TD8/9: Linux, Git and Python

Exercise 1: Working Directory

Using only command-line in your Linux shell,

1. Create an empty working directory called "td4".
2. Initialize a Git repository in it.
3. Install the Linux python3-pip package using your Linux package manager.
4. Install the VirtualEnv Python package using pip3.
5. Create a Python virtual environment called ".env".
   Do you see the change in your working directory ?
6. Activate your virtual environment.
   Do you see the change in your prompt ?
7. List the Python packages installed in your virtual environment.
8. Does Git want you to commit something ?
   Do you think it is a good thing ?
   hint : You can find templates at https://github.com/github/gitignore
9. Create a .gitignore file to tell Git which files should be untracked.
10. Does Git want you to commit something ?
    Do you think it is a good thing this time ?
11. Do your first commit and check that Git is happy now.

Exercise 2: Python Script

Back to the Domesday Book, the greatest medieval census.
It lists the manors (private properties) in every place of every county in England in the years 1066 and 1086, before and after the Norman conquest.
OpenDomesday presents it in a modern-human-readable website, as well as a RESTful web *application programming interface* API : https://opendomesday.org/api/

1. Install the Python package Requests using pip.
   info : Requests is a simple, yet elegant HTTP library and the de facto standard for querying RESTful web API.
2. Create a Python script that returns the list of all place ids in Derbyshire.
   hint : Look at the county structure inside the web API documentation
   hint : As the web API returns JSON, no need to use regular expressions
3. Commit your changes in Git

Exercise 3: Python Module

1. Create a Python module with a **get_manor_ids** function that takes a place id as parameter and returns the list of manors.

2. Check that calling your module does not produce any output.
3. To test your module, open a python interpreter and call your function with the first place id from Derbyshire.
4. Add a **if ___name___ == '___main___' :** block with your previous test, at the end of your module, to make it usable as a script.
5. Check that calling your module now does produce an output.
6. Commit your changes in Git

Exercise 4: Python Program

1. Enrich your module to get all manors in all places in Derbyshire.
2. Retrieve the geld paid and total ploughs owned by all those manors.
3. Create a Pandas DataFrame with the same information.
4. Use Pandas to compute the sum of geld paid and total ploughs owned in Derbyshire.
5. Add docstrings to your functions.
6. Commit your changes in Git.