**Lab Task: Deploy a Flask App using Jenkins and Docker**

**Objective:**

Build a CI/CD pipeline using Jenkins that:

1. Clones a Flask app from GitHub
2. Builds a Docker image of the app
3. Deploys it locally via Docker container
4. Is triggered by a GitHub webhook (optional)

**Part 1: Prerequisites**

Ensure the following are installed:

* Docker (https://www.docker.com/products/docker-desktop)
* Jenkins (Local or Dockerized)
* GitHub Account and a public repo

**Part 2: Flask App Structure**

Create a basic Flask app with this structure:

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flask-app/

│

├── app.py

├── requirements.txt

└── Dockerfile

**app.py:**

python

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from flask import Flask

app = Flask(\_\_name\_\_)

@app.route("/")

def hello():

return "Hello from Flask deployed by Jenkins!"

if \_\_name\_\_ == "\_\_main\_\_":

app.run(host="0.0.0.0", port=5000)

**requirements.txt:**

txt

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flask

**Dockerfile:**

Dockerfile

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FROM python:3.11-slim

WORKDIR /app

COPY . .

RUN pip install -r requirements.txt

EXPOSE 5000

CMD ["python", "app.py"]

**Part 3: Jenkins Pipeline Configuration**

**Step 1: Create a New Pipeline Job**

* Go to Jenkins Dashboard → **New Item**
* Choose **Pipeline**, name it e.g., flask-docker-deploy
* Under *Pipeline → Definition*, select *Pipeline script*

**Step 2: Paste Jenkinsfile Script**

groovy

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pipeline {

agent any

environment {

IMAGE\_NAME = 'flask-lab-app'

CONTAINER\_NAME = 'flask-lab-container'

}

stages {

stage('Clone Repo') {

steps {

git 'https://github.com/your-username/your-flask-repo.git'

}

}

stage('Build Docker Image') {

steps {

sh 'docker build -t ${IMAGE\_NAME} .'

}

}

stage('Deploy Container') {

steps {

sh '''

docker rm -f ${CONTAINER\_NAME} || true

docker run -d --name ${CONTAINER\_NAME} -p 5000:5000 ${IMAGE\_NAME}

'''

}

}

}

}

Replace the Git URL with your repo URL.