



Fall 2025

Data Structures (Lab)

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Section: A

On my honor, as a student of Institute of Management Sciences,

I have neither given not received unauthorized assistance on this

Academic work.”

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**-:DRY RUN / TRACE:-**

**OUTPUT:-**

* Step 1:

InsertionAtEnd(101);

After calling this function at very start , the list will display as empty so the pointers head and tail are null.

Like; head -> NULL tail -> NULL

After inserting:

NULL <- [101] -> NULL

Head -> [101] tail -> [101]

* Step 2:

InsertionAtEnd(102);

After calling this function again, this will append the existent value.

Like; NULL <- [101] <-> [102] -> NULL

Head -> [101] tail -> [102]

* Step 3:

insertionAtBeginning(200);

After calling this function the head will be NULL and the next of this node will start pointing the other node’s previous.

Like: NULL <- [200] <-> [101] <-> [102] -> NULL

Head -> [200] tail -> [102]

* Step 4:

insertAtPosition(150 , 2);

After calling this function, the new node will be created and the next of this node will be connected to the previous of other node and it’s head will be connected to the previous of 1st node.

Like; NULL <- [200] <-> [150] <-> [101] <-> [102] -> NULL

Head -> [200] tail -> [102]

* Step 5:

deleteFromBeginning();

After calling this function the very first value will be deleted and the head pointer will be shifted towards the next node.

Like;

**Before deletion:**

NULL <- [200] <-> [150] <-> [101] <-> [102] -> NULL

Head -> [200] tail -> [102]

**After deleting:**

NULL <- [150] <-> [101] <-> [102] -> NULL

Head -> [150] tail -> [102]

* Step 6:

insertAtEnd(300);

This function will insert the value at the end of the list. and will append the existent value.

Like; NULL <- [150] <-> [101] <-> [102] <-> [300] -> NULL

Head -> [150] tail -> [300]

**-:ANSWERS:-**

**Answer#01**

The patient ID at the head is 150

Like; head -> [150]

**Answer#02**

The patient ID at the tail is 300

Like; tail <- [300]

**Answer#03**

The printing of list in forward direction:-

150 – 101 – 102 – 300

**Answer#04**

The printing of list in backward direction:-

300 – 102 – 101 – 150 .

