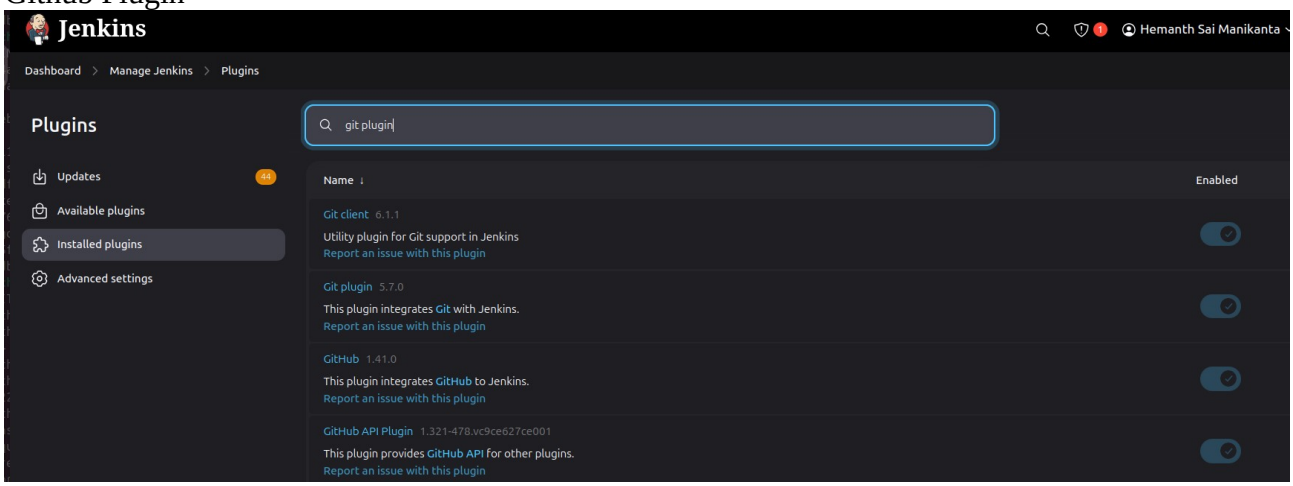
Assignment-2
IOE324 Introduction to DevOps and Microservices

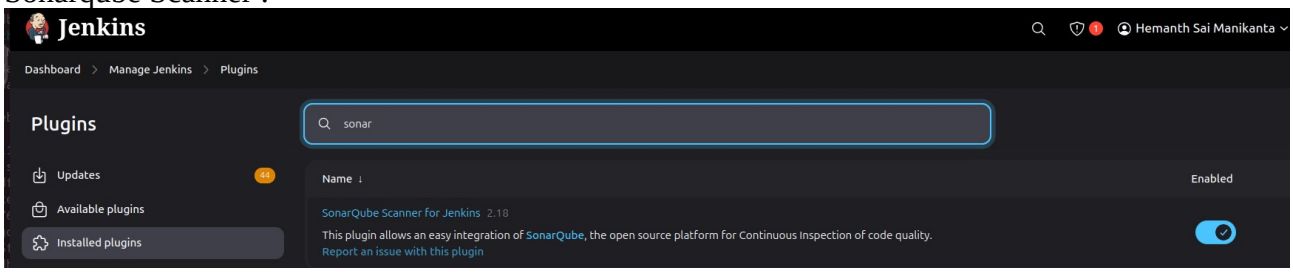
A.Hemanth Sai Manikanta
2022BCD0008

Set Up Plugins In Jenkins :

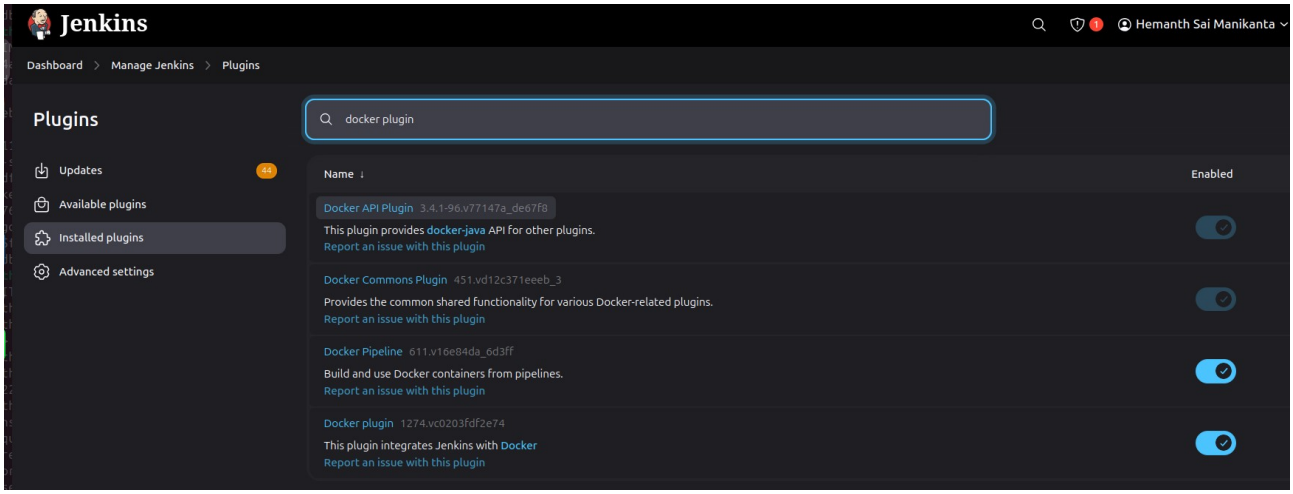
Github Plugin



Sonarqube Scanner :

