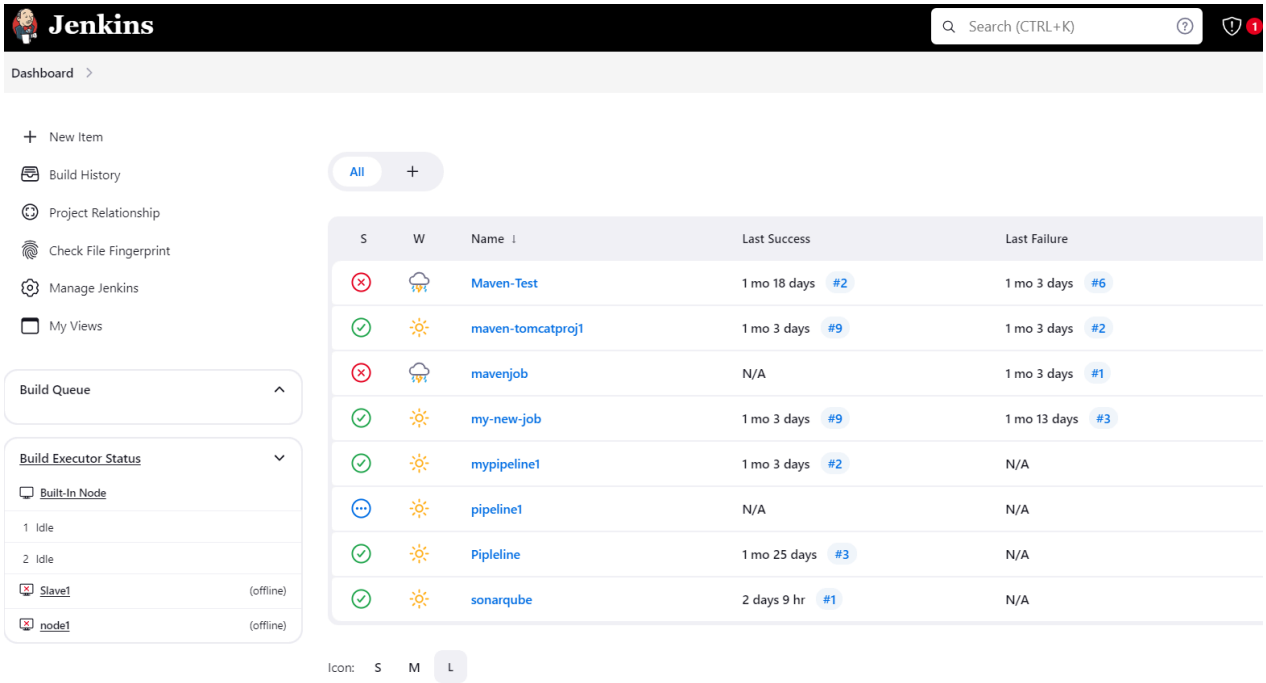
EXPERIMENT 8

Aim:Create a Jenkins CICD Pipeline with SonarQube / GitLab Integration to perform a static analysis of the code to detect bugs, code smells, and security vulnerabilities on a sample Web Java / Python application. dive deep into this segment, let's first understand what is meant by the term 'pipeline'?

