# Continuous Integration

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The continuous integration (CI) methods and approaches used in this project are centered around GitHub Actions workflows to automate the build, test, and code quality checks for a Java project using Gradle. We chose to use GithubActions as they integrated nicely with our use of github for version control. It also runs automatically on any commits made and sends an email notification in the event anything fails.

These methods are appropriate for the project because automation is used for version control, which reduces the likelihood of conflicts with different versions because a new version wasn't committed/merged. This then guarantees that our project is always up to date when being worked on and iterated.

The methods and practices we used for continuous integration simplify this aspect of maintenance of the project, as the project is quite large, this automation allows us to focus more of our attention on the actual development of the project, in addition to other aspects such as documentation and testing.

Details of the key components of the actual infrastructure is listed below:

- Triggering Events:
    - The CI workflow is triggered on push and pull_request events on the main branch
- Job Configurations:
    - Linux Build Job:
        - Runs on ubuntu-latest
        - Set up JDK 17
        - Makes gradlew executable
        - Sets up Gradle with caching of dependencies to speed up execution.
        - Builds the project and runs tests using Gradle.
        - Checks code quality with Gradle
    - MacOS Build Job:
        - Runs on macOS-latest
        - Similar setup as the linux build job but specific for macOS
    - Windows Build Job:
        - Runs on windows-latest
        - Similar setup as the linux build job but specific for Windows
- Dependency Submission Job:
    - Runs on ubuntu-latest
    - Set up JDK 17
    - Checks no dependencies are missing from the build