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1. In a paragraph, compare and contrast the functions get\_max\_number() and find\_max\_number(), identifying all the ways they are similar and different.

The get\_max\_number() function is a fruitful function and stores the variable vaule for max\_number. The find\_max\_number() just prints the variable value for max\_number and use the variable as a local variable.

1. "Don't repeat yourself" is such an important principle of software development that it has an acronym, DRY. Given this, explain why both of these

The functions get\_max\_number() and find\_max\_number() are NOT REALLY needed if you follow DRY principles. If you had to choose only one of them, explain which of these functions would be more useful and why.

All, we would need is the fruitful function, or in this program, the function get\_max\_number. The reason why, the function get\_max\_number is because at any time we can store the value of the max number by printing the get\_max\_number function. By storing the max number, we can print the max number at any time, if we print the function. On the other hand, find\_max\_number can only be use once because the max number is local variable.

1. The unit tests for get\_max\_number() passed. Fix or write an equivalent unit test which passes for find\_max\_number(), or explain in your Word document why this is not possible.

The reason why, the function find\_max\_number will not work is because it is not a fruitful function, which mean it does not return a value to test.

1. Look at rotate\_flag() and the unit tests for that function. Tracing the code, explain why ONLY the second unit test failed even though the fourth test is exactly the same as the first two. Then fix this problem in the code by removing the global variable which is causing the problem. In your Word document, explain why this is the preferred fix.

It’s because the globe variable (my flag) kept up dating with the value of my flag, which means that it coved output the right value because it keep input every different value.

1. Look at make\_older() and the unit tests for that function. Tracing the code, explain why the second and fourth unit tests for make\_older() failed. In particular, what is the variable person used for when the function is called in the main part of your program? What relationship does this variable have with person that exists inside the function? When two instances of a variable exist (one outside and one defined inside), the one inside the function is **shadowing** the other one. Shadowing a variable presents all sorts of problems, and this use here is no exception. Explain in your Word document what this function is supposed to do and how shadowing the variable is preventing the function from working as it should.   
   Fix the make\_older() function and modify its docstring so that the entire tuple information is returned and the personvariable in the main part of the program is updated correctly. In your Word document, explain why this is the preferred fix (as opposed to making a local variable global, for example).

The variable (person) is used for saving the older person’s information when the function (make\_older) is called. Shadowing the variable (person) causes problems because the computer thinks that it needs to update the variable but there are two a local variable and fruitful variable. This cause the computer to error because it update with the first fruitful and then update that variable name by change into a local variable, when variable is in the function so it lose the data and when you try recover the data for that variable name. This happens because if don’t return a variable making the variable a fruitful variable, then after the use of the function the data of the variable is lost. We fixed the function (make\_older) by making the function assign its local variable "person" to the global variable "person". This allowed the function to update a local variable in order for the variable "person" to be called the next time and increase the age again.