1. Open Jenkin dashboard.

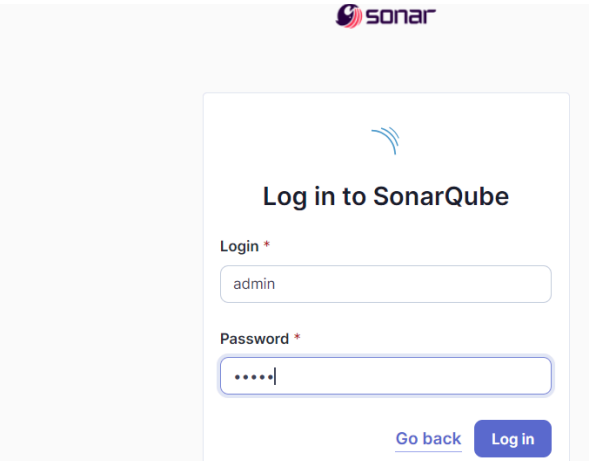


2. Run SonarQube in a Docker container using this command -

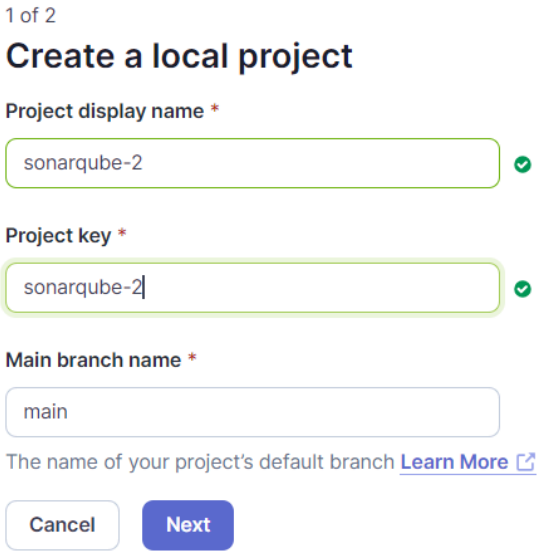
```
C:\Users\91900>docker run -d --name sonarqube -e SONAR_ES_BOOTSTRAP_CHECKS_DISABLE=true -p 9000:9000 sonarqube:latest
d23acccacd96c274f5f87912674ecf2d9adffff185a940c24740f44b29534485
```

3. Once the container is up and running, you can check the status of SonarQube at localhost port 9000.

4. Login to SonarQube using username *admin* and password *admin*.

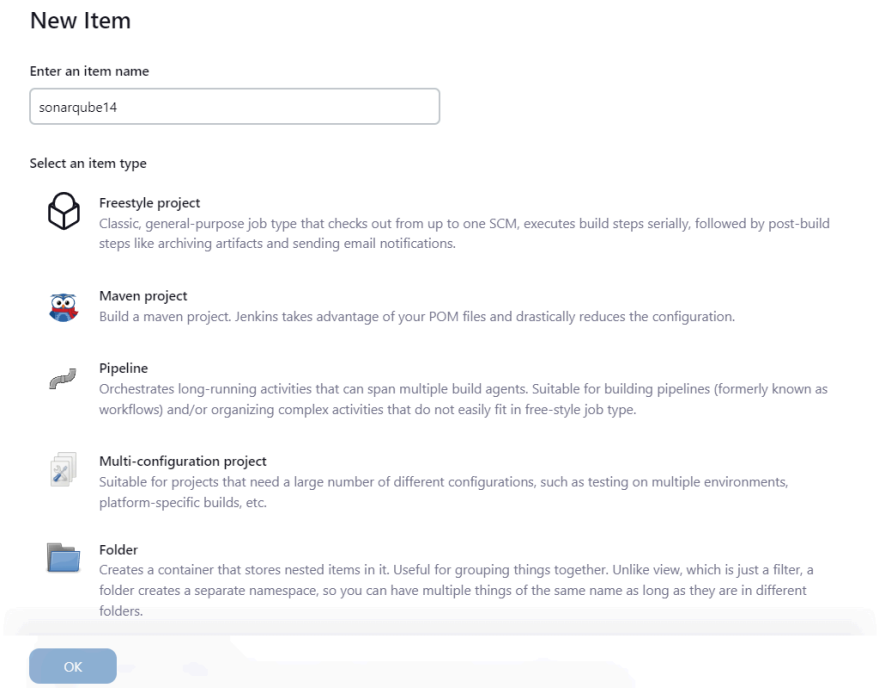


5. Create a manual project in SonarQube with the name **sonarqube-test**



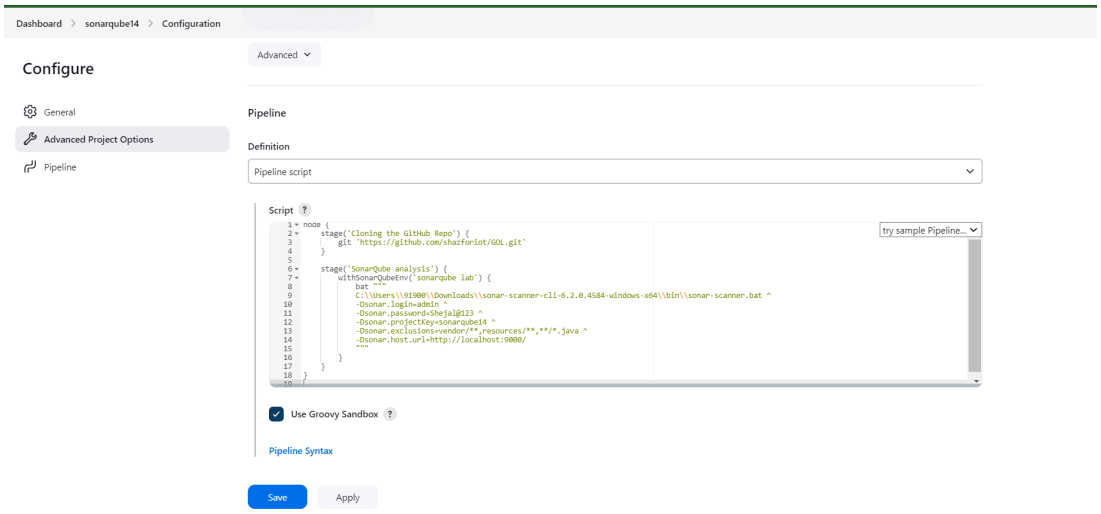
Setup the project and come back to Jenkins Dashboard.

