Exercise 8 – CI Pipeline

Goal:

Set up a Continuous Integration (CI) pipeline using GitHub Actions to automatically build, test, and verify your project on every push and pull request.

Exercise 8.1 (10 Points): Basic CI Setup

Task: Create a GitHub Actions workflow file named `ci.yml` with the following requirements:

- Trigger on: push to any branch and *pull_request* events
- Use a suitable runner (e.g., *ubuntu-latest*)
- Checkout your code using the *actions/checkout@v4* action
- Set up the environment:
  - Use appropriate actions to setup your environment used for your backend part of FocusFlow (e.g., Python, Java, Node.js, etc.)
- Run your test suite and check for successful execution

Deliverable: A GitHub repository with a working `ci.yml` workflow under `.github/workflows/` and a updated *README.md* file showing the pipeline status badge.

Exercise 8.2 (10 Points): Explore More GitHub Actions

In the next exercise you will explore several other valuable workflow actions to broader your DevOps skills and to improve your project. You can have a look into GitHub actions following the links:

- https://github.com/features/actions
- https://github.com/marketplace?type=actions

Here some categories of workflow integrations you can experiment with:

- Security & Dependency Management:
  - Dependency Scanning with Dependabot
  - Security Audit with npm audit / pip-audit / OWASP Dependency-Check
- Code Quality & Testing
  - Code Coverage Reporting (e.g., Codecov, Coveralls, or SonarQube)
  - Linting and Formatting (e.g., ESLint, Flake8, Checkstyle)
  - Test Matrix to run tests across multiple versions of languages (e.g., Pyhton 3.9 – 3.11) (see: https://docs.github.com/en/actions/writing-workflows/choosing-what-your-workflow-does/running-variations-of-jobs-in-a-workflow)
- Build Caching to store dependencies and speed up workflows
- Pull request Checks to use status checks and required reviewers before merging
- etc.

Task: Explore the options of additional workflow integrations and select one more action from the categories above. Enhance your existing workflow by integrating your additional selected workflow action.

Deliverable: An enhanced GitHub workflow that integrates the SonarQube CLI and pushes the analysis results to the SonarQube Server instance.