

CMSC140 Project 2 Design Template

Class: CMSC140 CRN 34975

Program: Project #2 Design

Instructor: Elia Shahbazi

Summary of Description: This program converts from metric system units to imperial system units

Due Date: 02/26/2023

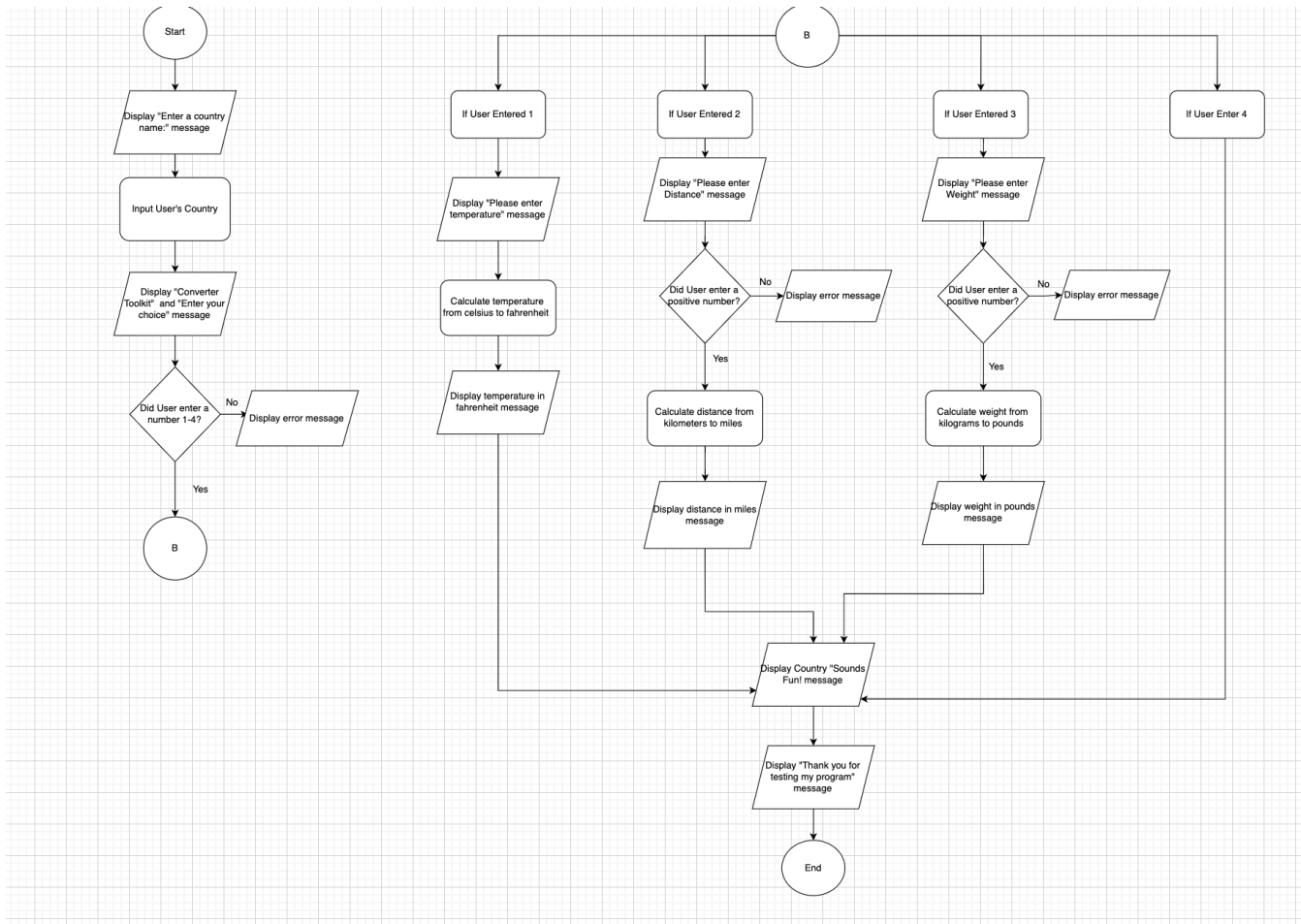
Integrity Pledge: I pledge that I have completed the programming assignment independently.

I have not copied the code from a student or any source.

I have not given my code to any student.

