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**Part One: Linux**

1. What does grep do?
   1. grep searches a file for a certain string of characters and upon reaching the end of the file prints all instances.
2. What's the difference between a pipe and a redirect?
   1. A pipe is a way divert the output of a program to another process. On the other hand, a redirect is used to divert the output of a program into a separate file.
3. What's so great about plain text?
   1. Plain text is quite easy to edit and change around to suit any need. It can be used to make tools that simply rely on the output of one another, functioning as low level coding. Conversely, plain text can also function as a very readable programming language. It does not take any education, besides knowing a native language, to read a plain text file.
4. If you rm a file by accident, how do you get it back?
   1. You roll up into a ball on the floor, try not to cry, and instead cry a lot. You don't get a file back if you rm it.

**Part Two: Python**

1. In script mode, what happens if you put an expression, like math.sin(math.pi) on a line all by itself (without a print statement)?
   1. First, because math.x is used, you need to 'import math' before using it. From there, nothing is shown when the script is run. The values and computation are simply done in the background. If you were interested in getting a proper printed response, you would need to write 'print math.sin(math.pi)'
2. What is the value of the expression 1.0 / 2.0 \* math.pi? What about 1 / 2 \* math.pi?
   1. The value for the first one is 1.571... For the second result, it is 0. The reason for this is that every number is considered an int, which means that 1 / 2 would result in 0, and that multiplied by anything is 0. The first expression has 1.0 and 2.0, which the computer thinks of as floats, meaning you can get a float in response.
3. Do Exercise 2.4 (Practice using Python as a calculator). For part 3, consider using Unum.
   1. Part 1:

import math

r = 5

volume = float(4) / 3 \* math.pi \* r \*\* 3

print volume

523.599...

b. Part 2:

copies = 60

price = copies \* (24.95 – 24.95 \* .4)

shipping = 3 + (copies – 1) \* .75

print price + shipping

945.45

Side note: This program is written assuming you are buying at least one book. If that would not actually be the case, a clause would need to be added to shipping to make sure you don't get charged $3 for shipping 0 books.

c. Part 3:

import unum

from unum.units import \*

time = 6 \* h + 52 \* min

time = time + 2 \* (8 \* min + 15 \* s) + 3 \* (7 \* min + 12 \* s)

print time

You get home at around 7:30

**Part Three: Git**

1. What is an "untracked" file?
   1. A file is untracked if git has not been explicitly told to keep track of it. To git, it does not exist.
2. Why are files containing object code and executables generally not tracked?
   1. They are not really necessary. If someone can clone your repo and rebuild the project, they should be have those files be created, normally through compiling code.
3. In Git vocabulary, what is a remote?
   1. A remote is a repo on a server, so if anything happens to the original files on your hard drive, the server should still have a copy that can be used.

**Part Four: More Python**

1. What's the difference between a fruitful function and a void function?
   1. A fruitful function returns some form of a result which can be used later for other aspects of the program. This can be accomplished by setting the function to a variable or printing out the result. On the other hand, a void function does not handle values well. Instead, they are used to perform specific actions.
2. What are functions good for anyway?
   1. The four reasons why a function is useful, as defined by the book, are: useful way of naming a section of code, make a program smaller and eliminate repetitive code, easy debugging in sections, and they can be used in other different programs. From my experience, functions are best used as a way to encapsulate a specific idea or thing you want to accomplish. Once you accomplish that, you can use other functions to perform actions necessary on the result or interact with the main function properly.
3. What are the two forms of the import statement?
   1. You can either use import \_\_\_\_, to import a complete module with all extra code. However, if you only need to use one part, it is a waste on memory and processing power by importing everything (though our computers can handle it). Instead, you can use from \_\_\_\_ import \_\_\_\_ to import, say, pi from math. That command would look like 'from math import pi'.