CS 3030 Scripting Languages
Lab 4: temp

Introduction

Lab 4 is your first Python script and it is a simple one. It is interactive, meaning your script will prompt the user to enter a temperature in degrees Fahrenheit or Celsius and calculate the other, in a continuous loop until the user exits the program.

Requirements

Your script shall be named `~/cs3030/lab4/temp` and be marked executable. Here is how you execute your script:

```
./temp
```

Your script shall interact with the user. The first thing it should print is exactly this:

```
Welcome to the CS 3030 Temperature Conversion Program
```

This welcome message should be printed only once.

Your program should then loop until the user enters "3" to exit the program. Your script should prompt the user with this main menu:

```
Main Menu

1:Fahrenheit to Celsius
2:Celsius to Fahrenheit
3:Exit program

Please enter 1, 2 or 3:
```

The user then enters `1`, `2` or `3` (and hits `ENTER`)

If the user enter `"3"`, the program exits.

If the user enters a `"1"`, the user is prompted for degrees Fahrenheit with this prompt:

```
Please enter degrees Fahrenheit:
```

The user enters a number, which should not contain commas but can contain a decimal point or a minus sign. Assume the user enters `"56.2"`. The program should respond with:

```
56.2 degrees Fahrenheit equals 13.4 degrees Celsius
```

The program then reprints the main menu and prompts the user, in an endless loop.

If the user enters a "2", the user should be prompted for degrees Celsius with this prompt:

```
Please enter degrees Celsius:
```

The user enters a number as before, which should not contain commas but can contain a decimal point or a minus sign. Assume the user enters "91.8". The program should respond with:

```
91.8 degrees Celsius equals 197.2 degrees Fahrenheit
```

If at any time the user enters anything non-numeric (including hitting just ENTER), your script should trap the error and at a minimum, print a message that includes:

```
Invalid entry
```

You should then reprint the main menu and start over at the beginning. Do not re-prompt for the degrees, start over at the top.

Your script should include these two functions to calculate its results:

`def fahrenheitToCelsius(fahrenheit)` - converts degrees fahrenheit to degrees celsius using this formula: **C = (F - 32.0) * (5.0/9.0)**

`def celsiusToFahrenheit(celsius)` - converts degrees celsius to degrees fahrenheit using this formula: **F = (9.0/5.0) * C + 32.0**

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Hints

- Use try/except to trap errors when prompting the user or converting the incoming string to a number
- Always restart from the main menu when the user enters anything invalid
- Always restart from the main menu after calculating degrees
- Your script should expect the user to hit `ENTER` after each entry
- Exit immediately when the user enters `3` from the main menu
- Use whitespace and indenting to make your script readable
- Add comments to your script to document your logic

Run cucumber to determine your grade

- Because `temp` is interactive, the first thing you should implement and test is typing `3` to exit. The cucumber scripts rely on this feature and it must work.
- The cucumber files for this lab implements a random number generator. To ensure your program always produces the correct output, run `cucumber` multiple times.
- When using cucumber, the `tar` command only needs to be run once (unless I update the `cuke.tar` file and notify the class)

```
tar xvf /var/classes/cs3030/lab4/cuke.tar

./cucumber -s
```

Files

For this lab you will have created folder `lab4` and the following executable files:

```
temp
```

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Grading

Here is how you earn points for this assignment:

FEATURES	POINTS
Must-Have Features	
Script is named correctly and found in its proper place on icarus	5
Script is executable	5
Required Features	
Script prints “Welcome to the CS 3030 Temperature Conversion Program”	5
Script prints the Main Menu	5
Script correctly converts degrees Fahrenheit to degrees Celsius with 1 decimal place with option 1	10
Script correctly converts degrees Celsius to degrees Fahrenheit with 1 decimal place with option 2	10
Script exits with option 3	10
Script uses function fahrenheitToCelsius()	10
Script uses function celsiusToFahrenheit()	10
Script recovers from non-numeric entry at main menu	10
Script recovers from non-numeric entry when prompting for degrees Fahrenheit	10
Script recovers from non-numeric entry when prompting for degrees Celsius	10
Grand Total	100