HW 0

Due: Nov 1, 2020

Collaboration

You may work with other students. However, each student should write up and hand in his or her assignment separately. *Be sure to indicate with whom you have worked in the comments of your submission.*

Installing Python and Spyder

Note, when you first start using your system, make sure that the version number displayed is 3.0 or higher. This version of Python is not backwards compatible with versions starting with 2.x. **This class uses Python version 3.5 or higher.**

Installing and Testing Matplotlib and Numpy

If you're using Anaconda Python, your system should already have numpy and matplotlib installed. Start Spyder and type "import numpy" and "import matplotlib" into the prompts. If no errors show up, you already have them installed.

To test that you have successfully installed matplotlib and numpy via a script, run the code provided in **pkgtest.py**, which should generate a chart for you.

A Very Simple Program: Raising a number to a power and taking a logarithm

The goal of this programming exercise is to make sure your python and numpy installations are correct, to get you more comfortable with using Spyder, and to begin using simple elements of Python. Standard elements of a program include the ability to print out results (using the `print` operation), the ability to read input from a user at the console (for example using the `input` function), and the ability to store values in a variable, so that the program can access that value as needed.

Assignment:

Write a program that does the following in order:

1. Asks the user to enter a number "x"
2. Asks the user to enter a number "y"
3. Prints out number "x", raised to the power "y".
4. Prints out the log (base 2) of "x".

Use Spyder to create your program, and save your code in a file named 'HW_0.py'. An example of an interaction with your program is shown below. The words printed in blue are ones the computer should print, based on your commands, while the words in black are an example of a user's input. The colors are simply here to help you distinguish the two components.

```
Enter number x: 2
Enter number y: 3
X**y =  8
log(x) = 1
```

Hints:

- To see how to use the `print` command, you may find it convenient to look at the input and output of the Python Wikibook. This will show you how to use print statements to print out values of variables.

- To see how to read input from a user's console into the Python environment, you may find it convenient to look at the same section (see for example the input() function)

- Reference the basic math section of the Python Wikibook to read more about using basic mathematical operators in Python

- To take the logarithm of a variable, import either of the numpy or pylab packages. You can then call either numpy.log2 or pylab.log2 to calculate the logarithm. See the Getting Started document on importing packages and the many Numpy examples online for more info. Googling the log2 function may take you here, which has some helpful info.

- Remember that if you want to hold onto a value, you need to store it in a *variable* (i.e., give it a name to which you can refer when you want that value). You may find it convenient to look at the variables and strings section of the Python Wikibook. (As you read through, remember that in Python 3.x you should be using input() not raw_input()). Take a look at the "Combining Numbers and Strings" sub-section, because you will be working with numbers and strings in this problem and will have to convert between the two using the `str()` and `int()` functions.