Notes App CI/CD Project Report

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1 Project Overview

The **Notes App** is a simple Node.js application to manage notes. The app allows:

- Listing all notes

- Adding a note

- Editing a note

- Deleting a note

  We implemented a CI/CD pipeline using **GitHub Actions** and Docker.

2 Project Structure

```
.
 app.js
 tasks.js
 tasks.test.js
 package.json
 package-lock.json
 Dockerfile
 .dockerignore
 .gitignore
 public/
```

3 GitHub Actions CI/CD Pipeline

We created a GitHub Actions workflow to automate build, test, security checks, Docker packaging, and deployment.

3.1 Workflow Stages

1. **Build:** Installs dependencies (including devDependencies), checks syntax of server files.

2. **Test:** Runs unit tests using Jest.

3. **Security:** Scans code for secrets using Gitleaks and audits npm dependencies.

4. **Package:** Builds Docker images and pushes to Docker Hub.

5. **Deploy:** Deploys the application to staging and production environments.

3.2   Workflow Code Sample

```
1  name: Notes App CI/CD
2
3  on:
4    push:
5      branches: [ main ]
6    pull_request:
7      branches: [ main ]
8
9  jobs:
10   build:
11     runs-on: ubuntu-latest
12     steps:
13       - uses: actions/checkout@v3
14       - uses: actions/setup-node@v3
15         with:
16           node-version: '18'
17       - run: npm install
18       - run: node -c app.js
19       - run: node -c tasks.js
```

4   Docker Setup

4.1   Dockerfile

```
1  FROM node:18-alpine
2  WORKDIR /app
3  COPY package*.json ./
4  RUN npm install
5  COPY . .
6  EXPOSE 3000
7  CMD ["node", "app.js"]
```

4.2   Docker Build and Run Commands

```
docker build -t notes-app:1.0 .
docker run -d -p 3000:3000 notes-app:1.0
```

5   Testing

Unit tests were written using Jest to verify core functionality:

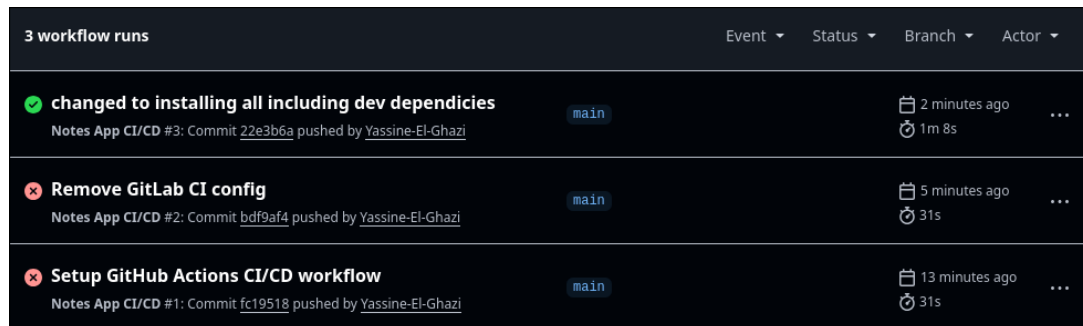- Adding a note

- Editing a note

- Deleting a note

- Listing notes

Example test command:

```
npm test
```

6 CI/CD Workflow Results

The workflow runs successfully with all stages passing. Screenshots from GitHub Actions show:

Figure 1: Workflow run history showing latest successful CI/CD run.

7 Conclusion

The Notes App project demonstrates:

- CI/CD automation with GitHub Actions

- Secure and tested Node.js application

- Dockerized deployment to staging and production