1. Problem Name: Traversing and Searching using dynamic memory allocation.

Problem Code & Output:

```
New.cpp - Code::Blocks 20.03
  File Edit View Search Project Build Debug Fortran wxSmith Tools Tools Plugins DoxyBlocks Settings Help
Management X
Projects

Projects

Minimum X

Management X

Minimum X

Minimum
 Projects
Workspace
                                                                              using namespace std;
                                                                              class Node (
                                                                              public:
int data;
                                                                                               Node* next:
                                                                                                Node(int value) {
                                                              10
                                                                                                              data - value;
next = nullptr;
                                                             13
14
15
                                                                               );
                                                                              =Node* createLinkedList(int arr[], int size) {
                                                                                            Node* head = nullptr;
Node* temp = nullptr;
Node* current = nullptr;
                                                              16
17
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19
                                                                                           for (int i = 0; i < size; ++i) {
  temp - new Node(arr[i]);</pre>
                                                              20
                                                             21
                                                                                                              if (head == nullptr) {
                                                             24
                                                                                                                               head - temp;
current = temp;
                                                              25
26
                                                                                                                else
                                                                                                                                 current->next = temp;
                                                              27
                                                                                                                                 current = current->next;
                                                             30
31
32
                                                                                                return head:
                                                             33
34
35
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37
                                                                              Node* searchLinkedList(Node* head, int key) (
                                                                                               Node* current = head;
while (current != nullptr)
if (current->data == ke
                                                               38
                                                                                                                                return current;
                                                              40
                                                                                                               current = current->next;
Build and run the active project
                                                                                                                                                                                                                                                                                                                                                     Windows (CR+LF) UTF-8 Line 89, Col 2, Pos 1883
- New.cpp - Code::Blocks 20.03
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| Comparison of the Comparison of
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                                                                                                                                                                                                                                                          Management × Start here × New.cpp > 37
                                                                                                   while (current !- nullptr) {
   if (current->data == key) {
     return current;
}
 Projects
Workspace
                                                              38
                                                               40
                                                                                                                    current - current->next;
                                                               42
                                                                                                   return nullptr;
                                                               45
                                                                                                  int size;
cout << "Enter Number of Elements: ";
cin >> size;
                                                               47
                                                               48
                                                                                                int* a = new int[size];
cout << "Enter " << size << " Integers:\n";
for (int i = 0; i < size; ++i) {
   cin >> a[i];
                                                                51
                                                              52
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56
                                                                                                 Node* head = createLinkedList(a, size);
Node* current = head;
                                                                57
58
                                                               59
                                                                                                    cout << "Linked List: "
                                                                                                  while (current != nullptr) {
   cout << current->data << " -> ";
   current = current->next;
                                                               61
                                                                62
63
                                                                64
65
                                                                                                   cout << "NULL" << endl;
                                                               66
                                                                                                  int key;
cout << "Enter element to search: ";
cin >> key;
                                                                68
                                                                 69
70
                                                               71
72
73
74
75
                                                                                                  Node* result = searchLinkedList(head, key);
                                                                                                  if (result != nullptr) {
    cout << "Element " << key << " found at node with address: " << result << end1;</pre>
                                                                                                   else (
                                                                                                                   cout << "Element " << key << " not found in the list." << endl;</pre>
                                                                                                                                                                                                                                                                                                                                                            Windows (CR+LF) UTF-8 Line 23, Col 31, Pos 422
C:\Users\sobha\Desktop\New.cpp
```

```
New.cpp - Code::Blocks 20.03
 Management X
Projects Start here X New.cpp X

Start here X New.cpp X

int* a - new int[size];
cout << "Enter " << size << " Integers:\n";
52
53
for (int i = 0; i < size; ++i) {
cin >> a[i];
                      56
                                 Node* head = createLinkedList(a, size);
                      57
                      58
59
                                 Node* current = head;
                                   cout << "Linked List: ";
                                  while (current != nullptr) {
   cout << current->data << " -> ";
   current = current->next;
                      61
                      63
                                  cout << "NULL" << endl;</pre>
                      65
66
                      67
68
                                  int key;
cout << "Enter element to search: ";</pre>
                      69
70
                                  cin >> key;
                      71
72
73
                                  Node* result = searchLinkedList(head, key);
                                  if (result != nullptr) {
    cout << "Element " << key << " found at node with address: " << result << endl;
} else {</pre>
                      74
75
                                        cout << "Element " << key << " not found in the list." << endl;</pre>
                      76
77
                      78
79
                                                                                                 © C:\Users\sobha\Desktop\New × + ~
                                  current - head;
                                  while (current != nullptr) {
   Node* next = current->next;
                      80
                                                                                                Enter Number of Elements: 5
                      81
                                                                                                Enter 5 Integers:
3 4 5 6 7
Linked List: 3 -> 4 -> 5 -> 6 -> 7 -> NULL
Enter 5 lement to search: 5
Element 5 found at node with address: 0x1519c0
                                        delete current;
                      83
                                       current = next;
                      84
                      85
                      86
                                  delete[] a;
                                                                                                Process returned 0 (0x0) \, execution time : 5.672 s Press any key to continue.
                      87
                      88
                                  return 0;
                      89 }
                      90
                                                                                                                       Windows (CR+LF) UTF-8 Line 23, Col 31, Pos 422
Run the active project
```