Name:_____ **Partner:** _____

Python Activity 8: More ELIF

Programs with increasingly complex decision-making…

Learning Objectives

Students will be able to:

Content:

- Implement the Python syntax of an if/elif/else statement
- Determine good test data for programs that include if/elif/else statements

Process:

- Write code that includes if statements and if/elif/else statements
- Write code that appropriately uses elif and else within an if-block

Prior Knowledge

- Boolean expressions, if/elif/else

Critical Thinking Questions:

1. Closely examine the Python program below.

Python Program

```
def heightMessage(height):
    female_ht = 162.9 # average US female height (cm)
    male_ht = 176.4

    if height > male_ht:
        print("You're taller than the average US male")
    elif height >= female_ht:
        print("You have the height of the average US female, or taller.")
    else:
        print("You're not taller than the average.")

def main():
    heightMessage(float(input("What is your height in cm? ")))

main()
```

a. List five numbers to test different parts of this program. Indicate what part of the program the number is testing. (Enter and test the code as a class / at home).

Number	Part Tested

FYI: **elif** is the Python keyword that represents **else if** and allows you to test for one of several options**.** As soon as one of the tests is true, the rest are ignored.

b. Suppose you wanted to add the comment "Close to average!" for heights that are between 160.9 and 162.9. Where would you add it? Write the code for this additional choice:

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c. Does it make a difference where the additional **elif** clause is placed? _____

d. When is the code associated with the **else** statement executed?

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g. Change the program so that it prints the following messages. Write the code for the revised program below.

Greater than or equal to 176.4	"Taller than avg man"
Greater than or equal to 162.9 but less than 176.4	"Taller than avg woman
Greater than or equal to 176.4/2 but less than 162.9	"Taller than half the avg men's height"
Greater than or equal to 162.9/2 but less than 176.4/2	"Taller than half the avg woman's height"
Less than 162.9/2	"Not taller than average"

h. Make a final change to the program so that it prints an error message if the height entered is greater than 250 or less than 0. Write the additional code below and draw a line to the program above to indicate where you would place this code.

2. Closely examine the Python program below, it is similar to the previous code, except we replaced the `elif` with `if`:

Python Program

```
def heightMessage(height):
    female_ht = 162.9 # average US female height (cm)
    male_ht = 176.4

    if height > male_ht:
        print("You're taller than the average US male")
    if height >= female_ht:
        print("You have the height of the average US female, or taller.")
    else:
        print("You're not taller than the average.")

def main():
    heightMessage(float(input("What is your height in cm? ")))

main()
```

a. This code will produce a different output than the previous code example, particularly, if you run this code with an input of `180`, you will see the following output:

```
You're taller than the average US male
You have the hight of the average US female, or taller.
```

How does this compare to the output we saw in the previous code example (only "`You're taller than the average US male`")?

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b. What does this tell you about the difference between using a series of `if` statements, versus `elif`?

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Application Questions: Use the Python Interpreter to check your work

1. Write an if/elif statement that assigns a value to the variable **bonus** depending on the amount of sales. Assume the amount of the sales is stored in a variable called **sales.**

Sales	Bonus
>= 100,000	10,000
>= 75,000	5,000
>= 50,000	2,500
>= 25,000	1,000

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