

Lab 8: CI/CD + Testing

CSI403 - Full Stack Development

Faculty of Information Technology

Sripatum University

Weight: 3.75%

Objectives

- ✓ Write pytest tests
- ✓ Create CI/CD pipeline
- ✓ Setup GitHub Actions

Repository: <https://github.com/amornpan/Advanced-RAG-Docker>

Task 1: Write test_api.py

```
import pytest
from fastapi.testclient import TestClient
from api import app

client = TestClient(app)

def test_health():
    response = client.get("/health")
    assert response.status_code == 200
    assert response.json()["status"] == "healthy"

def test_search():
    response = client.post("/search",
        json={"query": "test", "top_k": 5})
    assert response.status_code == 200
```

Task 2: Run Tests

```
# Run tests with verbose output  
pytest tests/ -v  
  
# Run with coverage report  
pytest tests/ --cov=. --cov-report=html
```

Coverage report shows how much code
is tested by your tests.

Task 3: Create Jenkinsfile

```
pipeline {  
    agent any  
    stages {  
        stage('Build') {  
            steps { sh 'docker-compose\u00d7build' }  
        }  
        stage('Test') {  
            steps { sh 'pytest\u00d7tests/' }  
        }  
        stage('Deploy') {  
            steps { sh 'docker-compose\u00d7up\u00d7-d' }  
        }  
    }  
}
```

Task 4: Create GitHub Actions

Create .github/workflows/ci.yml:

```
name: CI/CD
on: [push, pull_request]
jobs:
  build:
    runs-on: ubuntu-latest
    steps:
      - uses: actions/checkout@v3
      - run: docker-compose build
      - run: docker-compose up -d
      - run: sleep 60
      - run: curl -f http://localhost:8006/health
```

CI/CD Pipeline Overview

Push → Build → Test → Deploy

- **Push:** Code pushed to GitHub
- **Build:** Docker images built
- **Test:** Automated tests run
- **Deploy:** Services deployed

Deliverables

| Item | Check |
|-------------------------|--------------------------|
| Tests written | <input type="checkbox"/> |
| Tests passing | <input type="checkbox"/> |
| Jenkinsfile created | <input type="checkbox"/> |
| GitHub Actions workflow | <input type="checkbox"/> |
| Documentation | <input type="checkbox"/> |

Deadline: Sunday 23:59