**Assignment\_1:**

The built in Python function pow(x,y) returns the number x to the power of y.  Write your own function that performs this task recursively.  
  
Name it myPow() and have it accept two integers as arguments.  You do not have to handle a power less than 1 (myPow(64,.5) for example.

Test it with myPow(7,3), myPow(2,6) and one example of your choosing.  
  
(Hint: think about what exponentiation really is and consult the multiplication example we look at in the slides.  This should not be hard.)

**Assignment\_2:**

In your Unit 4 resources folder is a file called rands.txt.  It is a file of 10,000 randomly generated numbers between 1 and 100,000.

**You will:**

Read in this file, clean the data, convert from strings to integers and then sort the data.  At the end of this process you should have a list of sorted integers with a len of 10,000.

Create a library called mySearches.py.  In this module two functions should reside:

bsearch - a function that accepts an integer and a list.  The function should conduct a binary search through the list and return the index of the number in the list if the number is found and a -1 if the number is not found.  The function should report how many lookups were performed during the search before it returns its value.

lsearch - a function that accepts an integer and a list.  The function should conduct a linear search through the list and and return the index of the number in the list if the number is found and a -1 if the number is not found.  The function should report how many lookups were performed during the search before it returns its value.

A main program called lookup.py should import both functions from mySearches.py.  In the body of the program you should search for three numbers in the data (78700, 3333, 1118).  Output should show if the number was found in the list and how many lookups were needed for each kind of search, even if the number is not found in the list.

**Assignment\_3:**

use matplotlib to graph the data from assignment 2.  Use two data sets, the rands.txt numbers sorted and the same numbers unsorted.  Make this a line graph with index in list and the actual number as the X and the Y.  
  
The deliverable is the code used and screen captures of the two graphs produced.    
  
(Hint:  This assignment is incredibly simple.  That's because I don't really care about the program, I want you to install a third party library (matplotlib) and use it.  That's why I will be less than helpful if you email me about problems installing it.  It's UP TO YOU to get it installed and working.  That's the point of the assignment.)