Task 1

Part A:

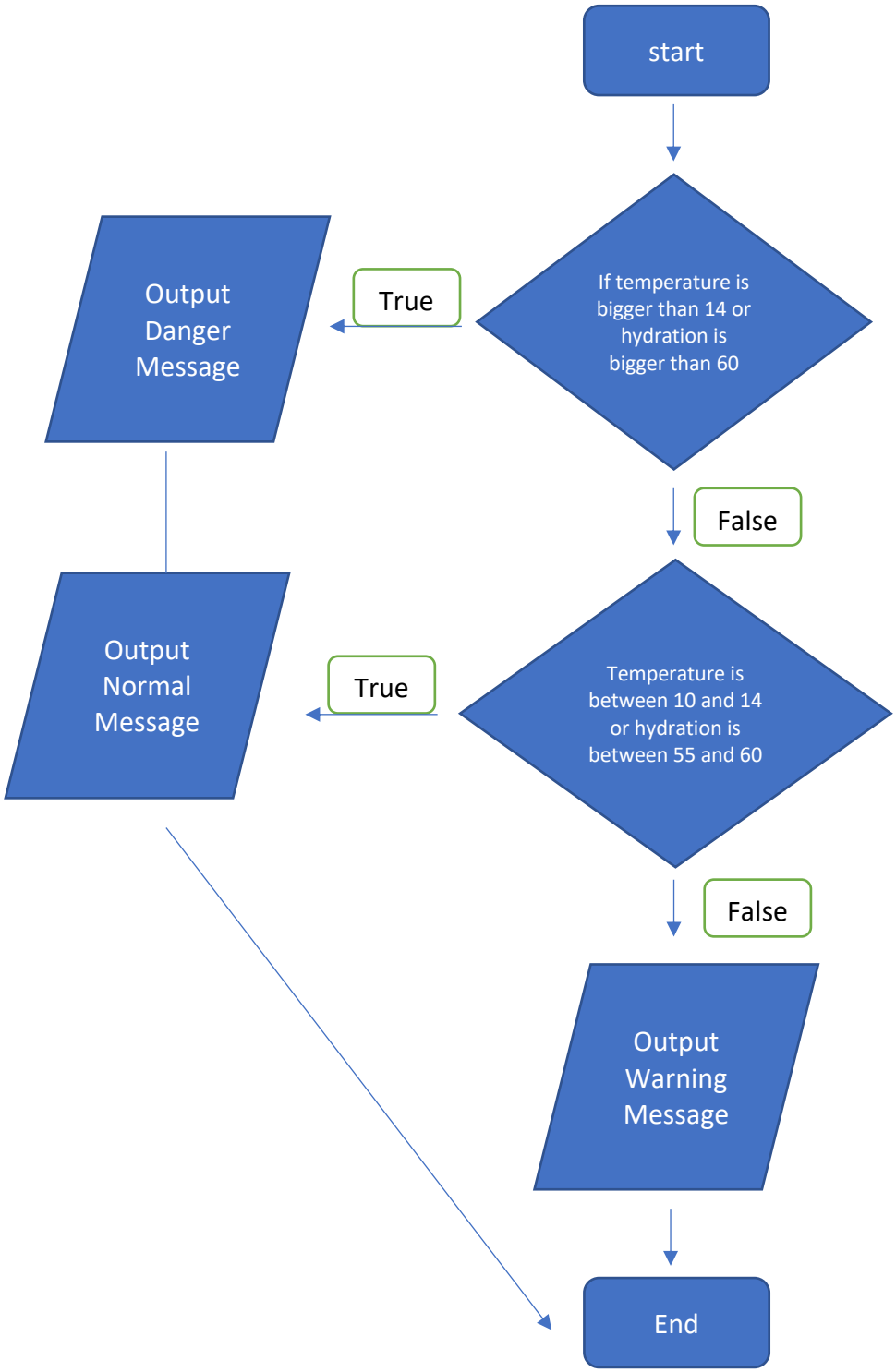
Logic Operations	Hand Calculation	Python Calculation
1. A and B	False	0
2. A or B	True	1
3. A == B	False	0
4. (A and B) == (A or B)	False	0
5. A != B	True	1
6. A > B	True	1
7. A >= B	True	1
8. A = B	False	Make A equals to B

Part B:
For number 8, in python, it just changes in the variable explorer and gives no answer so I worte none. But for hand calculation it shows false.

Part C:

1. What will be the output of your flow diagram for the following test cases?
    1. Temperature = 12.2°F and Hydration = 55.5%
        1. Normal message
    2. Temperature = 32°F and Hydration = 57.5%
        1. Danger Message
    3. Temperature = 0°F and Hydration = 50%
        1. Warning Message
2. Why is it important to be able to utilize logical, conditional or comparison operations in programs? Or are they completely useless? Justify your response.
    1. It's important to utilize logical, conditional or comparison operations because there won't only be one condition and it would be much easier if we can write one set of code and use it to face various situations. The input and output would also vary due to the different conditions. The logical, conditional or comparison operations allow rooms for combinations and it make a set of code more suitable for application in the real world.

Part C:


start
If temperature is bigger than 14 or hydration is bigger than 60
True
Output Danger Message
False
Temperature is between 10 and 14 or hydration is between 55 and 60
True
Output Normal Message
False
Output Warning Message
End

Part D:

1. What will be the output of your flow diagram for the following test cases?
    1. Temperature = 12.2°F and Hydration = 55.5%
        1. Normal
    2. Temperature = 32°F and Hydration = 57.5%
        1. Danger
    3. Temperature = 0°F and Hydration = 50%
        1. warning

Answers are consistent with part C's answers.

