Assignment 8: Searching and Test Driven Development
Software Engineering for Scientists

Objectives: Become familiar with test driven development and searching as a means of integrating data.

Tasks:

1. Accept the assignment at https://classroom.github.com/a/WSoIsN1S
2. Using test driven development, create a library with
    a. A general `get_data` function that retrieves rows from a data file with the option of providing a query value and query column to only return rows where the string at that column matches the value. Also optionally retrieve the header.
    b. A general `search` function that scans a list for a key and returns the index of that key
    c. A specific `get_fire_gdp_year_data` function that integrates the CO2 and GDP data for a particular country based on entries with shared years.
        i. HINT: Using the search function you created, find the year from the CO2 data in the GDP header, then retrieve the associated value from the country's GDP data. Watch out for missing values.
    d. Please commit after each test / code cycle. Just commit, don't push. You do not need to push until you are finished with the assignment.
3. Develop a small scientific presentation that looks at the relationship between fires and GDP across a range of countries. This will include a few sentence in your README covering:
    a. Introduction: What are you looking at?
    b. Results: What did you find?
        i. Feel free to base your visualization on the `scatter.py` script that was included in the repo. NOTE: This file does not use our best practices. All files you submit must use best practices.
    c. Methods: What steps did you take to get your results?
4. Develop a Snakemake pipeline that reproduces all of the statistics and figure(s) used in your results.
5. New code must be properly tested. To test if a file is created in `ssshtest` use the following assert

```
assert_equal $file_name $( ls $file_name )
```

6. All unit and functional tests must be run and passing with github actions
7. Create a release from master tagged as 1.0

NOTE: Refer to https://github.com/swe4s/lectures/tree/master/src/tdd/fire for a similar workflow.