CSCE 20004 – Programming Foundations I
Programming Project Report

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Submission Date: 1/22/25

Academic Integrity Statement: I pledge that I have neither given nor received unauthorized help on this programming assignment.

Problem Statement:
- Describe the goals of the programming assignment.
    - Learn how to use input/output commands and using basic numerical calculations in C++.
- What are the program inputs?
    - The box and truck: height, width, and length
- What are the program outputs?
    - The number of boxes
    - The empty space: height, width, and length
    - How much space is being used
- What error handling was required?
    - Not much, the only real error was with my space utilization. For the longest time it kept on printing out 0.

Design:
- Describe the design decisions you made.
    - Made the unit conversion for the truck feet to inches
    - Calculates the volume for you
    - Calculates the space utilization
    - I used int for every term except the space utillization where I used double for accurate percentage.
- What were pros/cons of choices above?
    - Pros:
        - Simple input
        - Consistent units
        - Detailed output
        - Efficient use of calculations
    - Cons:
        - Lack of input validation
        - Assumes perfect fit
        - Fixed unit conversion
        - Fixed box size

Implementation:
- Describe your implementation process.
- What sample code did you start with?
    - I started with the Sphere 2 program

- How did you extend or adapt this code?
  - I originally used the float declarations & its output statements
- What was your development timeline?
  - I started with finding the volume, then the entire measurements, them the empty, and finally the space utilization
- **Document your AI prompts and AI answers.**
  - N/a

Testing:
- Describe how you tested your program.
  - I would write on equation, test it, them go onto the next
- What were the normal inputs you used?
  - int emptyHeight, emptyWidth, emptyLength;
  - int boxHeight, boxWidth, boxLength;
  - int truckHeight, truckWidth, truckLength;
  - int entireHeight, entireWidth, entireLength;
- What were the special cases you tested?
  - static_cast<double>
- Did everything work as expected?
  - Yes
- **Include typescript showing program input/output.**

Conclusions:
- Describe the overall result of the assignment.
  - I was able to make a program that can find out how many boxes are in a truck, the space left in it, and the % of space being used
- Was the programming project a success?
  - Yes
- What would you do same or differently next time?
  - The comments I put were pretty helpful for me when I had any issues
- How long did the project take to complete?
  - 3 hrs