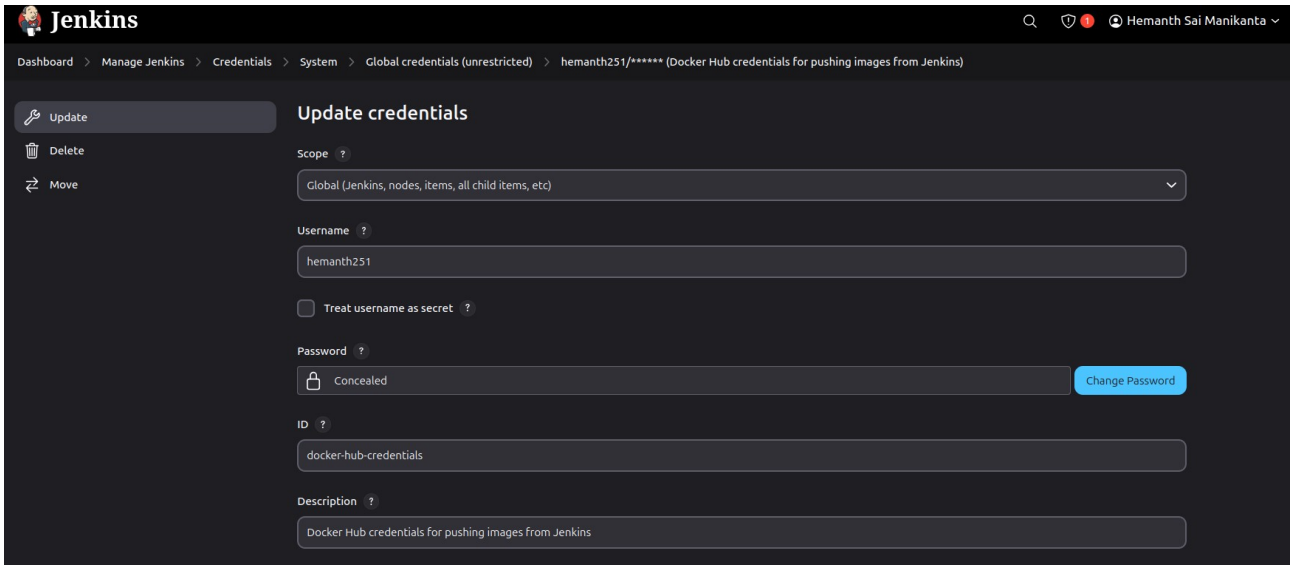


docker Plugin:

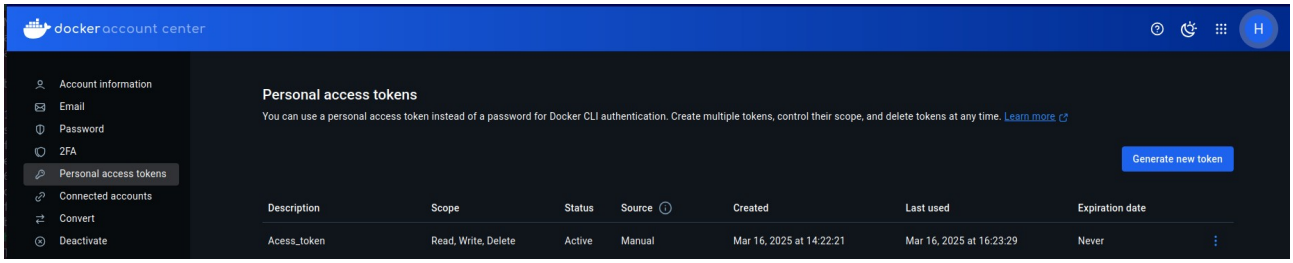


Adding Each Credentials to Jenkins :

Docker :

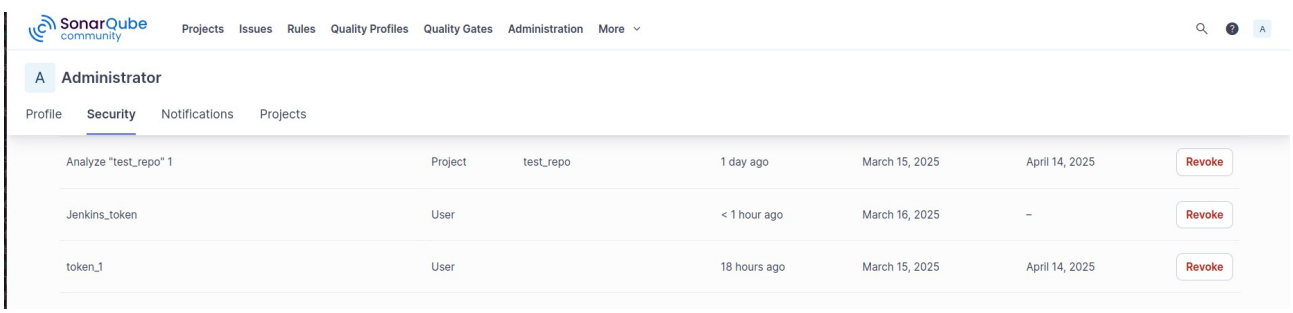


Docker Credentials:

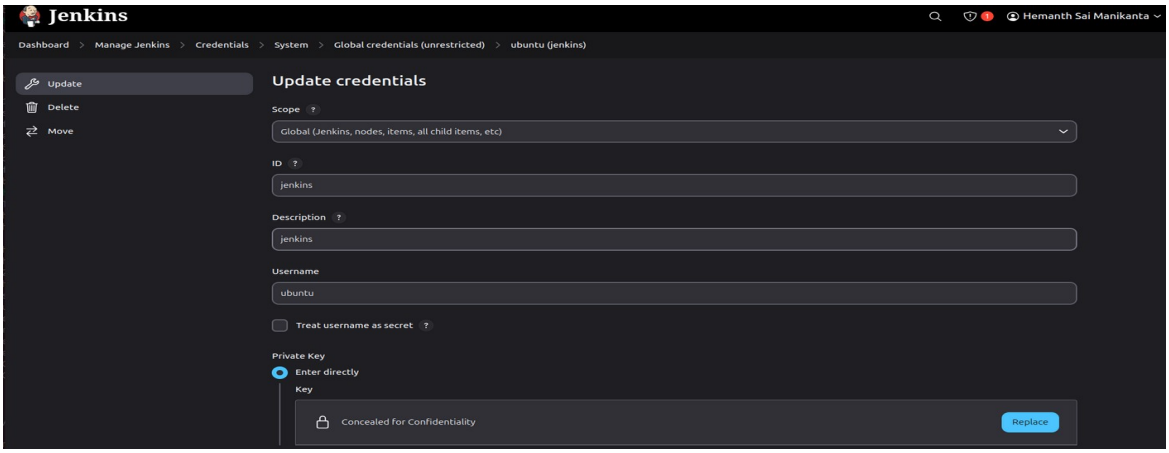


Sonarqube

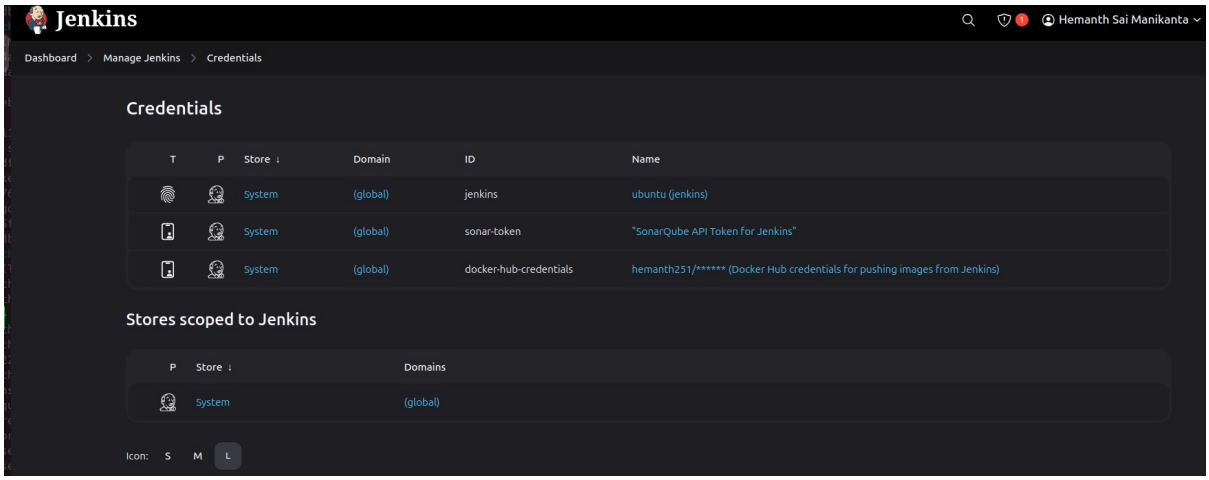
Sonarqube Credentials:



Git :Add SSH Key of Github to Jenkins :



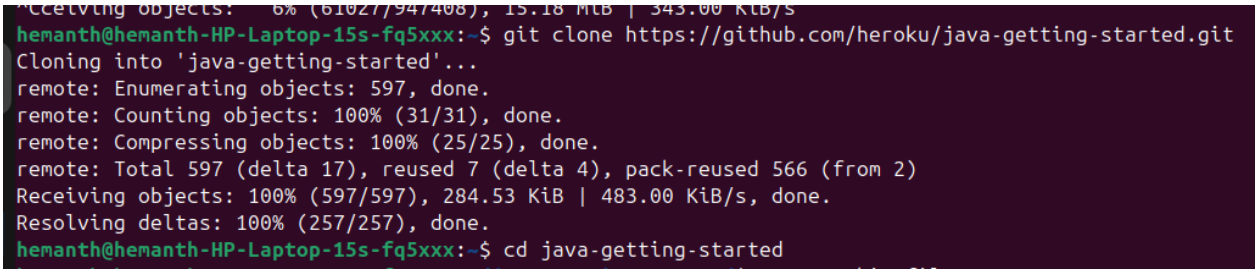
Adding 3 credentials

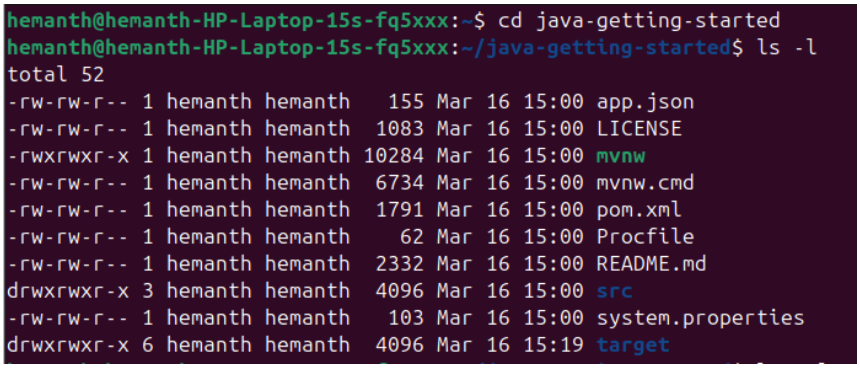


1. Integrate a Git Repository:

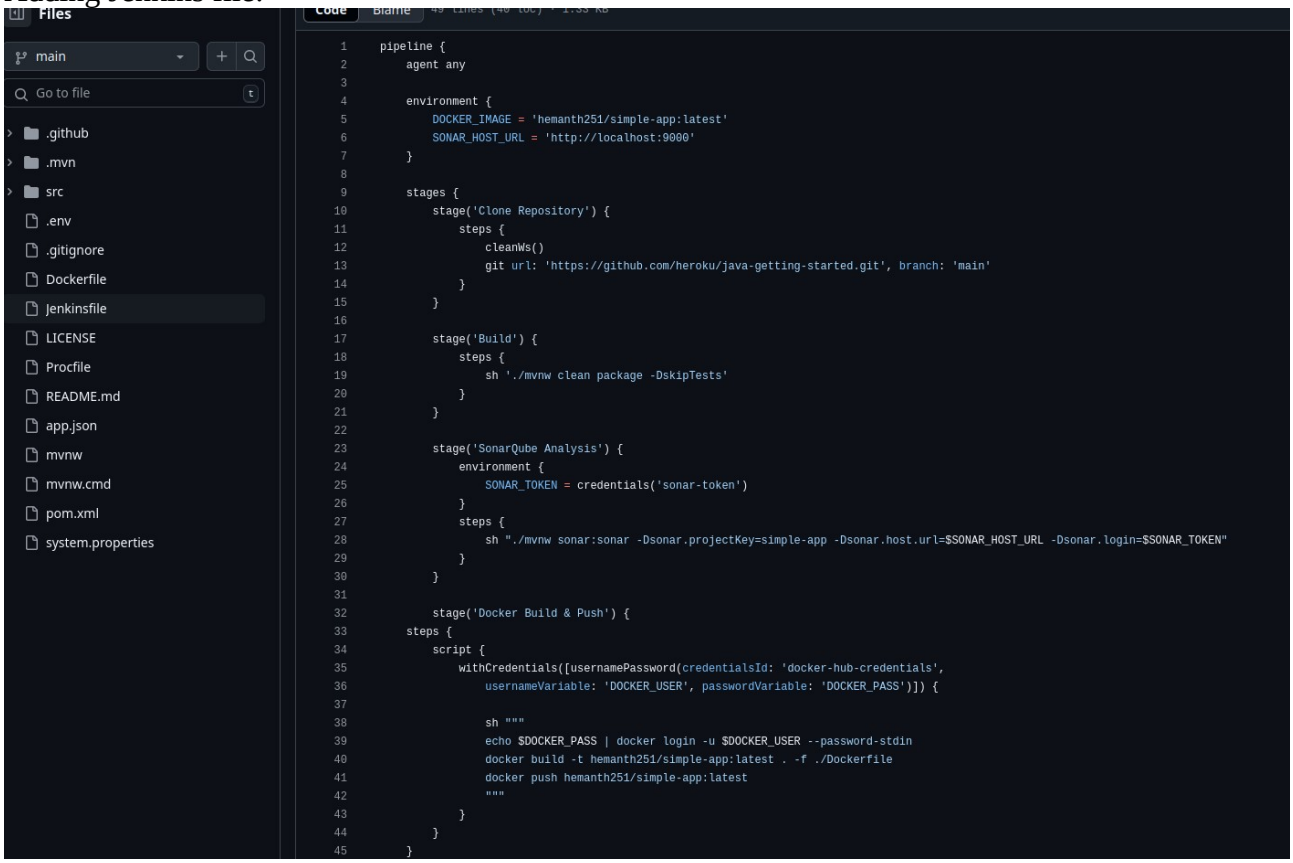
Pull the code from a Git repository of your choice. Ensure that the repository contains a simple project in any programming language.(Java)(Maven)

Cloned the project from https://github.com/heroku/java-getting-started.git and fork it



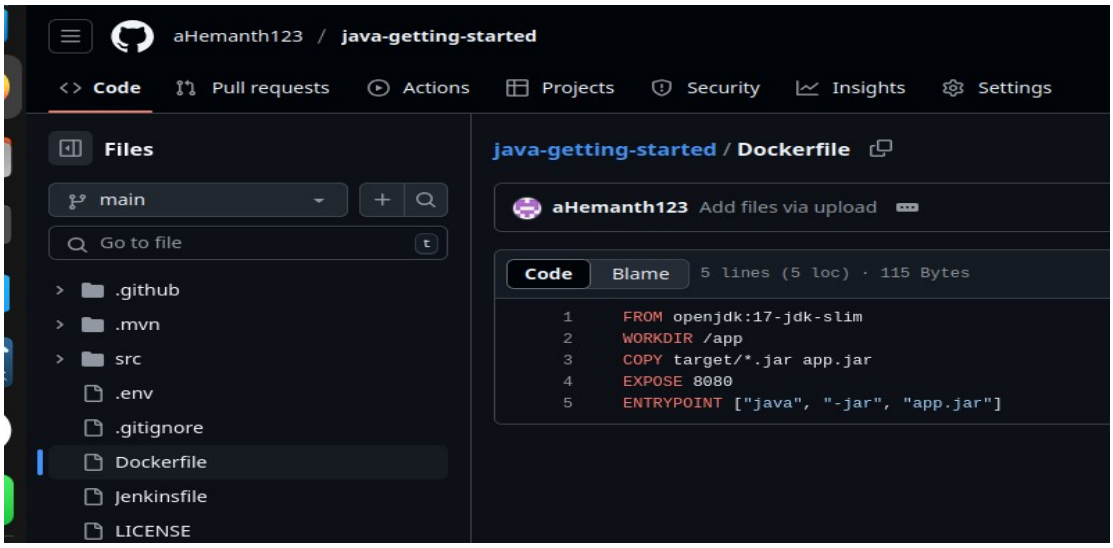


Adding Jenkins file:

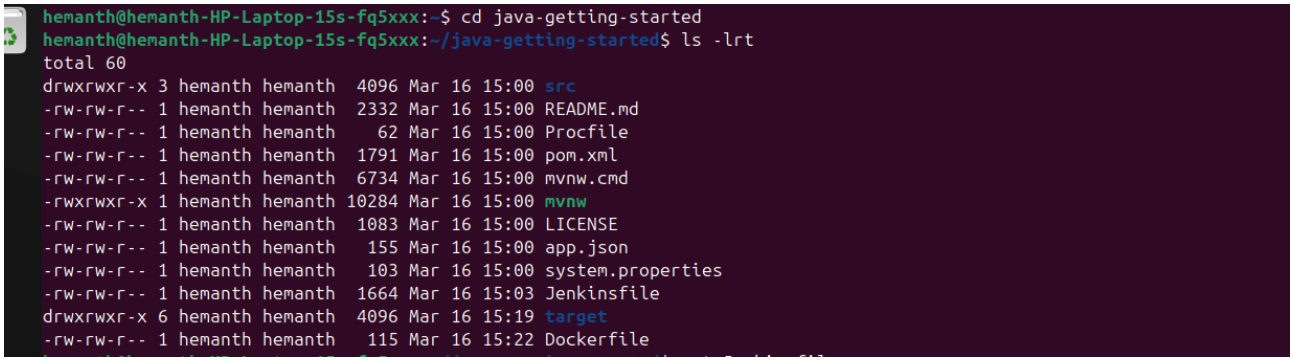


```
pipeline {
    agent any

    environment {
        DOCKER_IMAGE = 'hemanth251/simple-app:latest'
        SONAR_HOST_URL = 'http://localhost:9000'
    }

    stages {
        stage('Clone Repository') {
            steps {
                cleanWs()
                git url: 'https://github.com/heroku/java-getting-started.git', branch: 'main'
            }
        }

        stage('Build') {
            steps {
                sh './mvnw clean package -DskipTests'
            }
        }

        stage('SonarQube Analysis') {
            environment {
                SONAR_TOKEN = credentials('sonar-token')
            }
            steps {
                sh "./mvnw sonar:sonar -Dsonar.projectKey=simple-app -Dsonar.host.url=$SONAR_HOST_URL -Dsonar.login=$SONAR_TOKEN"
            }
        }

        stage('Docker Build & Push') {
    steps {
        script {
            withCredentials([usernamePassword(credentialsId: 'docker-hub-credentials',
                usernameVariable: 'DOCKER_USER', passwordVariable: 'DOCKER_PASS')]) {

                sh """
                echo $DOCKER_PASS | docker login -u $DOCKER_USER --password-stdin
                docker build -t hemanth251/simple-app:latest . -f ./Dockerfile
                docker push hemanth251/simple-app:latest
                """
            }
        }
    }
}
```

Added Docker file:

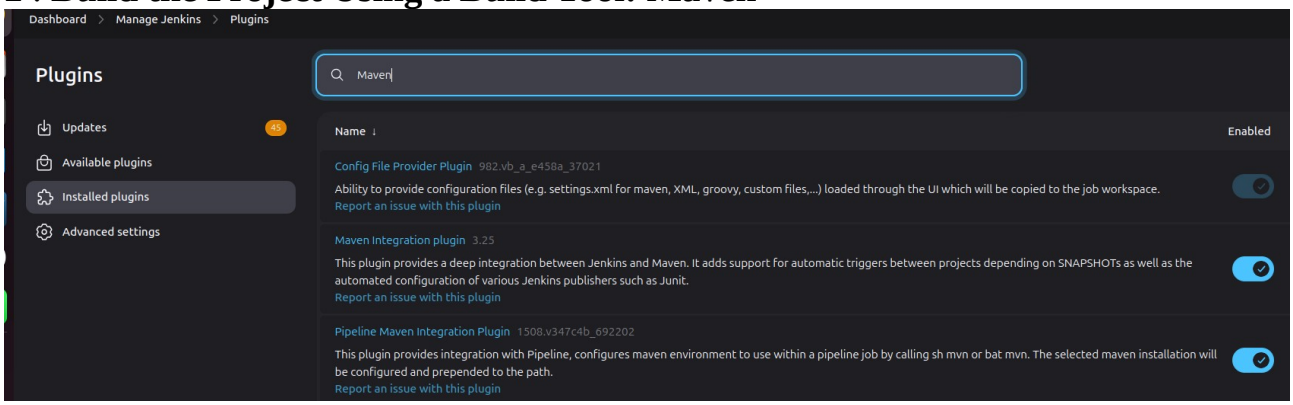


```
FROM openjdk:17-jdk-slim
WORKDIR /app
COPY target/*.jar app.jar
EXPOSE 8080
ENTRYPOINT ["java", "-jar", "app.jar"]
```



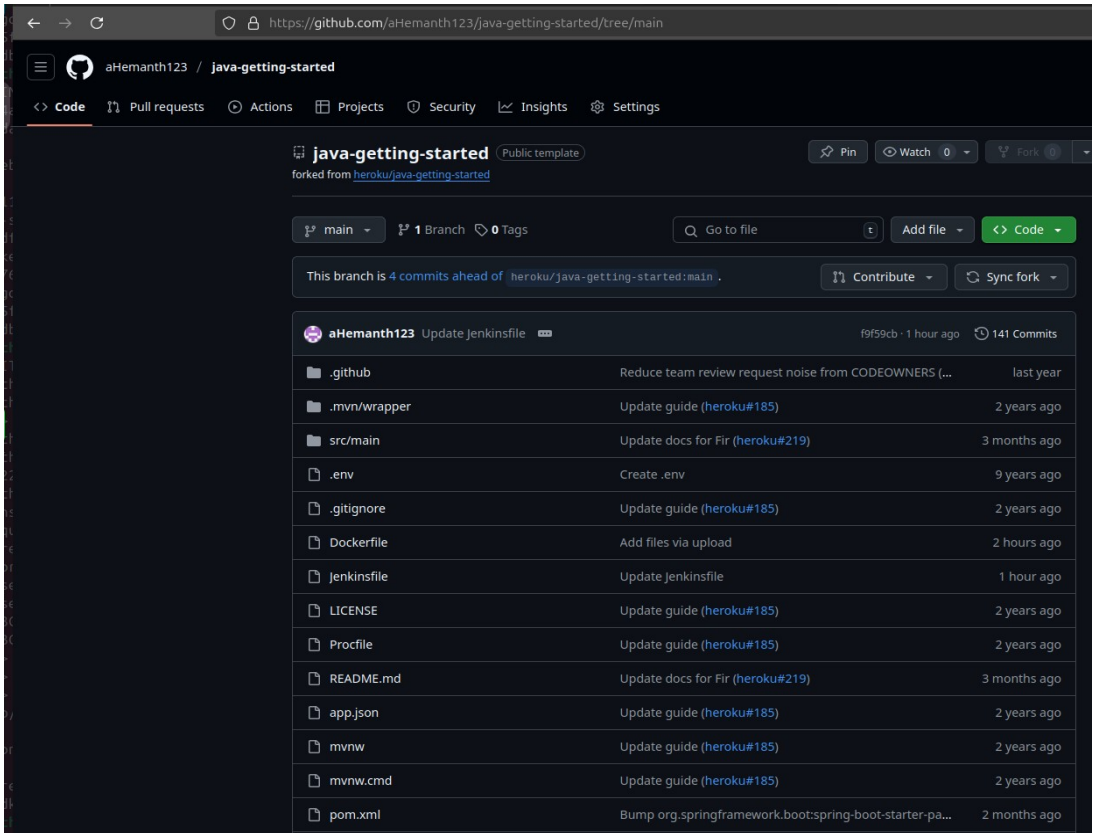
```
hemanth@hemanth-HP-Laptop-15s-fq5xxx:~$ cd java-getting-started
hemanth@hemanth-HP-Laptop-15s-fq5xxx:~/java-getting-started$ ls -lrt
total 60
drwxrwxr-x 3 hemanth hemanth  4096 Mar 16 15:00 src
-rw-rw-r-- 1 hemanth hemanth  2332 Mar 16 15:00 README.md
-rw-rw-r-- 1 hemanth hemanth    62 Mar 16 15:00 Procfile
-rw-rw-r-- 1 hemanth hemanth  1791 Mar 16 15:00 pom.xml
-rw-rw-r-- 1 hemanth hemanth  6734 Mar 16 15:00 mvnw.cmd
-rwxrwxr-x 1 hemanth hemanth 10284 Mar 16 15:00 mvnw
-rw-rw-r-- 1 hemanth hemanth  1083 Mar 16 15:00 LICENSE
-rw-rw-r-- 1 hemanth hemanth   155 Mar 16 15:00 app.json
-rw-rw-r-- 1 hemanth hemanth   103 Mar 16 15:00 system.properties
-rw-rw-r-- 1 hemanth hemanth  1664 Mar 16 15:03 Jenkinsfile
drwxrwxr-x 6 hemanth hemanth  4096 Mar 16 15:19 target
-rw-rw-r-- 1 hemanth hemanth   115 Mar 16 15:22 Dockerfile
```

2 . **Build the Project Using a Build Tool: Maven**

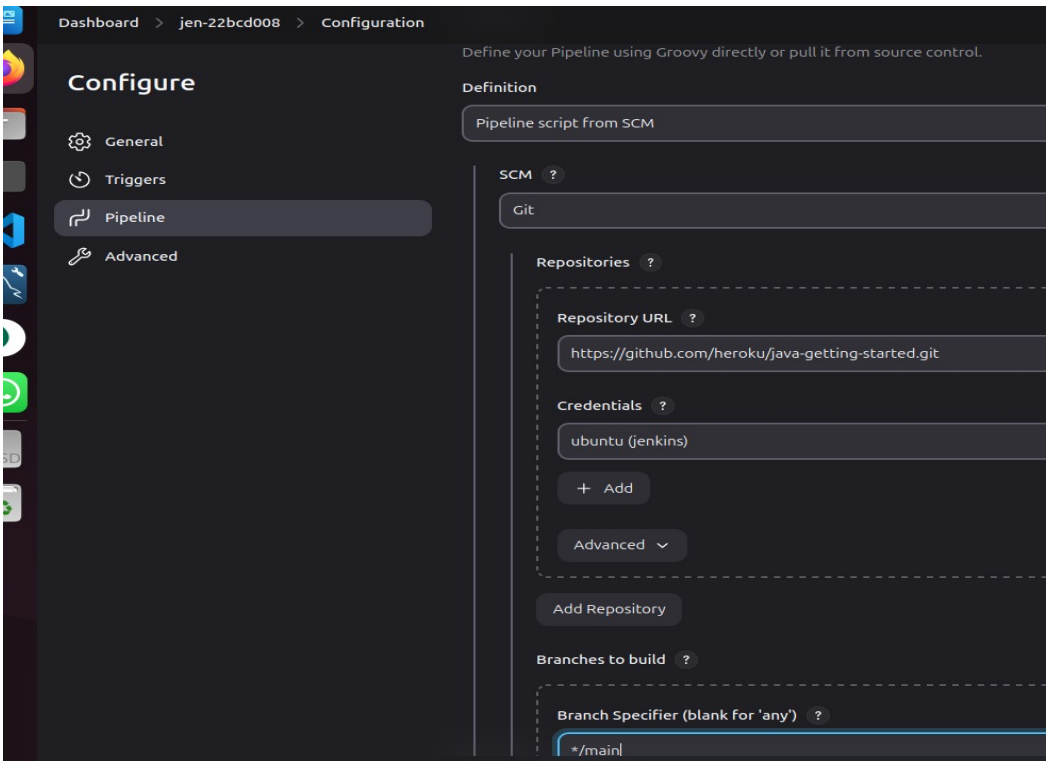



```
hemanth@hemanth-HP-Laptop-15s-fq5xxx:~/java-getting-started$ sudo apt install maven -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
maven is already the newest version (3.8.7-2).
The following packages were automatically installed and are no longer required:
  libllvm17t64 python3-netifaces
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.
hemanth@hemanth-HP-Laptop-15s-fq5xxx:~/java-getting-started$
```

