

Single Linked List Implementation

Node definition:

```
class Node {  
public:  
    int data;  
    Node* next;  
    Node(int value) : data(value), next(nullptr) {}  
};
```

Create a linked list:

```
class LinkedList {  
public:  
    Node* head;  
    LinkedList() : head(nullptr) {}  
  
    void append(int data) {  
        Node* new_node = new Node(data);  
        if (head == nullptr) {  
            head = new_node;  
            return;  
        }  
        Node* current = head;  
        while (current->next) {  
            current = current->next;  
        }  
        current->next = new_node;  
    }  
};
```

// Example usage:

```
int main() {  
    LinkedList llist;  
    llist.append(5);  
    llist.append(10);  
    llist.append(15);  
    return 0;  
}
```

Printing a linked list:

```
void printLinkedList(Node* head) {
    Node* current = head;
    while (current) {
        cout << current->data << " -> ";
        current = current->next;
    }
    cout << "nullptr" << endl;
}
```

// Example usage:

```
printLinkedList(llist.head);
```

Finding an element in a linked list:

```
bool findElement(Node* head, int target) {
    Node* current = head;
    while (current) {
        if (current->data == target) {
            return true;
        }
        current = current->next;
    }
    return false;
}
```

// Example usage:

```
cout << findElement(llist.head, 10) << endl; // Output: 1 (true)
```

```
cout << findElement(llist.head, 20) << endl; // Output: 0 (false)
```

Deleting an element in a linked list:

```
void deleteElement(Node*& head, int target) {
    if (head == nullptr) {
        return;
    }

    if (head->data == target) {
        Node* temp = head;
        head = head->next;
        delete temp;
        return;
    }
}
```

```
Node* current = head;
while (current->next) {
    if (current->next->data == target) {
        Node* temp = current->next;
        current->next = current->next->next;
        delete temp;
        return;
    }
    current = current->next;
}
```

```
// Example usage:
deleteElement(llist.head, 10);
printLinkedList(llist.head);
```
