Implementing a DevOps Pipeline using Google Cloud

# Setting up the project

**Module 1: Plan & Track**

Purpose: Define requirements, architecture, and project goals.

• Folder: cloud-devops-pipeline/01\_plan/

• Files:

• architecture.png – Architecture diagram

• use\_cases.md – Project use cases and user stories

• tech\_stack.md – Tools and technology used

• README.md – Module summary

**Module 2: Develop**

Purpose: Application coding and local testing.

• Folder: cloud-devops-pipeline/02\_develop/

• Subfolders:

• app/ – Flask app source code

• tests/ – Pytest-based unit tests

• Files:

• requirements.txt – Python dependencies

• README.md – Development notes and instructions

**Module 3: Build**

Purpose: Containerization and dependency bundling.

• Folder: cloud-devops-pipeline/03\_build/

• Files:

• Dockerfile – Container build instructions

• docker-compose.yml (optional)

• README.md – How to build and run locally

**Module 4: Test & Validate**

Purpose: Automation of test suites in CI pipelines.

• Folder: cloud-devops-pipeline/04\_test/

• Files:

• .github/workflows/ci-cd.yml – GitHub Actions workflow

• ci-test-report.md – Sample test output and analysis

• README.md – Explanation of CI testing logic

**Module 5: Release & Deploy**

Purpose: Continuous Deployment to Cloud Run.

• Folder: cloud-devops-pipeline/05\_deploy/

• Files:

• cloudrun\_deploy.sh – GCP CLI-based deployment script

• deployment\_log.md – Sample output from deployment

• README.md – Steps to trigger and verify deployment

**Module 6: Monitor & Operate**

Purpose: Enable observability, logging, and alerting.

• Folder: cloud-devops-pipeline/06\_monitor/

• Files:

• gcp\_monitoring\_setup.md – Instructions to enable logs, traces, alerts

• alerts\_config.json – (Example alert policy in JSON)

• README.md – Summary of monitoring setup

Create the folder structure running the following code snippet:

|  |
| --- |
| mkdir -p cloud-devops-pipeline/{01\_plan,02\_develop/app,02\_develop/tests,03\_build,04\_test/.github/workflows,05\_deploy,06\_monitor} |

|  |
| --- |
| touch cloud-devops-pipeline/01\_plan/README.md \  cloud-devops-pipeline/02\_develop/README.md \  cloud-devops-pipeline/03\_build/README.md \  cloud-devops-pipeline/04\_test/README.md \  cloud-devops-pipeline/05\_deploy/README.md \  cloud-devops-pipeline/06\_monitor/README.md |