6. Create a New Item in Jenkins, choose **Pipeline**.



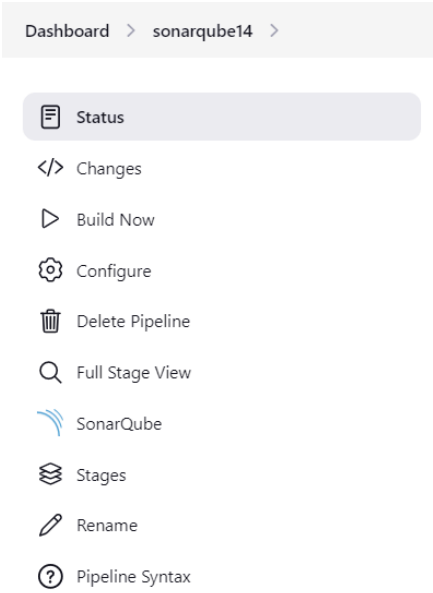
7. Under Pipeline Script, enter the following -

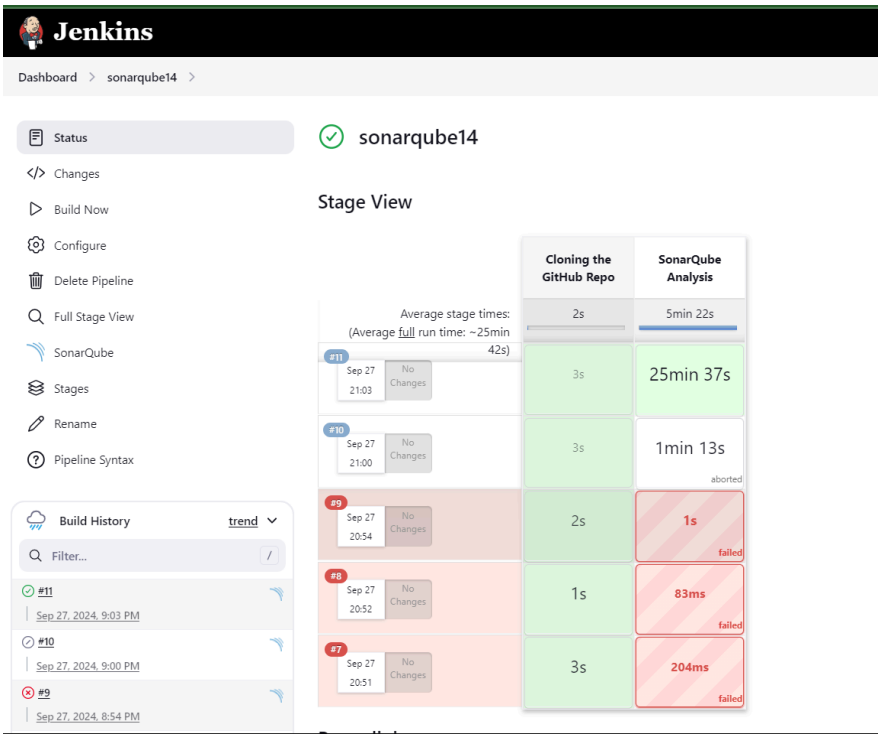
```
node {
    stage('Cloning the GitHub Repo') {
        git 'https://github.com/shazforiot/GOL.git'
    }
    stage('SonarQube analysis') {
        withSonarQubeEnv('sonarqube') {
            sh "<PATH_TO_SONARQUBE_FOLDER>//bin//sonar-scanner \
            -D sonar.login=<SonarQube_USERNAME> \
            -D sonar.password=<SonarQube_PASSWORD> \
            -D sonar.projectKey=<Project_KEY> \
-D sonar.exclusions=vendor/**,resources/**,**/*.java \
            -D sonar.host.url=http://127.0.0.1:9000/"
        }
    }
}
```



