Individual Assignment 2

IE University - BCSAI - SDDO - 2025

Topic: Improve and Automate Your Application with DevOps Practices
Deadline: 2025-11-23 23:59

Objective

Improve the application you built in Assignment 1 by focusing on code quality, testing, automation, deployment, and monitoring.

Requirements

1. **Code Quality and Testing**
   - Refactor your code to remove code smells (e.g. duplication, long methods, hardcoded values) and follow SOLID principles.
   - Add automated unit and integration tests.
   - Achieve at least 70% code coverage.
   - Include a test report in your repo.

2. **Continuous Integration (CI)**
   - Create a CI pipeline (more details about this to come)
   - Pipeline must run tests, measure coverage, and build your application.
   - The pipeline should fail if tests fail or coverage is below 70%.

3. **Deployment Automation (CD)**
   - Containerize the app using Docker.
   - Add a deployment step to a cloud platform (more details about this to come).
   - Configure secrets and triggers so only the main branch deploys automatically.

4. **Monitoring and Health Checks**
   - Add a `/health` endpoint returning basic app status.
   - Expose metrics for request count, latency, and errors.
   - Provide a minimal Prometheus or Grafana setup (config or screenshots).

5. **Documentation**
   - Update `README.md` with clear run, test, and deploy instructions.
   - Add a short `REPORT.md` summarizing what was improved and how.

Deliverables

- Git repository with improved code, tests, and CI/CD setup.
- Dockerfile and deployment configuration.
- Monitoring configuration or dashboard file.
- Short report (5–6 pages) explaining improvements, pipeline, and monitoring.

Grading Criteria

Component	Weight
Code quality and refactoring	25%
Testing and coverage	20%
CI/CD pipeline	20%
Deployment and containerization	20%
Monitoring and documentation	15%

Notes

- Use meaningful commit messages.
- Make your repo runnable by others.
- You may reuse or adapt templates from class examples.
- Keep explanations concise and relevant.