PYU33C01 (2022): Computational Methods (Mitchison), Assignment 1

This assignment will use the same data set that we explored in the first lab: `planets.csv`.

- Write Python code to complete the exercises below.
- Write a **brief** report (max. 3 pages) describing your results. The report should include any printed lists/tables or figures that you are asked to make, with informative captions.
- Submit your report (as a **PDF file**) electronically **via Blackboard**. Also submit your code as a single file (either a .py or .ipynb is fine). When executed, your code should import exoplanet data from the .csv file and generate output to solve each of the exercises below. **Both file names (report and Python code) should include your full name.**

Submission deadline: Sunday 16th October @ 23:59
Late submissions will be docked 10% per day. Submissions more than five days late will be assigned a mark of 0.

Assignment 1:

(a) **How many planets were discovered each year?**
Plot the number of planets discovered per year versus time (i.e. year on x axis, number of planets discovered on y axis).

(b) **How does a planet's mass correlate with the mass of its star?**
Make a scatter plot on a log-log scale (i.e. logarithmic on both axes), showing each planet's mass versus the mass of its star.

(c) **How many planets have been discovered at each facility? Which facilities have discovered the most planets so far, and over how long a time period?**
For each facility, find the total number of planets discovered and the year in which the first planet was discovered. Print a list of the top ten facilities (in terms of how many planets were discovered there). The list should display the facility name, the total number of planets discovered, and the year of first discovery. Order this list chronologically, i.e. by the year of first discovery. Which facility has found the most planets overall?