**Description:**You will become familiar with the Spyder IDE and begin writing code using data types and expressions.

* Please complete the following assignments and submit by Sunday August 23 by 11:59PM:
  1. Give a list saved in a variable: a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100], write one line of Python that takes this list and makes a new list that has only the even elements of this list in it.
  2. Write a program that creates a random number from 0 to 100 and asks a user to guess it. The user, should be able to modify the number of attempts at guessing what the number is. The program should tell the user whether the number is lower or greater than the user's guess. When the user guesses the correct answer the program should tell the user he/she had won. At the end of this exchange, your program should print out how many guesses it took to get the number.

Use the following code snippet to create the random number:   NUMBER = random.randint(MINIMUM, MAXIMUM)

* 1. Create a program that will play the “hearts and spades” game with the user. The game works like this:

Randomly generate a 4-digit number. Ask the user to guess a 4-digit number (0000 - 9999) where the numbers should not repeat. For every digit that the user guessed correctly *in the correct place*, they have a “heart”. For every digit the user guessed correctly *in the wrong place* is a “spade.” Every time the user makes a guess, tell them how many “hearts” and “spades” they have. Once the user guesses the correct number, the game is over. Keep track of the number of guesses the user makes throughout the game and tell the user at the end.

Say the number generated by the computer is 1038. An example interaction could look like this:

Welcome to the Hearts and Spades Game!

Enter a number:

>>> 1234

2 heart, 0 spades

>>> 1256

1 heart, 1 spade

...

* 1. Fibonacci Sequence is the series of positive numbers that is created by add the previous two numbers to create the next number in a sequence. For example, A Fibonacci sequence starts with the number 1. Then next number adds the two that number plus the previous number which happens to be 0+1 so the sequence would now be 0+1 = 1 giving us the sequence 1, 1, The next number is created by add these two 1+1 = 2 giving us 1,1,2 and so on until we have 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, 2584, 4181, 6765, 10946, 17711, 28657, 46368, 75025, 121393, 196418, 317811, ...  
     Write a recursive function that asks the user how many Fibonacci numbers to generate and then generates them.
  2. Write a function or set of functions that asks a user for a number and determine whether the number is prime or not. Recall that a prime number is a number that has no divisors.

* Please turn in your work for Week2 to this folder.