Homework #1

Active Measurements (4 points)

Assignments

- You are requested to evaluate the relationship between the (average) RTT and physical distance of two endpoints

- The first endpoint could be either your laptop (if you use a local python script) or a Colab VM

- The second endpoint should vary and be located at increasing distances from the first endpoint

- Hint: Ftp mirror servers are a good source of worldwide disseminated hosts. Some examples:
  – https://www.gnu.org/prep/ftp.html
  – https://www.debian.org/mirror/list

- Hint: create a csv file of all the servers you want to ping and load it into your notebook (many tutorials are available)

Assignments (0-3 points)

- Use your preferred approach to estimate the average RTT

- You can use (among others) the geopy.distance.distance() function of the geopy library to get the distance in km between any two pairs of (lat.long) coordinates

- Gather a sufficiently diverse set of measurements, including both RTT at very short and very long distances

- Plot the obtained measurements on a distance/RTT graph

Assignments (4th point)

- A basic approximation for the RTT is a linear function of the physical distance:

$$RTT = 2(L/C + d/v) + n$$

- Estimate the average RTT per km by fitting a linear function on your set of measurement. Comment your result.

- Plot the fitted line over the set of measurements

- Hint: take a look at numpy.polyfit function

Evaluation

- The following aspects will be considered for evaluation
  - Technical correctness and completeness
  - Coding style, level of automation, easiness of interpretation (use comments to explain what you are doing)
  - Presentation of results (with print(), figures, etc.)

Deadlines

- This homework must be delivered by Thu, March 9th, 23:59

- Export your code (entire script, notebook or colab link) with any additional resource needed (e.g., csv file) and upload it on the specific folder on WeBeep.