## Linked List Program - Test Documentation

## Overview

* **Program Name**: Linked List Program
* **Test Date**: November 9, 2024
* **Tester**: Student
* **Purpose**: To verify basic linked list operations work correctly

## Test Types and Results

### 1. Basic Function Tests

Tests each function separately to make sure it works on its own.

| **Test Name** | **What it Tests** | **Expected Result** | **Actual Result** | **Status** |
| --- | --- | --- | --- | --- |
| **Insert at beginning** | Add 10 to start of list | Node with value 10 at start | Node with 10 created at start | PASS |
| **Insert at end** | Add 20 to end of list | Node with value 20 at end | 20 added after 10 | PASS |
| **Count nodes** | Count total nodes in list | Count = 2 | Count = 2 | PASS |
| **Delete node** | Remove node with value 10 | 10 removed, 20 becomes first | 10 removed successfully | PASS |

### 2. Real-World Usage Test (To-do List Simulation)

Tests how the program works in a real situation.

**Test Scenario**: Creating and managing a simple to-do list

1. Add three tasks (1, 2, 3)
2. Remove middle task (2)
3. Check remaining tasks

**Steps and Results**:

**1. Initial List Creation:**

**Input: Add tasks 1, 2, 3**

**Expected: 1 -> 2 -> 3 -> NULL**

**Actual: 1 -> 2 -> 3 -> NULL**

**Status: ✓ PASS**

**2. Task Removal:**

**Input: Remove task 2**

**Expected: 1 -> 3 -> NULL**

**Actual: 1 -> 3 -> NULL**

**Status: ✓ PASS**

**3. Final Count:**

**Expected: 2 tasks**

**Actual: 2 tasks**

**Status: ✓ PASS**

## A screenshot of a computer program Description automatically generated

## Problems Found

None in current version. Program handles basic operations as expected.

## Future Test Suggestions

1. Test with larger numbers (e.g., 1000 items)
2. Test adding/removing items in different orders
3. Test with negative numbers
4. Test memory usage with very large lists

## Test Environment

* **Compiler**: gcc (MinGW)
* **IDE**: Visual Studio Code
* **OS**: Windows
* **Build Command**: gcc linked\_list.c test\_linked\_list.c -o run\_tests.exe

## How to Run Tests

1. Open VS Code
2. Press Ctrl + Shift + B to build
3. In terminal, run: .\run\_tests.exe
4. Check output against expected results

## Notes

* All basic operations working as expected
* No crashes or unexpected behavior observed