## Chapter 2 Programming Project

**Your name:**

**IDE used**: \_\_\_X\_\_\_Visual Studio \_\_\_\_\_Replit Other (provide name)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**URL to GitHub repository**: https://github.com/pistachiosparkle/AA-CS-Class

**Program 1. Ocean Levels**

**Instructions:**

Assuming the ocean’s level is currently rising at about 1.5 millimeters per year, write a program that displays:

* The number of millimeters higher than the current level that the ocean’s level will be in 5 years.
* The number of millimeters higher than the current level that the ocean’s level will be in 7 years.
* The number of millimeters higher than the current level that the ocean’s level will be in 10 years.

**Design Details** (algorithm, pseudocode, or flowchart):

riseperyear = 1.5

(years changes with each part of the problem)

oceanlevelrise = riseperyear \* years

**Reflection:**

1. What did you find most challenging with this program?

Not too tricky, but this was my first time using C++ so it was just new

1. What problems did you encounter and how did you solve them?

I didn’t encounter problems with this problem. Not necessarily a problem, but I still do not understand the necessity of return 0 (why can’t I just skip it), but of course I included it as taught.

1. What did you learn from writing this program?

I gained familiarity with C++ syntax. Using // instead of # for comments kept throwing me off

**Project 2.** **Distance per Tank of Gas**

**Instructions:**

A car with a 20-gallon gas tank averages 23.5 miles per gallon when driven in town, and 28.9 miles per gallon when driven on the highway. Write a program that calculates and displays the distance the car can travel on one tank of gas when driven in town and when driven on the highway.

Hint: The following formula can be used to calculate the distance:

Distance = Number of Gallons x Average Miles per Gallon

**Design Details** (algorithm, pseudocode, or flowchart):

tanksize = 20.0

mpgtown = 23.5

mpghighway = 28.9

towndistance = tanksize \* mpgtown

highwaydistance = tanksize \* mpghighway

**Reflection:**

1. What did you find most challenging with this program?

Keeping track of double vs int

1. What problems did you encounter and how did you solve them?

I saw a “lightbulb note” (idk the correct term) that says mpgtown is undefined, I’ve gone over it countless times and it absolutely is defined?? I can’t figure out what I’m missing here.

1. What did you learn from writing this program?

Maybe I learned that I can’t correctly assess whether a variable has been defined.

**Project 3. Energy Drink Consumption**

A soft drink company recently surveyed 16,500 of its customers and found that approximately 15 percent of those surveyed purchase one or more energy drinks per week. Of those customers who purchase energy drinks, approximately 58 percent of them prefer citrus-flavored energy drinks. Write a program that displays the following:

* The approximate number of customers in the survey purchasing one or more energy drinks per week.
* The approximate number of customers in the survey preferring citrus-flavored energy drinks.

**Design Details** (algorithm, pseudocode, or flowchart):

totalcustomers = 16500

purchasepercentage = 0.15

citrusprefpercent = 0.58

customerspurchasinged = totalcustomers \* purchasepercentage

customersprefcitrus = customerspurchasinged \* citrusprefpercent

**Reflection:**

1. What did you find most challenging with this program?

Keeping all the difference variables organized and spelled correctly

1. What problems did you encounter and how did you solve them?

The vertical line to the left of the code that usually comes after int main() { is missing and I haven’t been able to identify why.

1. What did you learn from writing this program?

It’s important to name variables in a sensible way because things can get complicated and it’s hard to intuitively keep track of which variable means what if the names are perhaps too similar, or too complicated (or too vague).