LARSON—MATH 255–HOMEWORK WORKSHEET h07
Simulation, Visualization, Randomness, Dictionaries

1. Create a Cocalc/Sage Cloud account.

   (a) Start the Chrome browser.

   (b) Go to `http://cocalc.com`

   (c) You should see an existing Project for our class. Click on that.

   (d) Click "New", then "Sage Worksheet", then call it **h07**.

   (e) For each problem number, label it in theSAGE cell where the work is. So for Problem 1, the first line of the cell should be `#Problem 1`.

2. Evaluate `randint(1,100)` a few times; your results will vary. This will generate random integers in the range $[1, 100]$, including both endpoints.

3. **Investigate**. Does `randint(1,100)` produce a *uniform distribution*? (That is, as you repeat experiments of `randint(1,100)` are the number of produced outcomes of each possible integer roughly 1%?

   Do a large number of experiments! Keep the percentages in a list. Make a `bar_chart` of your percentages.

4. **Problem.** Find the sum of the *odd* Fibonacci numbers that are no more than four million.

   Dictionaries!

5. **Dictionary Practice**. Do the problems at the following link directly in your Sage Worksheet:

   `https://pynative.com/python-dictionary-exercise-with-solutions/`.

6. **Dictionary Problem**. Write a function `my_dictionary(n)` that takes a positive integer n as input and returns a dictionary where the keys are numbers between 1 and 15 (both included) and the values are the square of the keys.

   When $n = 15$ you should get:

   {1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81, 10: 100, 11: 121, 12: 144, 13: 169, 14: 196, 15: 225}

   Getting your homework recorded

   When you are done, before you leave class...

   (a) Click the "Make pdf" (Adobe symbol) icon and make a pdf of this worksheet. (If CoCalc hangs, click the printer icon, then "Open", then print or make a pdf using your browser).

   (b) Send me an email with an informative header like "Math 255 - h07 worksheet attached" (so that it will be properly recorded).