Individual Homework Assignment 1

Individual Homework Assignment

This should be completed by each student individually. You may not work on this assignment in groups. **Individual assignments are due one week after being assigned**. Remember that your assignment should be well documented (with a README) and all commit messages should be **descriptive**.

Write a Python script that estimates the value of the following integral using Monte Carlo integration:

$$\int_0^1 \frac{1}{1+x^2} dx$$

This integral will evaluate to $\frac{\pi}{4}$

Put your script in a function called `estimate_pi`. The function should take a number of points as an input and should return the calculated value of π. Save your work in a file called `assignment.py`. Include testing of your code in this file. Make sure to comment your code.

Turning in your assignment

In order for your assignment to be complete, make sure you have the following:

1. Your solution written as a function called `estimate_pi` in a file called `assignment.py`.
2. Evidence that you have tested your code. Write at least three test cases. Make sure to comment these and write about them in your `README.md`
3. An updated `README.md` file which explains the assignment. Change the title and write a brief paragraph about what is in this repository. Imagine you are writing this for someone who does not know what the assignment was. Explain how to run your script. You should also add a paragraph about your test cases and what leads you to believe your test cases demonstrate that your code is working.

Grading

This assignment is the first of four individual assignments you will be given in this course. This assignment is worth 8% of your total grade.

Rubric

This assignment will be graded out of 20 points. See `RUBRIC.pdf` for a detailed breakdown of grading