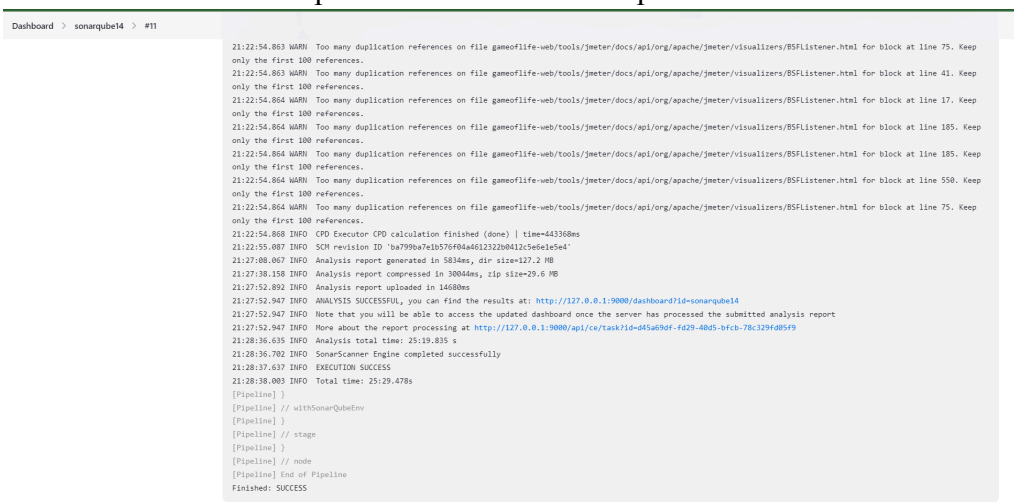
It is a java sample project which has a lot of repetitions and issues that will be detected by SonarQube.

