Project 7 — CIA Flag Images

CS 1410

Background

In this assignment, you will be downloading GIFs for flags from all the countries in the world from a public CIA website. The files appear in the following web folder:

https://www.cia.gov/library/publications/resources/the-world-factbook/graphics/flags/large/

The names of the files have the following form:

```
xx-lgflag.gif
```

where **xx** stands for the 2-character country code. For example, the GIF for the United States is *us-lgflag.gif*. The 2-character codes are in the file **flags.txt** in the Canvas folder for this assignment.

Note: the web folder above is protected so you'll get a 404 error if you try to read the page directly. If you add the file name to the URL, it works fine. For example:

https://www.cia.gov/library/publications/resources/the-world-factbook/graphics/flags/large/us-lgflag.gif

Write three similar scripts that do the following:

- Download all flag files into your current directory
- Report the total number of bytes downloaded
- Report the execution time of the script (recorded via **time.perf_counter()**)

The three versions will use the following schemes for downloading:

1. Download sequentially (no concurrency) — name your file *cia_a.py*
2. Download concurrently using a **ProcessPoolExecutor** — file *cia_b.py*
3. Download concurrently using a **ThreadPoolExecutor** — file *cia_c.py*

Use the **requests** module discussed in class to make the HTTP requests. Inspect your file folder after each execution to verify that all the GIFs have been freshly downloaded. Turn in your three scripts and the three output sets, for example:

```
Elapsed time: 10.28958823
3110197 bytes downloaded
```