Print your Name here: Arianna Alimi

Part1: Flowchart and Pseudocode/Algorithm: Here is the flowchart and pseudocode for Project2 program:



Pseudocode Design Assignment

This program converts from metric system units to imperial system units

- Display message asking user to “Enter a country name”
- Input user’s country name
- Display “Converter Toolkit” and the converter options 1-4
- Display message asking user to “Enter your choice (1-4)
If user does not enter a number 1-4, display error message
- If user chose 1:
 - Display message “Please enter temperature in Celsius”
 - Input user’s temperature
 - Calculate the temperature from Celsius to Fahrenheit using formula $F = 9/5 * C + 32$
 - Display message showing user temperature in Fahrenheit using whole numbers
- If user chose 2:
 - Display message “Please enter distance in Kilometers”
If user does not enter a positive number, display an error message
 - Input user’s distance
 - Calculate the distance from Kilometers to Miles by multiplying Kilometers by 0.6
 - Display message showing user the distance in Miles (2 places after decimal)
- If user chose 3:
 - Display message “Please enter weight in Kilograms”
If user does not enter a positive number, display an error message
 - Input user’s weight
 - Calculate the weight from Kilograms to Pounds by multiplying Kilograms by 2.2
 - Display message showing user the weight in Pounds (1 place after decimal)
- If user chose 4:
 - End the program
- Display message “(User’s country) sounds fun!”
- Display “Thank you for testing my program!!” message

Part2: Comprehensive Test Plan

Test your program with at least two more test cases. Use the given data as an example. Record your data for input and output in the following table. **Make sure your tests cover all the possible scenarios.**

Test Case #	Input	Expected Output	Actual Output	Did the test pass?
1	Greece Choice 0	Error Message Greece sounds fun!	Error Message Greece sounds fun!	Yes
2	Canada Choice 1 45	113 Canada sounds fun!	113 Canada sounds fun!	Yes
3	Spain Choice 2 -15	Error Message Spain sounds fun!	Error Message Spain sounds fun!	Yes
4	Portugal Choice 3 55.5	121.1 Portugal sounds fun!	121.1 Portugal sounds fun!	Yes

Test Plan 1:

```
Enter a country name: Greece

Converter Toolkit
-----
1. Temperature Converter
2. Distance Converter
3. Weight Converter
4. Quit

Enter your choice (1-4): 0
The number you inputted is an invalid choice, please try again.

Greece sounds fun!

Thank you for testing my program!!
Programmer: Arianna Alimi
CMSC140 Common Project 2
Due Date: 3/5/2023

...Program finished with exit code 0
Press ENTER to exit console.
```

Test Plan 2

```
Enter a country name: Canada

Converter Toolkit
-----
1. Temperature Converter
2. Distance Converter
3. Weight Converter
4. Quit

Enter your choice (1-4): 1
Please enter temperature in Celsius (such as 24): 45
It is 113 in Fahrenheit

Canada sounds fun!

Thank you for testing my program!!
Programmer: Arianna Alimi
CMSC140 Common Project 2
Due Date: 3/5/2023

...Program finished with exit code 0
Press ENTER to exit console.
```

Test Plan 3:

```
Enter a country name: Spain

Converter Toolkit
-----
1. Temperature Converter
2. Distance Converter
3. Weight Converter
4. Quit

Enter your choice (1-4): 2
Please enter distance in Kilometer (such as 18.54): -15
!!! Program does not convert negative distance !!!

Spain sounds fun!

Thank you for testing my program!!
PROGRAMMER: Arianna Alimi
CMSC140 Common Project 2
Due Date: 3/5/2023

...Program finished with exit code 0
Press ENTER to exit console.█
```

Test Plan 4:

```
Enter a country name: Portugal

Converter Toolkit
-----
1. Temperature Converter
2. Distance Converter
3. Weight Converter
4. Quit

Enter your choice (1-4): 3
Please enter weight in Kilograms (such as 121.6): 55.5
It is 122.1 in Pounds

Portugal sounds fun!

Thank you for testing my program!!
Programmer: Arianna Alimi
CMSC140 Common Project 2
Due Date: 3/5/2023

...Program finished with exit code 0
Press ENTER to exit console.
```

Lessons Learned: Provide answers to the questions listed below:

Write about your Learning Experience, highlighting your lessons learned and learning experience from working on this project.

What have you learned?

I have learned how to calculate with constants instead of literals, how to use switch commands, how to use if statements, how to use else statements, and how to work with multiple headers.

What did you struggle with?

Initially, I struggled with using switch statements since it was new to me and I haven't worked with it much. It was difficult to make multiple cases in one switch command work but I ended up figuring it out. Also, the formula for the temperature converter was also something I struggled with since initially, it was skipping out on the (9/5) since I did not declare one of them as a double.

What would you do differently on your next project?

I will definitely use more if and else statements on my next project to avoid any invalid inputs and ensure that users are putting in the correct numbers that the program asks.

What parts of this assignment were you successful with, and what parts (if any) were you not successful with?

I was successful with using if and else statements, however, I was initially unsuccessful with using switch statements, however after watching a youtube video, it helped explain how to use it and I solved this issue.

Provide any additional resources/links/videos you used to while working on this assignment/project.

[https://www.youtube.com/watch?v= CeIY_ZBXb4](https://www.youtube.com/watch?v=CeIY_ZBXb4)

The learning center also helped me with solving my struggles and completing this program.