8. Run The Build.

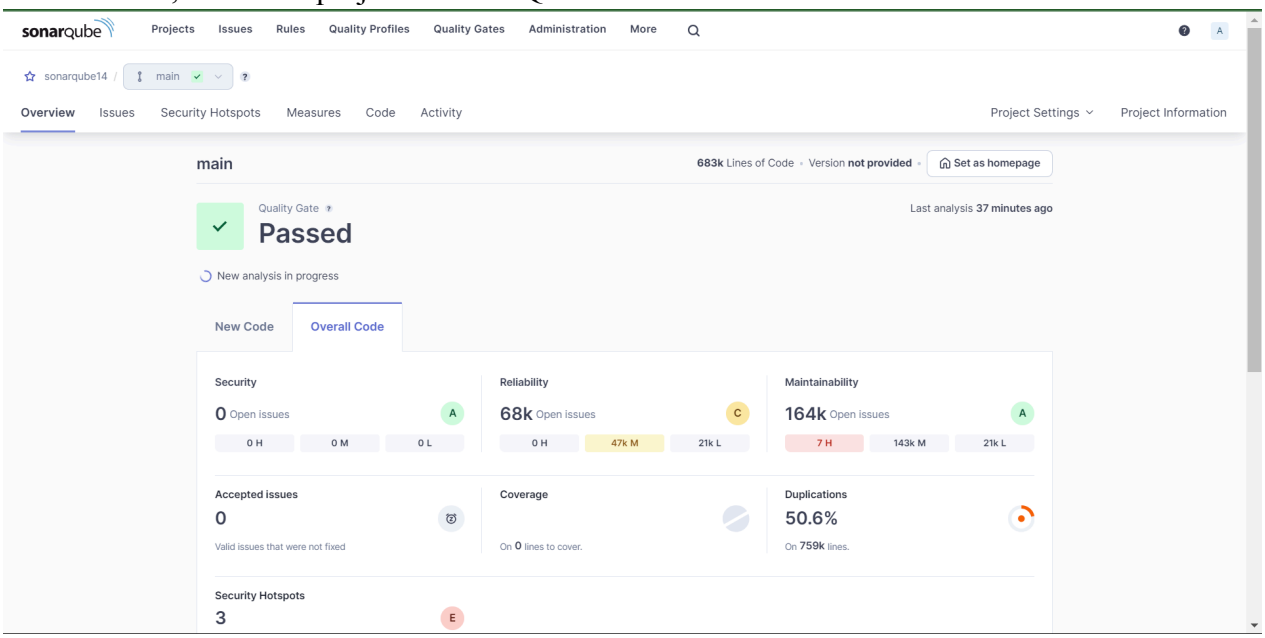




9. Check the console output once the build is complete.



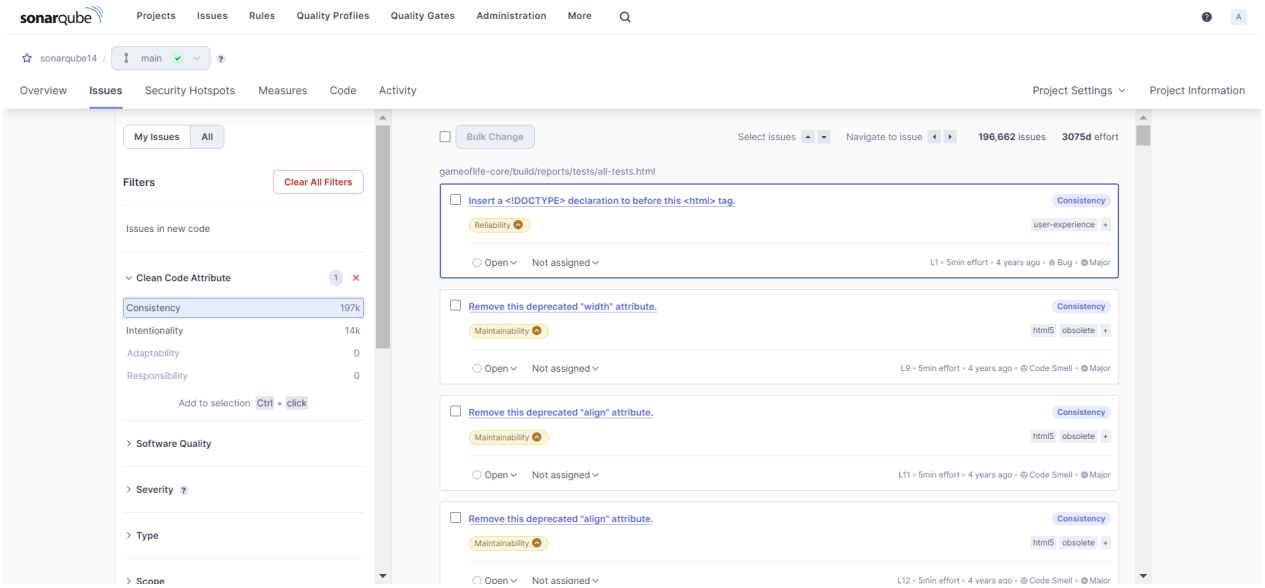
10. After that, check the project in SonarQube.



