**Mission 8.4: Conditional Output: If, Elif, & Else**

I. Situation:

1. Conditional if statements
   1. An if statement is used to have code that is run only when the statement is true. If the statement is false, the code associated with it is ignored.
      1. Example code

a = 33

b = 200

if b > a:

print ("b is greater than a")

print (“all done”)

* + 1. Output

b is greater than a

all done

* + 1. Alternative output if a = 200 and b = 33

all done

* 1. Indentation. All of the conditional code that is associated with an if statement must be indented 4 spaces. IDLE does this automatically. Also note the if statement ends with a colon, “:”.
  2. elif. Short for else if. elif is used to run different code when the original if statement is false, but the elif statement is true.
     1. Example code

a = 33

b = input(“Enter an integer”)

if b > a:

print ("b is greater than a")

elif a > b:

print (“a is greater than b”)

* 1. else. The code associated with an else function is run if the original if statement and all of the elif statements after it are false.
     1. Example code

a = 33

b = input(“Enter an integer”)

if b > a:

print ("b is greater than a")

elif a > b:

print (“a is greater than b”)

else:

print (“a = b”)

1. Python Logic

Python supports the usual logical conditions from mathematics:

Equals: a == b Not Equals: a != b

Less than: a < b Less than or equal to: a <= b

Greater than: a > b Greater than or equal to: a >= b

1. Help on the Internet: https://www.w3schools.com/python/python\_conditions.asp

II. Mission:

1. Your team must write, run, save, and share a program in Python that uses if, elif, and else to code a simple calculator that can add, subtract, multiply, and divide two numbers selected by the user.
2. Because this mission will require several class periods to complete, use the following procedure to save your work and not lose progress:
   1. When you are testing code, save XXXXXSimpleCalc.py to the Downloads folder.
   2. When time is running out, put a copy of your latest version in your Drive folder online.
   3. Make sure to notify me in the communication file when you think you are finished.
3. Open IDLE3 in the XFCE OS, and start writing some code.
4. Use the input function to define a variable named “choice” which lets the user choose which math function they want to do.
5. Use the input function to get user values for the variables num1 and num2.
6. Use if and elif to make the program execute the correct code and print the output, depending on what the value of the variable “choice” is.

HELPFUL HINT: Test and save your code after you complete each of the four conditions.

1. Use else to print an error message “I don’t know that command” if the user inputs an unexpected string.
2. Add an *Easter egg*. In programing, an Easter egg is a hidden, surprising feature of code that is not obvious to the user. For example, you could use something like elif choice = “Mr. T” print (“I pity the fool.”).
3. Test your program one last time to make sure the 4 known conditions, the easter egg, and unknown input produce the desired output.
4. Save XXXXXSimpleCalc.py into your work products folder.

Command & Signal

1. This mission will almost certainly require several class periods to complete.
2. Upon successful completion and demonstration, your team will be awarded the following badge:

