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CPSC122-02

4/13/2025

Report

How to Run the Code:

1. **Unzip**, and cd into the Linked-Lists folder wherever it is on your machine:

   cd Downloads/Linked-Lists/

2. Compile and run the main file by running the two commands (the bolded text):

   a. **g++ -std=c++11 main.cpp linked_list.cpp -o main**

   b. If on Linux/Mac:

      ./main

      If on Windows:

      .\main.exe

How to Run the Tests:

3. **Unzip** (if you haven't already), and cd into the Linked-Lists folder:

   cd Downloads/Linked-Lists/

4. Compile and run the test file by running the two commands (the bolded text):

   a. **g++ -std=c++11 test_linked_list.cpp linked_list.cpp -o test**

   b. If on Linux/Mac:

      ./test

      If on Windows:

      .\test.exe

Question Answers:

1) The sum of the first 20 prime numbers' multiplicative inverses after adding the values of each node in the prime numbers linked list was **approximately 1.74287.**

   I double checked this by inputting the values:

   1/2 + 1/3 + 1/5 + 1/7 + 1/11 + 1/13 + 1/17 + 1/19 + 1/23 + 1/29 + 1/31 + 1/37 + 1/41 + 1/43 + 1/47 + 1/53 + 1/59 + 1/61 + 1/67 + 1/71

   Into a calculator and got **1.74286691689.**

2) The difference between the largest and smallest number of days when talking about 10,000 years was **651644 days.** This difference was between the full moon cycle and the draconic year.

   This can be double checked by multiplying the longest and shortest year, in days, by 10,000 and then subtracting them in a calculator:

   (411.78443029 * 10,000) - (346.620075883 * 10,000) = **651643.54407 days**

3) The total cost to buy 3 shares of each top 15 NASDAQ company on March 15, 2025 was **$11216.60.**

   This can be checked by adding each of the top 15 NASDAQ company share prices together and multiplying the total by 3.

   (247.10 + 130.28 + 404.00 + 212.71 + 181.19 + 668.13 + 330.53 + 62.59 + 19.74 + 93.40 + 57.33 + 139.25 + 352.47 + 285.98 + 554.18) * 3 = **$11216.64**

How Work Was Divided:

I. Gavin McClure-Coleman:

   A. Report:

1. Instructions to Run Code and Tests
2. Project Question 1

B. Specifications/Code:

1. double search(int key)
2. Node* at(int index)
3. int size()
4. void pretty_print()
5. Both UML Diagrams

II. Aidan Amal:

A. Specifications/Code:

1. Bool remove(int index)
2. bool remove_key(int key)
3. void bubble_sort()

III. Darrell Cenido:

A. Report:

1. Project Question 3

B. Specifications/Code:

1. void push_front(int key, double value)
2. void push_back(int key, double value)
3. void selection_sort()

IV. Megan Gilbert

A. Report:

1. Project Question 2

B. Specifications/Code:

1. bool insert(int key, double value, int index)
2. bool remove_value(double value)
3. void print()