LAB: MLOps Deployment from DEV to PROD

Objective

In this lab, students will simulate deploying code from a **Development (DEV)** environment to a **Production (PRD)** environment using **Git and Pull Requests (PRs)**. Each pair will take turns being a **developer** and a **gatekeeper**, practicing collaboration, code review, and version control.

Step 1: Form Pairs

- Students work in pairs.
- Decide who is the **developer** and who is the **gatekeeper**.
- Later, roles will be swapped.

Step 2: Developer Role

A. Prepare Project

1. Create a new project folder or use an existing one.
2. Organize your files (Python scripts, notebooks, etc.).
3. **Do not include virtual environments (venv) in Git.**

B. Set Up Virtual Environment : python -m venv venv

Activate it:

- **Windows:** venv\Scripts\activate
- **Mac/Linux:** source venv/bin/activate

Install necessary packages:

pip install numpy pandas scikit-learn # example

Generate requirements.txt:

pip freeze > requirements.txt

C. Initialize Git Repository

git init

git checkout -b feature-login (Feaute-login is the name of branch)

git add file1.py file2.py requirements.txt

git commit -m "Initial commit"

Do not add venv folder.

D. Push to Remote Repository

- Create a repository on **GitHub**
- Link your local repo:

```
git remote add origin <remote-repo-URL>
git push -u origin feature-login
```

- Give the gatekeeper **access to the repo** as a collaborator/contributor:
- Go to Settings → Manage Access → Invite collaborator.
- Gatekeeper accepts the invitation.

E. Create a Pull Request (PR)

- On GitHub/GitLab, create a PR from your branch to main.
- This is **the developer requesting the gatekeeper to review the code**.

Step 3: Gatekeeper Role

A. Review the PR

- Gatekeeper **views all changes** in the PR:
- Gatekeeper can:
  - **Comment on issues** → developer fixes and updates PR
  - Merge PR **only when satisfied**

B. Pull and Run Code

- Clone the repository locally (if not already done):
  - **git clone <repo-URL>**
  - cd <repo-folder>
- Pull the latest main branch: git pull origin main
- Set up a **new virtual environment**:
  - python -m venv venv
  - source venv/bin/activate # Mac/Linux
  - venv\Scripts\activate # Windows
- Install dependencies: pip install -r requirements.txt
- Run the project scripts/notebooks to ensure everything works.

D. Optional Fix by Gatekeeper

- If gatekeeper finds issues and wants to fix locally:
  - Clone repo → create a new branch
  - Fix code → push → create a new PR
  - Developer or gatekeeper can review → merge