Activity: Conditionals

Before You Begin:

Go thoroughly read the SDI_Conditionals.pdf! That PDF contains the full instructions for this project and the rubric, which explains how you will be graded.

Criteria:

For each problem below you will need the following:

- Label the section of code appropriately
- Prompt the user for each variable that is in the "User Input" Section of that problem.
- Validate each user prompt to insure that the user is typing in a valid response.
- Convert each user response to the **correct** data type, if needed.
- The result should be calculated using variables, not literal values when possible.
- Create code that will make decisions based on the value of the givens
- Print the result of the decision-making to the console using the format given in the "Results" section of that problem.
- After each section put in a multi-lined code for the Test Values.
- Use only code and techniques learned in this class.

Example: Stuff Your Face

To get in the heavyweight division of the Strawberry Festival's pie eating contest you must weigh 250 lbs or more.

Determine whether an entrant qualifies based on his weight.

- **Given:**
  - Competitor's weight.
- **Result:**
  - "The competitor qualifies for the heavyweight division." Or " The competitor needs to gain some weight!"

Graded Problems:

Problem #1: Temperature Converter

Convert a temperature to either degrees Celsius or degrees Fahrenheit depending on what the user has entered. First ask the user for a number temperature, for example 85. Then ask the user if that degree is in degrees Celsius or Fahrenheit. Tell the user to input a "C" or "F". If the temperature is Celsius the calculator should convert to Fahrenheit. If the temperature is given in Fahrenheit, then the calculator should convert to Celsius.

- **User Input:**
  - Temperature Number
  - Temperature Type (A String holding an "F" or a "C")
- **Result:**
  - "The temperature is **X** degrees Celsius." Or "The temperature is **X** degrees Fahrenheit."
- **Data Sets to Test:**
  (Note that data sets are not the only numbers that should work with your code, but you need to be sure to test these plus 1 of your own for the test value section.)
  - Temperature Number = 32, Temperature Type = "F"
    - "The temperature is **0** degrees Celsius."
  - Temperature Number = 100 Temperature Type = "C"
    - "The temperature is **212** degrees Fahrenheit."
  - Temperature Number = 50 Temperature Type = "c"
    - "The temperature is **122** degrees Fahrenheit."
    - Make sure upper and lowercase letters both work!
  - Test One Of Your Own

Problem #2: Last Chance for Gas

A driver has to determine if they can make it across the desert with their current fuel.
They are about to past the last gas station for the next 200 miles and they need to determine whether they should stop now for gas or not.

- **User Input:**
  - How many gallons does your car tank hold?
  - How full is your gas tank? (in %)
  - How many miles per gallon does your car go?
- **Result To Print Out:**
  - "Yes, you can drive **X** more miles and you can make it without stopping for gas!" or "You only have **X** miles you can drive, better get gas now while you can!"
- **Data Sets to Test:**
  - Gallons -20 , Gas Tank = 50% full, MPG- 25
    - **Result** – "Yes, you can drive **250** more miles and you can make it without stopping for gas!"
  - Gallons -12 , Gas Tank = 60% full, MPG- 20
    - **Result** – "You only have **144** miles you can drive, better get gas now while you can!"
  - Test One Of Your Own

Problem #3: Grade Letter Calculator

A student earns a number grade at the conclusion of a course at Full Sail.
Determine the appropriate letter grade for that number using conditional statements.

- Assume grades are whole numbers that never go below 0 or above 100.
- There should be only one print out to the console.
- Use Full Sail's grade scale:
  - A is 90-100
  - B is 80-89
  - C is 73-79
  - D is 70-72
  - F is 0-69
- **User Input:**
  - Course Grade (in %)
- **Result To Print Out:**
  - "You have a **X**%, which means you have earned a(n) **X** in the class!"
- **Data Sets to Test:**
  - Grade – 92%
    - **Result** - "You have a **92**%, which means you have earned a(n) **A** in the class!"
  - Grade – 80%
    - **Result** - "You have a **80**%, which means you have earned a(n) **B** in the class!"
  - Grade – 67%
    - **Result** - "You have a **67**%, which means you have earned a(n) **F** in the class!"
  - What happens when you type in 120%?
    - Is this a valid response? Can you re-prompt the user?
  - Test One Of Your Own

Problem #4: Discount Double Check

You are going to purchase (2) items from an online store.
If you spend $100 or more, you will get a 10% discount on your total purchase.
If you spend between $50 and $100 , you will get a 5% discount on your total purchase.
If you spend less than $50, you will get no discount.

- **User Input:**
  - Cost of First Item (in $)
  - Cost of Second Item (in $)
- **Result To Print Out:**
  - "Your total purchase is $**X**." Or
  - "Your total purchase is $**X**, which includes your **X**% discount."
- **Data Sets to Test:**
  - First Item Cost - $ 45.50, Second Item Cost - $75.00, Total - $108.45
    - **Results** - "Your total purchase is $**108.45**, which includes your **10**% discount."
  - First Item Cost - $ 30.00, Second Item Cost - $25.00, Total - $52.25
    - **Results** - "Your total purchase is $**52.25**, which includes your **5**% discount."
  - First Item Cost - $ 5.75, Second Item Cost - $12.50, Total - $18.25
    - **Results** - "Your total purchase is $**18.25**."
  - Test One Of Your Own