ENGR 110 – Vector Project

Code Documentation File

Class Section:

Team #:

Names:

**Part 1 Plan Code Structure** – For this portion just consider the *structure* of the code to include a menu that repeats until the user chooses to end the program.

Indicate which concepts you need to use in this program. Then answer the associated questions.

|  |  |
| --- | --- |
| **Concepts** | **Related Questions** |
| **□ Input** | *What information (how many, type) do you need to collect from the user?* |
| **□ Branching (if/else)** | *How many branches are needed? \_\_\_\_*  *List the Boolean condition(s) that determine(s) which branch is executed:* |
| **□ Loops** | *When should the loop stop? What is the corresponding Boolean expression (condition)?*  *What operations to be repeated/updated each time the loop executes?* |
| **□ Functions** | *Where in the code is the function defined?*  *Where in the code is the function called?* |

**Part 2 Develop and Test Structure**– Use ChatGPT to help write the code structure described in Part 1

1. What prompt did you use first in ChatGPT?
2. Did you modify your prompt to get an improved response? If so, describe what changes you made to the prompt. What elements were missing from the original prompt that made it insufficient?
3. Accuracy: Review and test the ChatGPT generated code. To test, you will need to make your own test cases to verify that the code is working correctly. Describe your test cases and the results of testing these with the generated code.
4. Describe any changes that were made to the ChatGPT-generated code to correct errors or omissions in the syntax. If no changes were needed, state so.

**Part 3 – Function Development**

***Function 1***

**1. What is the purpose of this function?** *(What is the code supposed to do?)*

**2.** Indicate which concepts you need to use for this function. Then answer the associated questions.

|  |  |
| --- | --- |
| **Concepts** | **Related Questions** |
| **□ Input** | *What information (how many, type) do you need to collect from the user?* |
| **□ Output** | *What information in the output message is variable, based on the input?* |
| **□ Calculations**  You may include photos or screenshots here instead of typing out equations | *What calculations are needed between the input and the output?*  *Complete an example calculation by hand (you will use this as your test case to verify the accuracy of the code once developed):* |

***Function 2***

**1. What is the purpose of this function?** *(What is the code supposed to do?)*

**2.** Indicate which concepts you need to use for this function. Then answer the associated questions.

|  |  |
| --- | --- |
| **Concepts** | **Related Questions** |
| **□ Input** | *What information (how many, type) do you need to collect from the user?* |
| **□ Output** | *What information in the output message is variable, based on the input?* |
| **□ Calculations**  You may include photos or screenshots here instead of typing out equations | *What calculations are needed between the input and the output?*  *Complete an example calculation by hand (you will use this as your test case to verify the accuracy of the code once developed):* |

**Part 4** **Develop and Test Function 1 and Function 2** – Use ChatGPT to help write the code for each function described in Part 3

***Function 1***

1. What prompt did you use first in ChatGPT?
2. Did you modify your prompt to get an improved response? If so, describe what changes you made to the prompt. What elements were missing from the original prompt that made it insufficient.
3. Accuracy: Review and test the ChatGPT generated code. To test, you will need to make your own test cases to verify that the code is working correctly. Describe your test cases and the results of testing these with the generated code.
4. Describe any changes that were made to the ChatGPT-generated code to correct errors or omissions in the syntax. If no changes were needed, state so.

***Function 2***

1. What prompt did you use first in ChatGPT?
2. Did you modify your prompt to get an improved response? If so, describe what changes you made to the prompt. What elements were missing from the original prompt that made it insufficient.
3. Accuracy: Review and test the ChatGPT generated code. To test, you will need to make your own test cases to verify that the code is working correctly. Describe your test cases and the results of testing these with the generated code.
4. If the code is not accurate or functioning correctly, fix it. Describe any changes that were made to the ChatGPT-generated code to correct errors or omissions in the syntax. If no changes were needed, state so.

**Part 5 – Structure and Function Integration**

1. Where should the input statements be located for each function in the overall code structure (menu and loop)?
2. Where should the output statements be located for each function in the overall code structure (menu and loop)?
3. Where should the functions be called in the overall code structure?

**Part 6 – Resultant Vector**

Run the final program with your team’s latitude/longitude coordinates.

1. Start latitude/longitude coordinates:
2. Stop latitude/longitude coordinates:
3. Resultant vector in i/j notation:
4. Resultant vector in R/theta notation: