Fin 290: HW#1
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Assignment is due via online submission on Friday 1/18 by 11:59 PM PST. See details in lecture regarding the exact submission process and HW solution format.

1. Install the anaconda package and the Pycharm IDE as discussed in class. Make sure it is working in the sense that you can run code as a script as well as in the python console (command line). Note: anaconda must be the version that uses Python 3.7.

2. Write a program that examines three variables x, y, and z and prints out the largest odd number amongst them. If none are odd, print out a message indicating this. For this code, **do not use** any 'for' or 'while' loops and do not use any built in sort functions. It should be written using conditionals. Make sure to add some comments in your code to indicate what appropriate lines of code are doing.

3. Write a program that examines three variables x, y, and z and prints out the largest odd number amongst them. If none are odd, print out a message indicating this. For this code, use a 'for' or 'while' loop, conditionals, and a sorting function ('sorted' from the numpy package). Make sure to add some comments in your code to indicate what appropriate lines of code are doing.

4. **Comparison of two program outputs:** Write a code that has an outer loop of N iterations that creates three random integers x, y, and z between 0 and 9 using the 'randint' function from the 'numpy' package, then use the two versions of the code you wrote in 1. and 2. that outputs the largest integer to check their outputs against each other. You can create a vector of length N that stores the differences between the outputs of program 1 and program 2. You can then print the sum of this vector after the outer loop is completed. Run this for 1 million runs (1,000,000). If your code outputs identical largest integers, the sum of the difference vector should be 0!

5. Let s be a string that contains a sequence of decimal numbers separated by commas, e.g. s = '1.23,2.4,3.123'. Write a program that prints the sum of the numbers in the string s. What if the input numbers are separated in the following manner: s = '1.23, 2.4, 3.123'?

6. Using a 'for' loop write a program that sums the numbers from 1 to N where N is a positive integer input by the user. Output an error message if the number is neither an integer nor positive. Write a program that sums the numbers from 1 to 100 two ways, first by summing a single vector of appropriately chosen numbers, and second, by summing two appropriately chosen vectors.

7. Write a script that uses the randint function from the numpy package and calculate the probabilities for the coin flip problem with 2 coins, 4 coins, and N coins. Here, N is input by the user. Do this for M runs which is also input by the user. In the case for 2 and 4 coins, show that the experimental probability converges to the theoretical probability by taking M=100, 1000, 10000, 100000, 1000000.