Exercise 2 - Treasure Hunt

Sebastian Hahn

2015-05-26

1 Treasure Hunt

The second exercise is a treasure hunt based on common sense and your ability to work with files, arrays and plotting functions. In general, a treasure hunt is one of many different types of games which can have one or more players who try to find hidden articles, locations or places by using a series of clues. However, this time the game takes place in the virtual world, where bytes, bits and mainly your Python skills are important.

1.1 Game instructions

In the following treasure hunt you have to answer short riddles concealing file names, column names or positions. The files are written in random formats (e.g. .csv, .npz, .nc) and their content might contain information useful for the next clue. All files can be downloaded from `http://rs.geo.tuwien.ac.at/downloads/cpa/`, however, you will only be able to download a file once knowing its correct file name. All names are lowercase.

1.2 Clues

1. Please download `filename1.csv` and read `column1` at row number `row1`, which will give you `filename2part1`. Prove the solution of riddle `row1` with a histogram.
   - `filename1.csv`: *It has 4 legs but cannot walk.*
   - `column1`: *Young I'm tall, old I'm short, I love to glow, breath is my foe.*
   - `row1`: *What digit is the most frequent between the numbers 1 and 1000?*
2. Please download `filename2part1_filename2part2.nc`, which is a treasure map. Read and plot `variable2`. Which capital city has been marked? The answer to this question will give you `filename3part1`.
   - `filename2part2`: *Stay hungry, stay . . . . . , Steve Jobs*
   - `variable2`: *May the . . . . . be with you, Han Solo*
3. Please download `filename3part1_filename3part2.npy` and read `variable3`. In `row3` you will find `filename4.bin`.
   - `filename3_part2`: *What planet has the shortest year?*
   - `variable3`: *I'll be . . . . , Arnold Schwarzenegger*
   - `row3`: Mean of `column3` in the file `filename1.csv`.
   - `column3`: *An . . . . . a day keeps the doctor away!*
4. Please download `filename4.bin`. The first 107 bytes will tell you how to read the rest of the file.

5. Finally you have to generate a HDF5 file on your own representing the final treasure map. The file needs to have 3 variables: `longitude`, `latitude` and `dataset`. You should be able to generate a plot from your file and find the name of the island where the treasure can be found.

   - `longitude`: data can be found in `filename1.csv` in `column5`
   - `latitude`: data can be found in `filename3.npy` in `variable5a`
   - `dataset`: data can be found in `filename4.bin` in `variable5b`
   - `column5`: *Alive without breath, as cold as death; never thirsty, ever drinking, all in mail, never clinking.*
   - `variable5a`: *What gets wetter and wetter the more it dries?*
   - `variable5b`: *What is black and white and red all over?*

2 Program Interface

No special interface is required. The program can be a simple script with functions reading the various files.

3 Reporting

The following is required when handing in the exercise:

- **Documented** python source code,
- **plots** of the treasure maps and
- a **text file** with all answers.

After I had a chance to look at the source code I will make appointments with each group to have a short (10-15 min) talk about the exercise. Hand in of the exercise will be handled in TUWEL.

3.1 Due Date

Please hand in the exercise by 2015-06-15.