

Lab 4

LlamaIndex Workbench

Instructions:

1. Complete the tasks and steps listed under the Requirements section below.
2. Participate in the Lab Discussions on Canvas

Requirements:

1. Install Python 3.10 (or higher) from this URL:
 - <https://www.python.org/downloads/release/python-3100/>
2. Install Jupyter/Notebook or VS Code from this URL:
 - <https://code.visualstudio.com/download>
 - <https://jupyter.org/install>
3. Check python versions installed on your computer and verify that you have Python 3.10 or higher installed by executing from the terminal/window the command:
 - `py -list`
4. Create python 3.10 (or higher) virtual environment by executing the following commands from the terminal/window:
 - `py -3.10 -m pip install virtualenv`
 - `py -3.10 -m virtualenv venv-lab_4`
 - `venv- venv-lab_4 \Scripts\activate`
5. Create LLAMA CCloud API Key from this URL:
 - <https://cloud.llamaindex.ai>
6. Create REPLICATE_API_TOKEN from this URL:
 - <https://replicate.com/>

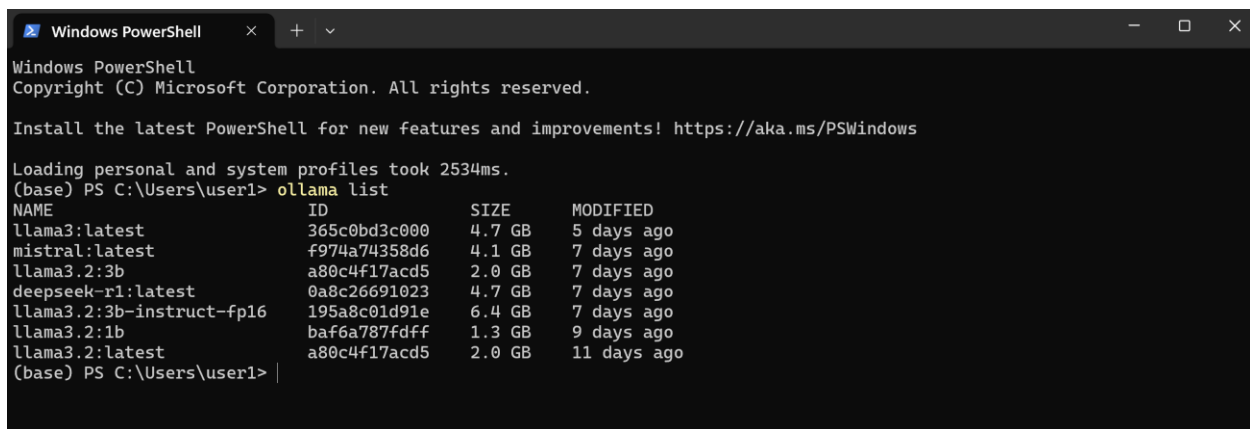
7. Download Ollama from the following URL:

- <https://ollama.com/>

8. LlamaIndex documentation available from the following URL:

- <https://www.llamaindex.ai/>

9. Use/Modify the provided scripts to run **4 experiments** using **4 different models (listed below)** from the list of models available on **Ollama** and **Replicate**. The following is a sample of models that are available:



```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

Loading personal and system profiles took 2534ms.
(base) PS C:\Users\user1> ollama list
NAME                ID                SIZE    MODIFIED
-----
llama3:latest        365c0bd3c000      4.7 GB  5 days ago
mistral:latest       f974a74358d6      4.1 GB  7 days ago
llama3.2:3b          a80c4f17acd5      2.0 GB  7 days ago
deepseek-r1:latest   0a8c26691023      4.7 GB  7 days ago
llama3.2:3b-instruct-fp16 195a8c01d91e      6.4 GB  7 days ago
llama3.2:1b          baf6a787fdff      1.3 GB  9 days ago
llama3.2:latest      a80c4f17acd5      2.0 GB  11 days ago
(base) PS C:\Users\user1> |
```

10. The **4 experiments** that you must execute and analyze their results are:

- **Experiment 1:** Use **Lab_4 – Ollama.ipynb** script with model **llama3.2:3b**
- **Experiment 2:** Use **Lab_4 – OpenAI.ipynb** script with model **gpt-4o-mini**
- **Experiment 3:** Use **Lab_4 – Replicate.ipynb** script with model **deepseek-ai/deepseek-r1**
- **Experiment 4:** Use **Lab_4 – Replicate.ipynb** script with model **meta/meta-llama-3-70b-instruct**