Under different tabs, check all different issues with the code.

11. **Code Problems -**

Consistency



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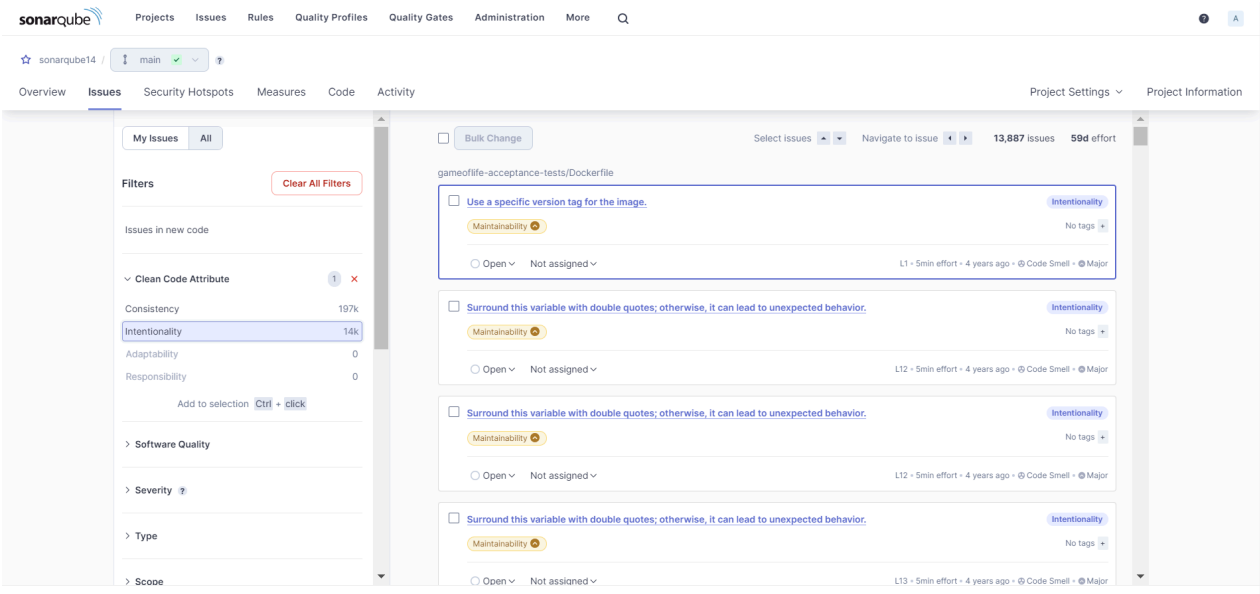
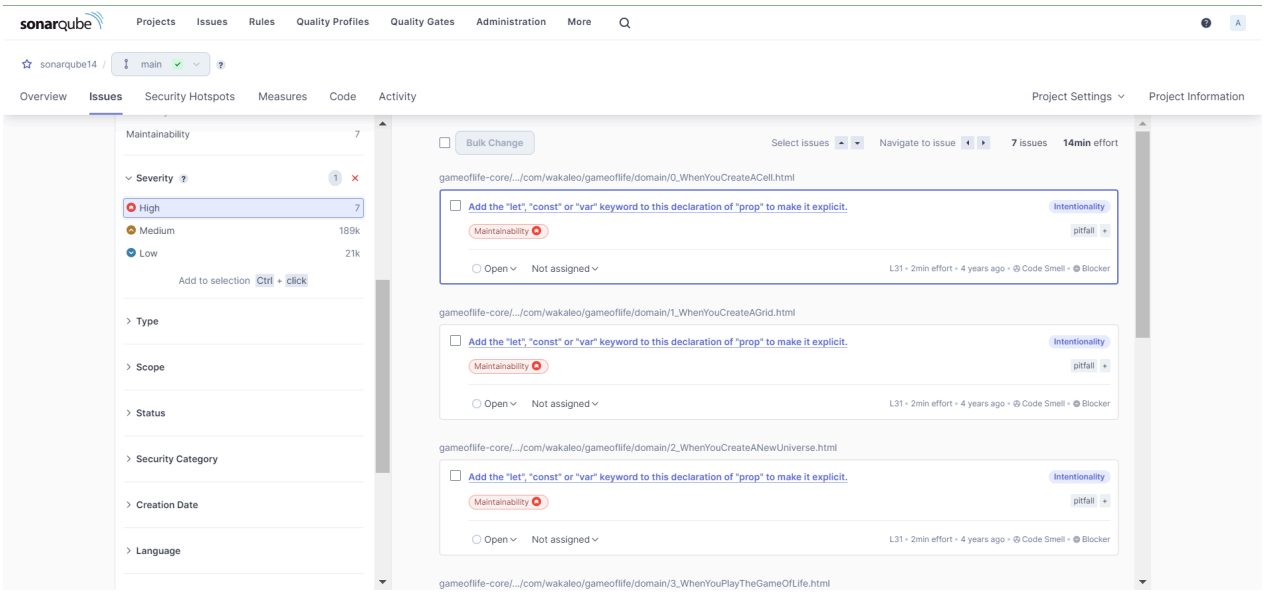
Intentionality

