Lap :03

Name :M Ijaz

Submitted to

Sir Rasikh

Roll no . 073

Subject . Lab Data structure

Lab . 3

Questions no 1 Implement a singly linked list with functions to insert a node at the start and at the end. Display the list after each insertion

Answer.

```
#include <iostream>
using namespace std;

class Node {
public:
    int data;
    Node* next;
    Node(int data) {
        this->data = data;
        this->next = nullptr;
    }
};

class SinglyLinkedList {
```

```
public:
    Node* head;
    SinglyLinkedList() {
        head = nullptr;
    }

    void insert_at_start(int data) {
        Node* new_node = new Node(data);
        new_node->next = head;
        head = new_node;
        display();
    }

    void insert_at_end(int data) {
        Node* new_node = new Node(data);
        if (head == nullptr) {
            head = new_node;
        } else {
            Node* current = head;
            while (current->next != nullptr) {
                current = current->next;
            }
            current->next = new_node;
        }
        display();
    }
```

```
    void display() {
        if (head == nullptr) {
            cout << "List is empty." << endl;
            return;
        }
        Node* current = head;
        while (current != nullptr) {
            cout << current->data << " -> ";
            current = current->next;
        }
        cout << "None" << endl;
    }
};

int main() {
    SinglyLinkedList linked_list;
    linked_list.insert_at_start(10);
    linked_list.insert_at_start(20);
    linked_list.insert_at_end(30);
    linked_list.insert_at_end(40);
    return 0;
```

```
}
```


Programiz
C++ Online Compiler
Programiz PRO
main.c...
Output
10 -> None
20 -> 10 -> None
20 -> 10 -> 30 -> None
20 -> 10 -> 30 -> 40 -> None
=== Code Execution Successful ===