Task 2

Part A:

1. What will be the output of your flow diagram for the following test cases?

a. Temperature = 12.2°F and Hydration = 65.5%

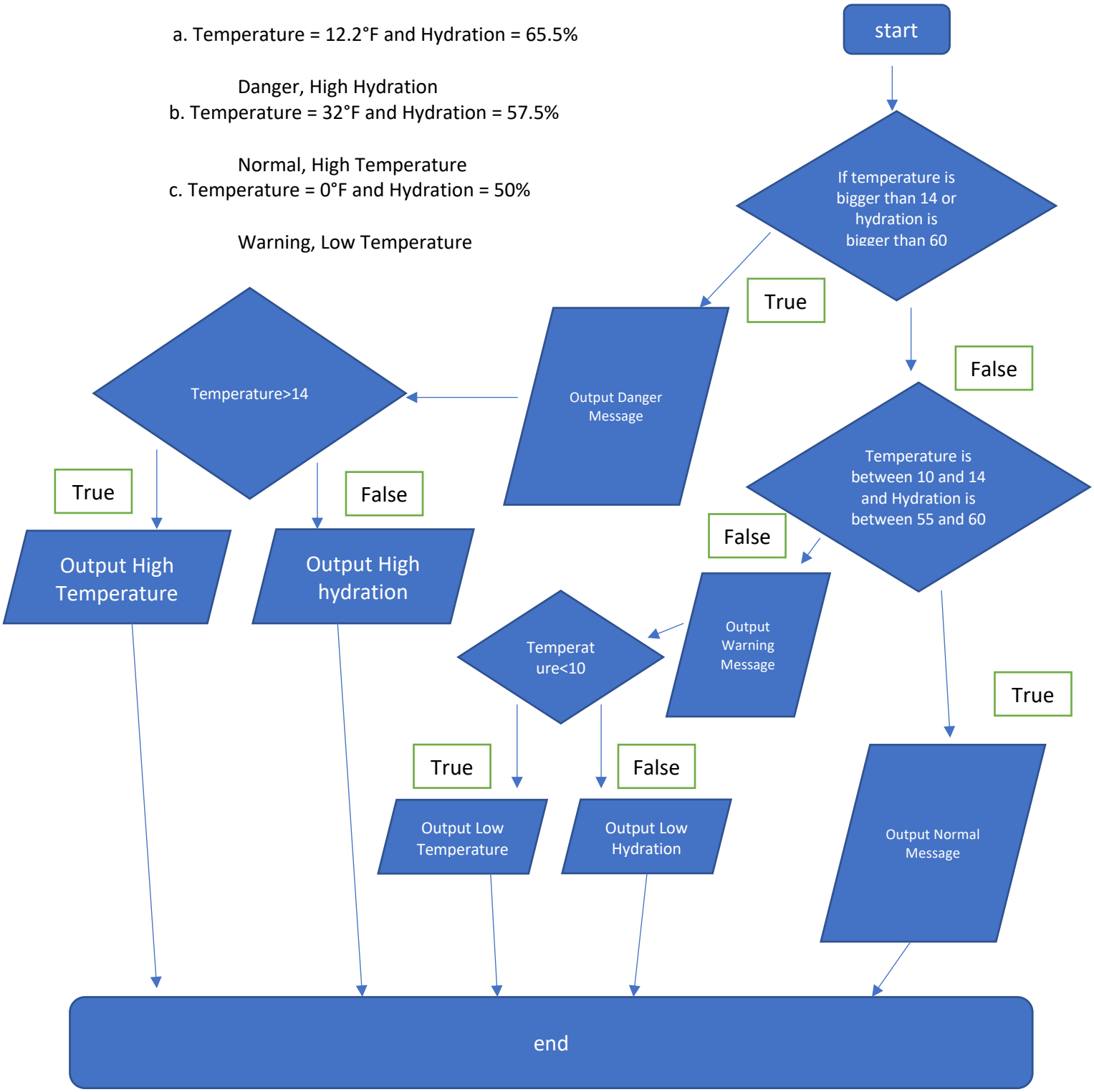
Danger, High Hydration

b. Temperature = 32°F and Hydration = 57.5%

Normal, High Temperature

c. Temperature = 0°F and Hydration = 50%

Warning, Low Temperature



Task 3:

Part B:

1. What Python function can you use to output variables to the screen?
    1. Print function
2. What syntax differences exist between the two Python functions (`distanceBike` and `windTurbineArea`)?
    1. Formulas are different
3. What syntax differences exist in your Python program when calling these two functions?
    1. Two arguments for distance bike versus four arguments for the wind turbine
4. What are the differences between a main program and a called function in Python? What are the advantages of user-defined functions in Python?
    1. You can call it multiple times instead of rewriting the code.

Task 4

Part A:

1. What happens when you run `Py2_Task4_`*`teamnumber`*`.py`?
    1. There's an error because R is not defined
2. What happens when you change line 5 of the Python file from `print(R)` to `print(radius)`?
    1. The file runs.
3. What happens when you change line 4 of the Python file from `print(A)` to `print(area)`?
    1. An error occurs.
4. What happens when you add a line in your function such as `global area` just after the definition line and then change line 4 of the Python file from `print(A)` to `print(area)`?
    1. An error occurs
5. What does it tell you about the difference between local and global variables?
    1. Global variables are defined outside the function while local variables are inside the function

Part B:

1. Are S1 and S2 global or local variables?
    1. Local.