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This homework and its due date are posted on the course website: <https://ucsb-cs8.github.io/w20>. Submit a PDF file of this assignment following the guidelines posted on the website.

h05: Perkovic 3.3 (User-Defined Functions), 3.4 (Python Variables and Assignments)

0. (5 points) Use the provided homework template (without any blank pages), filling out all requested fields, and correctly submitting a legible electronic document on Gradescope before the due date. By submitting this document you agree that **this is your own work** and that you have read the policies regarding Academic Integrity: <https://studentconduct.sa.ucsb.edu/academic-integrity>.

1. (10 pts) In Section 3.3, what is the one of the main advantages of using functions that the author lists?

They can be called to complete a task that requires multiple Python statements, thus cleaning up the code.

2. (3 pts) What is the role of the input argument in a function?

The input argument takes what value(s) the user wants the function to execute.

3. (6 pts) What are the two ways in which a function can stop its execution?

1. return

2. print()

4. (10 pts) Without running the code try to figure out why the following function definition is incorrect.

```
def squareSum(x, y):
    """ Returns the sum of squared inputs """
    return x**2 + y**2
```

Now, re-type the function definition exactly as shown and see what the errors tell you.

How many and which errors were there in the code? (You can also mark them in the code above.)

3 errors. One was separating the input variables, another was forgetting to insert a colon after the function name. The last was not indenting the docstring.

5. (5 pts) On page 70 the author shows an example that illustrates using `print()` versus `return`. Use that example to explain *in your own words*, what `NoneType` means and why it appears in the error for that function.

`NoneType` means that evaluated output has no assigned value. When you try to apply arithmetic to "nothing," as opposed to 0, it is impossible.

6. (5 pts) In Section 3.3, the book explains that the function needs to be defined before it can be used. Will the following code result in an error, since `f(x)` is defined after it is used in `g(x)`? **Why?**

```
def g(x):
    return f(x)
```

Yes. Before calling a function, you must first define it since Python statements are executed from top to bottom.

```
def f(x):
    return x**2 + 1
```

7. (5 pts) According to Section 3.3, what is a docstring and what is its purpose? **Where** in the program are the docstrings supposed to be placed? Why? What happens if you place them elsewhere?

A docstring is a string that describes what the function does. When using the `help(x)` function, it will return the docstring of the function `x` that you are seeking help for.

It should be placed directly below the first line of the function definition. If you don't place them there, the `help(x)` function will not display the docstring as it is no longer part of the function `x`.