Problem-1: Write a C++ program to create and display a singly linked list.(Traversing)

Code:

LinkListTravarsing.cpp > main()

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

class Node{
    public :
    int data;
    Node* next;

    Node(int value){
        data= value;
        next = nullptr;
    }
};

Node* creatLinkList(int arr[],int size){
    Node* head = nullptr;
    Node* temp = nullptr;
    Node* current = nullptr;

    for(int i=0;i<size ;++i){
        temp = new Node(arr[i]);

        if (head == nullptr){
            head = temp ;
            current = temp;
        }else {
            current->next= temp;
            current = current->next;
        }
    }

    return head;
}

int main() {
    system("cls");

    int size;
    cout << "Enter thr nuu=mber of element:" ;
    cin >> size;

    int* a = new int(size);
    cout << "Enter int size << " integer:" ;
    for(int i=0; i<size ; ++i ){
        cin >> a[i];
    }

    Node* head = creatLinkList(a, size);
    Node* current = head;

    while(current != nullptr){
        cout << current->data << "->" ;
        current = current->next;
    }

    cout << "NULL" << endl;

    current =head;
    while (current != nullptr){
        Node* next = current->next;
        delete current;
        current= next;
    }

    delete[] a;

    return 0;
}
```

Output:

```
D:\GitHub002\03 Third Semester\CSE 2104_Data Structures Lab\Lab Report\5th Lab 21042025>cd "d:\GitHub00
2\03 Third Semester\CSE 2104_Data Structures Lab\Lab Report\5th Lab 21042025\output"

d:\GitHub002\03 Third Semester\CSE 2104_Data Structures Lab\Lab Report\5th Lab 21042025\output>.\"LinkL
istTravarsing.exe"
Enter thr number of element:9
Enter 9 integer:1 5 4 8 6 7 96 3 0
1->5->4->8->6->7->96->3->0->NULL

d:\GitHub002\03 Third Semester\CSE 2104_Data Structures Lab\Lab Report\5th Lab 21042025\output>
```

Problem-2: Write a C++ program to create and search an element in a singly linked list.

Code:

SearchingOnList.cpp > main()

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

class Node {
public:
    int data;
    Node* next;

    Node(int value) {
        data = value;
        next = nullptr;
    }
};

Node* createLinkedList(int arr[], int size) {
    Node* head = nullptr;
    Node* temp = nullptr;
    Node* current = nullptr;

    for (int i = 0; i < size; ++i) {
        temp = new Node(arr[i]);

        if (head == nullptr) {
            head = temp;
            current = temp;
        } else {
            current->next = temp;
            current = current->next;
        }
    }

    return head;
}

//Search Function
bool search(Node* head, int key) {
    Node* current = head;
    while (current != nullptr) {
        if (current->data == key)
            return true;
        current = current->next;
    }
    return false;
}

int main() {

    int size;
    cout << "Enter the number of elements: ";
    cin >> size;

    int* a = new int[size];

    cout << "Enter " << size << " integers: ";
    for (int i = 0; i < size; ++i) {
        cin >> a[i];
    }

    Node* head = createLinkedList(a, size);

    //Display the list
    cout << "Linked List: ";
    Node* current = head;
    while (current != nullptr) {
        cout << current->data << " -> ";
        current = current->next;
    }
    cout << "NULL" << endl;

    //Ask user for a value to search
    int key;
    cout << "Enter value to search: ";
    cin >> key;

    if (search(head, key))
        cout << key << " is found in the list!" << endl;
    else
        cout << key << " is not found in the list." << endl;

    //Free memory
    current = head;
    while (current != nullptr) {
        Node* next = current->next;
        delete current;
        current = next;
    }

    delete[] a;

    return 0;
}
```

Output:

```
Active code page: 65001

D:\GitHub002\03 Third Semester\CSE 2104_Data Structures Lab\Lab Report\5th Lab 21042025>cd "d:\GitHub00
2\03 Third Semester\CSE 2104_Data Structures Lab\Lab Report\5th Lab 21042025\output"

d:\GitHub002\03 Third Semester\CSE 2104_Data Structures Lab\Lab Report\5th Lab 21042025\output>.\"Searc
hingOnList.exe"
Enter the number of elements: 7
Enter 7 integers: 1 4 5 8 6 9 2
Linked List: 1 -> 4 -> 5 -> 8 -> 6 -> 9 -> 2 -> NULL
Enter value to search: 7
7 is not found in the list.

d:\GitHub002\03 Third Semester\CSE 2104_Data Structures Lab\Lab Report\5th Lab 21042025\output>cd "d:\G
itHub002\03 Third Semester\CSE 2104_Data Structures Lab\Lab Report\5th Lab 21042025\output"

d:\GitHub002\03 Third Semester\CSE 2104_Data Structures Lab\Lab Report\5th Lab 21042025\output>.\"Searc
hingOnList.exe"
Enter the number of elements: 6
Enter 6 integers: 1 5 7 9 6 8
Linked List: 1 -> 5 -> 7 -> 9 -> 6 -> 8 -> NULL
Enter value to search: 6
6 is found in the list!
```