

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

Code:

```
LinkedListTraversing.cpp > main()
1  #include <iostream>
2  using namespace std;
3
4  class Node{
5  public :
6      int data;
7      Node* next;
8
9      Node(int value){
10         data= value;
11         next = nullptr;
12     }
13 };
14
15 Node* creatLinkList(int arr[],int size){
16     Node* head = nullptr;
17     Node* temp = nullptr;
18     Node* current = nullptr;
19
20     for(int i=0;i<size ;++i){
21         temp = new Node(arr[i]);
22
23         if (head == nullptr){
24             head = temp ;
25             current = temp;
26         }else {
27             current->next= temp;
28             current = current->next;
29         }
30     }
31
32     return head;
33 }
34
35 int main() {
36     system("cls");
37
38     int size;
39     cout << "Enter thr nuu=number of element:" ;
40     cin >> size;
41
42     int* a = new int[size];
43     cout << "Enter int size < " integer:" ;
44     for(int i=0; i<size ; ++i ){
45         cin >> a[i];
46     }
47
48     Node* head = creatLinkList(a, size);
49     Node* current = head;
50
51     while(current != nullptr){
52         cout << current->data << "->" ;
53         current = current->next;
54     }
55
56     cout << "NULL" << endl;
57
58     current =head;
59     while (current != nullptr){
60         Node* next = current->next;
61         delete current;
62         current= next;
63     }
64
65     delete[] a;
66
67     return 0;
68 }
```

Output:

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

```
G+ SearchingOnList.cpp > main()
1  #include <iostream>
2  using namespace std;
3
4  class Node {
5  public:
6      int data;
7      Node* next;
8
9      Node(int value) {
10         data = value;
11         next = nullptr;
12     }
13 };
14
15 Node* createLinkedList(int arr[], int size) {
16     Node* head = nullptr;
17     Node* temp = nullptr;
18     Node* current = nullptr;
19
20     for (int i = 0; i < size; ++i) {
21         temp = new Node(arr[i]);
22
23         if (head == nullptr) {
24             head = temp;
25             current = temp;
26         } else {
27             current->next = temp;
28             current = current->next;
29         }
30     }
31
32     return head;
33 }
34
35 //Search Function
36 bool search(Node* head, int key) {
37     Node* current = head;
38     while (current != nullptr) {
39         if (current->data == key)
40             return true;
41         current = current->next;
42     }
43     return false;
44 }
45
46 int main() {
47
48     int size;
49     cout << "Enter the number of elements: ";
50     cin >> size;
51
52     int* a = new int[size];
53
54     cout << "Enter " << size << " integers: ";
55     for (int i = 0; i < size; ++i) {
56         cin >> a[i];
57     }
58
59     Node* head = createLinkedList(a, size);
60
61     //Display the list
62     cout << "Linked List: ";
63     Node* current = head;
64     while (current != nullptr) {
65         cout << current->data << " -> ";
66         current = current->next;
67     }
68     cout << "NULL" << endl;
69
70     //Ask user for a value to search
71     int key;
72     cout << "Enter value to search: ";
73     cin >> key;
74
75     if (search(head, key))
76         cout << key << " is found in the list!" << endl;
77     else
78         cout << key << " is not found in the list." << endl;
79
80     //Free memory
81     current = head;
82     while (current != nullptr) {
83         Node* next = current->next;
84         delete current;
85         current = next;
86     }
87
88     delete[] a;
89
90     return 0;
91 }
92
```

Output:

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```
D:\GitHub002\03 Third Semester\CSE 2104_Data Structures Lab\Lab Report\5th Lab 21042025>cd "d:\GitHub002\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>.\"SearchingOnList.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:\GitHub002\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>.\"SearchingOnList.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!
```