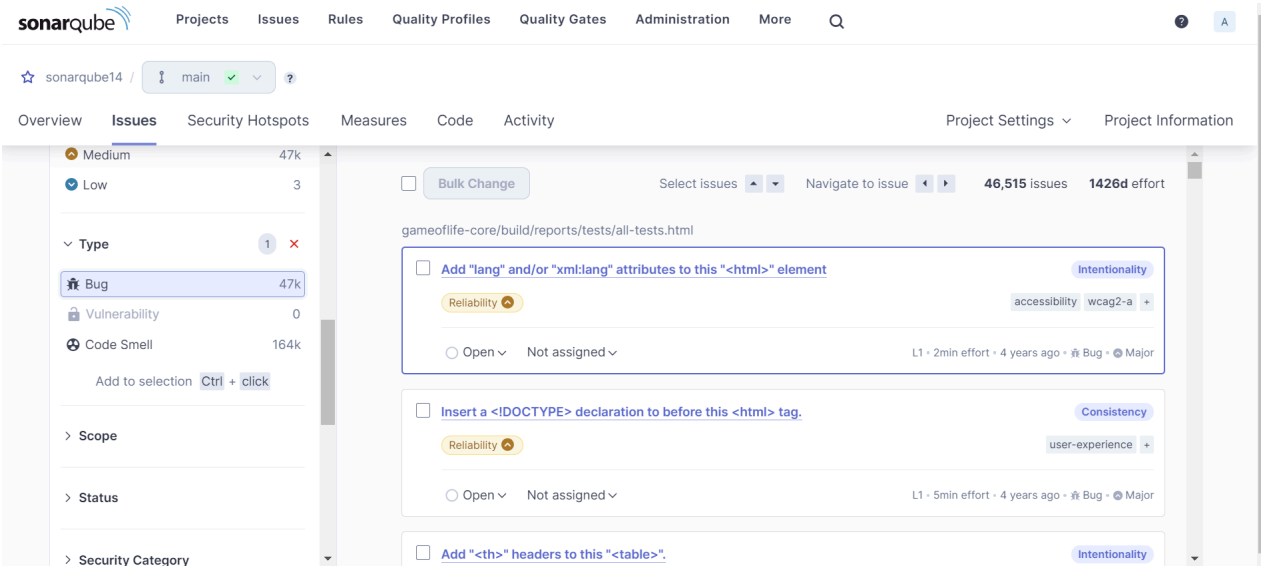


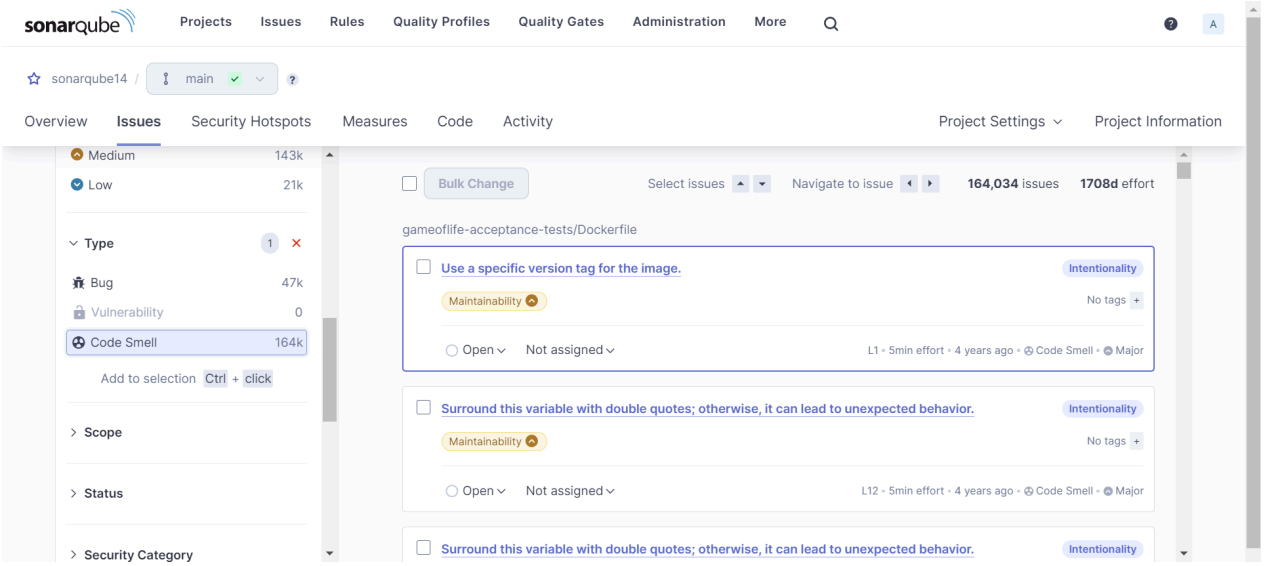
Severity



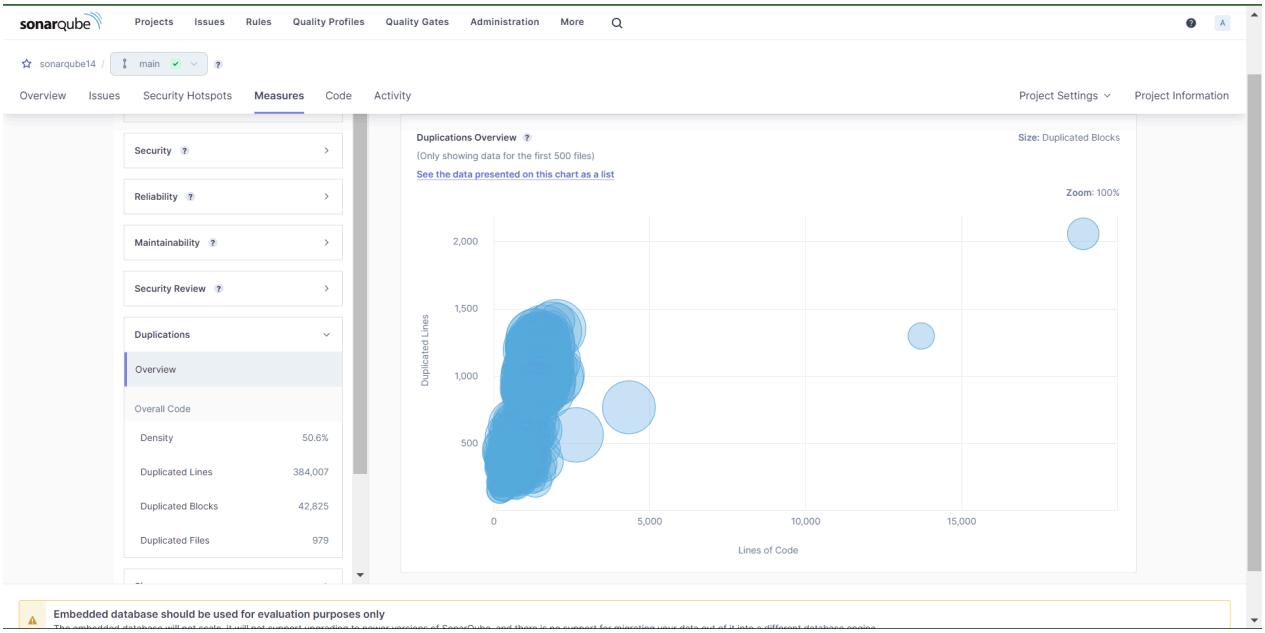
Name:Shejal Tiwari Div/Roll no :D15C/57

Bugs and Code Smells

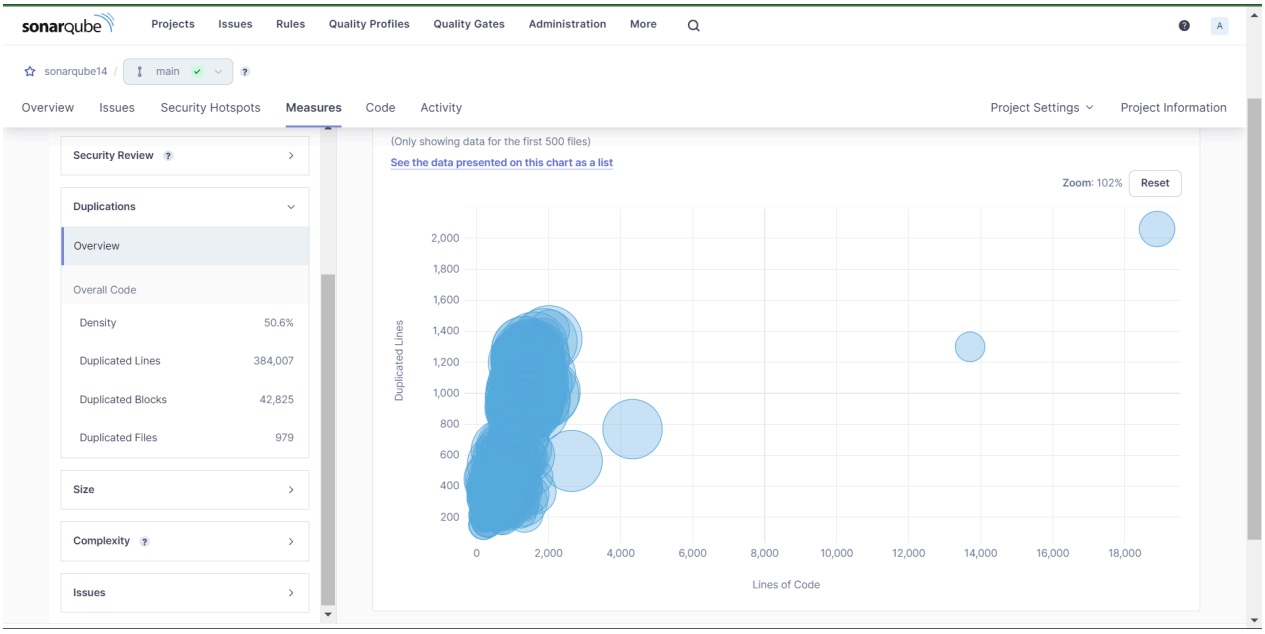




Duplicates



Cyclomatic Complexities



In this way, we have created a CI/CD Pipeline with Jenkins and integrated it with SonarQube to find issues in the code like bugs, code smells, duplicates, cyclomatic complexities, etc.

Conclusion: In this experiment, we successfully cloned a GitHub repository and integrated it with SonarQube for code analysis. During the analysis, SonarQube highlighted various types of program issues, including:

- **Consistency**: Code standards and formatting issues.
- **Intentionality**: Potential logical or structural errors in code.
- **Severity**: Classification of errors by criticality.
- **Duplicates**: Identification of duplicate code sections.
- **Cyclomatic Complexity**: Measurement of code complexity based on control flow.

These insights provided a comprehensive understanding of the code quality and highlighted areas that needed improvement.

Issues Faced:

1. **SonarQube Scanner Path Error**: The Jenkins pipeline script was initially unable to run correctly due to Jenkins not detecting the correct path for the SonarQube Scanner. This required manual intervention to modify the script and set the proper path for the scanner bash file, allowing the pipeline to function as expected.