Individual Assignment

Bonus:

The Docker image that is created in this assignment is based on Ubuntu 22.04 containing the primality checker. The resulting image will likely be in the range of around 105MB (you can check the size of it by running the command 'docker images'). For such a small application, this is quite much!

There are some tools that help to make Docker images smaller; one of them is called Slim

Links to an external site.

. Such tools provide some assistance to make applications residing in Docker images smaller but manually inspecting and reducing a Docker image's "disk space foot print" can go even further.

Your assignment

The assignment contains two parts:

1) **Make your Docker image smaller with Slim**

Links to an external site.

.

2) **Can you shrink the size of your resulting Docker image to smaller than 1.85MB and hence, even beating what Slim can achieve by using your locally running LLM for ideation?**

If you manage to make a really small Docker image that is still working correctly, upload **a single zip file** with your repository for the PrimeChecker containing:

- Screenshots from your **complete** "discussion" with the **locally running LLM (ie., not Bing Chat, OpenAI, ChatGPT!)** so that we can see in a transparent way how you obtained the ideas to make the resulting Docker image smaller. The screenshot of your "chat" with **the locally running LLM** must show your CID whenever you interacted with the **locally running LLM**. You **must also document** the versions of the locally running LLM and the versions of the LLM models that you used.
- When you use the **locally running LLM** for ideation like in this case, it is important, though, to **verify** the LLM's suggestions. Hence, you must supply non-LLM-based evidence **why** the supplied idea works.
    - Examples:

        - Reference to a (apparently non-hallucinated) book/paper
        - Reference to a (apparently non-hallucinated) manual page of a tool that you are using
        - It is **not enough** to simply copy the output from the locally running LLM to pass this assignment. You must be skeptical towards the answers that you see and do not simply believe what you are presented with.
    - Reason:
        - IEEE Ethical Considerations in AI and AS
        - Links to an external site.
        -
        - OECD AI Principles, Principle 1.5: Accountability
        - Links to an external site.
        -
- Dockerfile (**including comments** that you made to make the resulting Docker image really small)
- **All necessary source files** (CMakeLists.txt, *.cpp, *.hpp) (**including comments** that you made to make the resulting Docker image really small)
- A screenshot as .png file (with your first name and last name as overlay) showing how you ran Slim to shrink your Docker image
- A screenshot as .png file (with your first name and last name as overlay) of the command docker images that shows your achievement **also in comparison with Slim**

You must include all files listed above so that we are able to reproduce ourselves to verify.

The application PrimeChecker must still work correctly after all your changes!

Upload the .zip file to this assignment.

To give you an example, smaller variants could end up in this range:

```
$ docker images

REPOSITORY        TAG      IMAGE ID        CREATED              SIZE

bergerc/example.slim.     latest     61424bff8b00    4 seconds ago
4.05MB

bergerc/dit639            latest     200087b2f19f    9 minutes ago
116MB

dit638-small-manual       latest     120e05938c31   40 seconds ago
1.82MB
```