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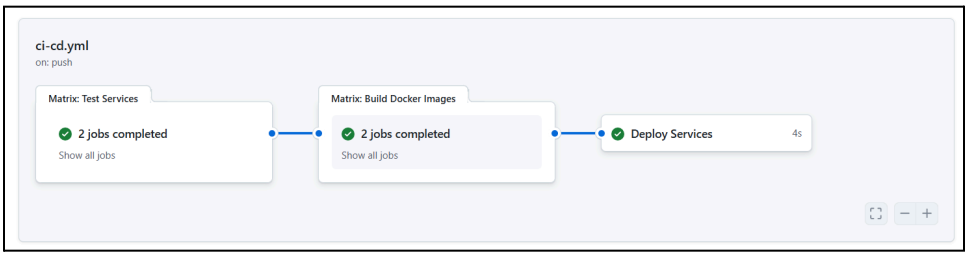
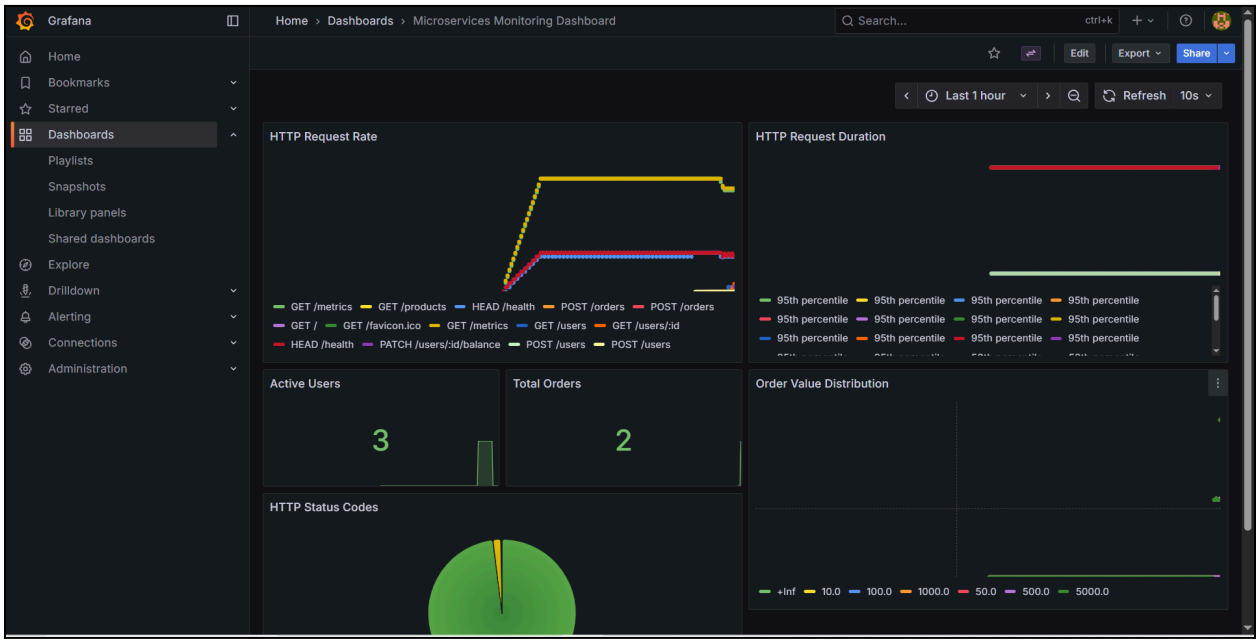
Web Services and SOA - Lab Assignment 11

14-11-2025

CI/CD Pipeline



Grafna Dashboard



WorkFlow

Pipeline Stages

1. Test Stage

- Runs Jest test suites for both services on every push/PR
- Validates code quality before building

2. Build Stage

- Builds Docker images for both services

- Pushes images to GitHub Container Registry (GHCR)
- Only runs on push events after tests pass

3. Deploy Stage
- Placeholder for production deployment
- Currently outputs deployment information
- Runs only on main/master branch

Architecture

- User Service (Port 8003): Manages user accounts and balances
- Order Service (Port 8002): Handles product catalog and order processing
- Prometheus: Metrics collection and storage
- Grafana: Metrics visualization dashboard
- Frontend: Web interface (Port 8080)

Setup

Prerequisites
- Node.js 18+, Docker Desktop, Git

Local Setup
1. Install dependencies: `npm install` in each service directory
2. Run tests: `npm test`
3. Start services: `docker-compose up -d`
4. Access:
   - Frontend: http://localhost:8080
   - Grafana: http://localhost:3000 (admin/admin)
   - Prometheus: http://localhost:9090

GitHub Actions Setup
1. Push code to GitHub repository
2. Workflow automatically runs on push/PR
3. Images published to GHCR: `ghcr.io/<username>/<service-name>`

Key Observations

Strengths
- All changes tested before deployment
- Immediate validation of code quality
- Docker ensures environment consistency

Challenges
1. Jest configuration required special handling for ES modules
2. Required proper network configuration for service communication
3. Needed explicit `packages: write` permission in workflow
4. curl commands needed PowerShell-specific syntax

Solutions
- Used `@jest/globals` for ES module test compatibility
- Created Docker network for service discovery
- Added workflow permissions for GHCR access
- Provided PowerShell-compatible commands in documentation