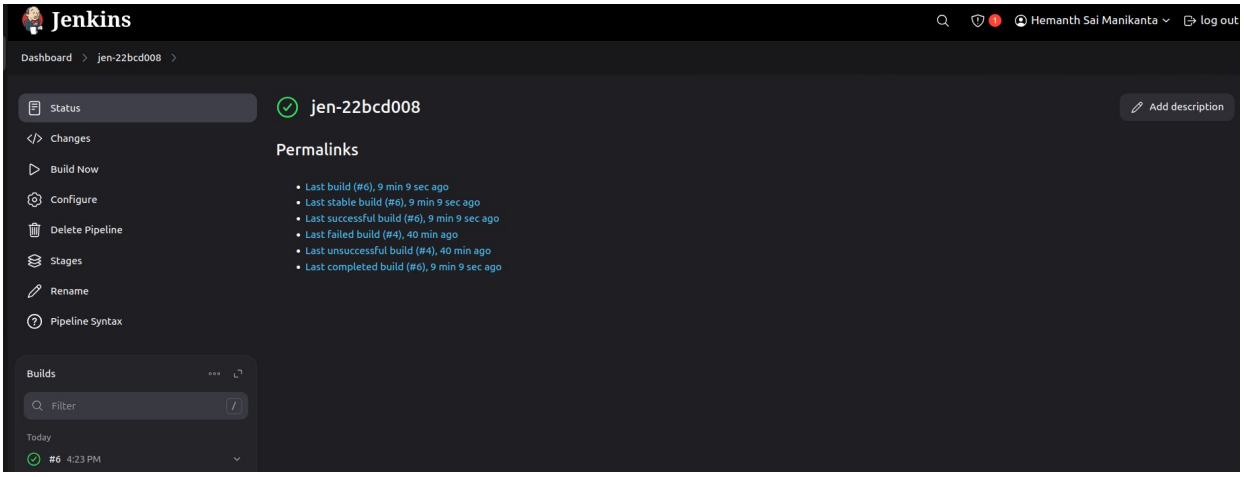
github link: https://github.com/aHemanth123/java-getting-started/tree/main

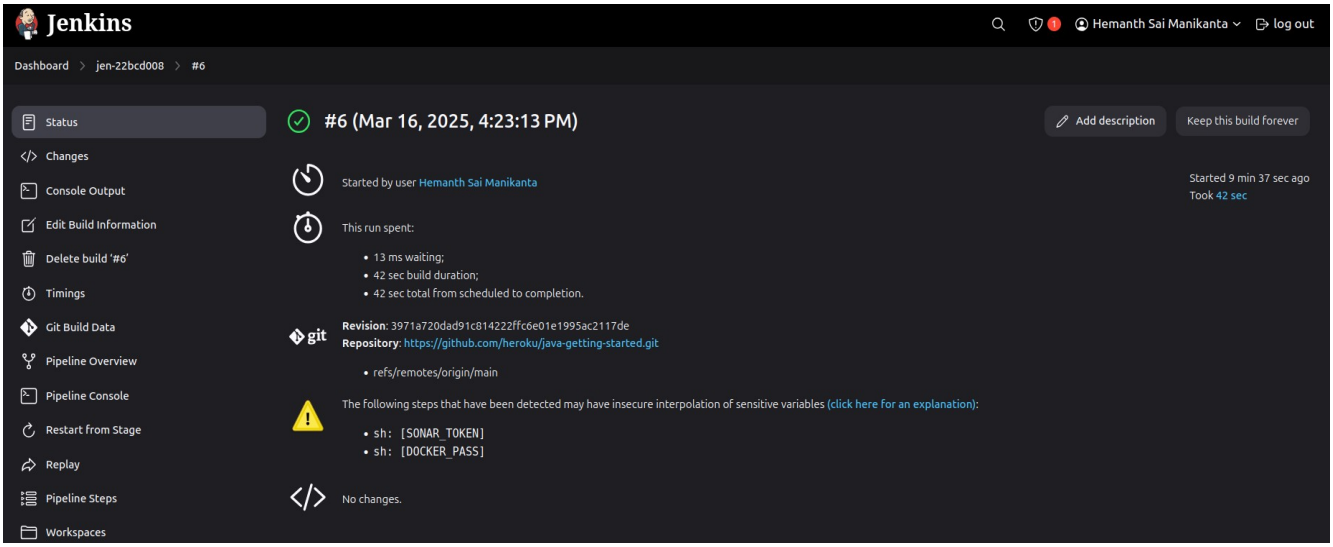


Creating a Pipeline using MY ROLLN0 – jen 22bcd0008 with git Integration by selecting the pipeline from SCM

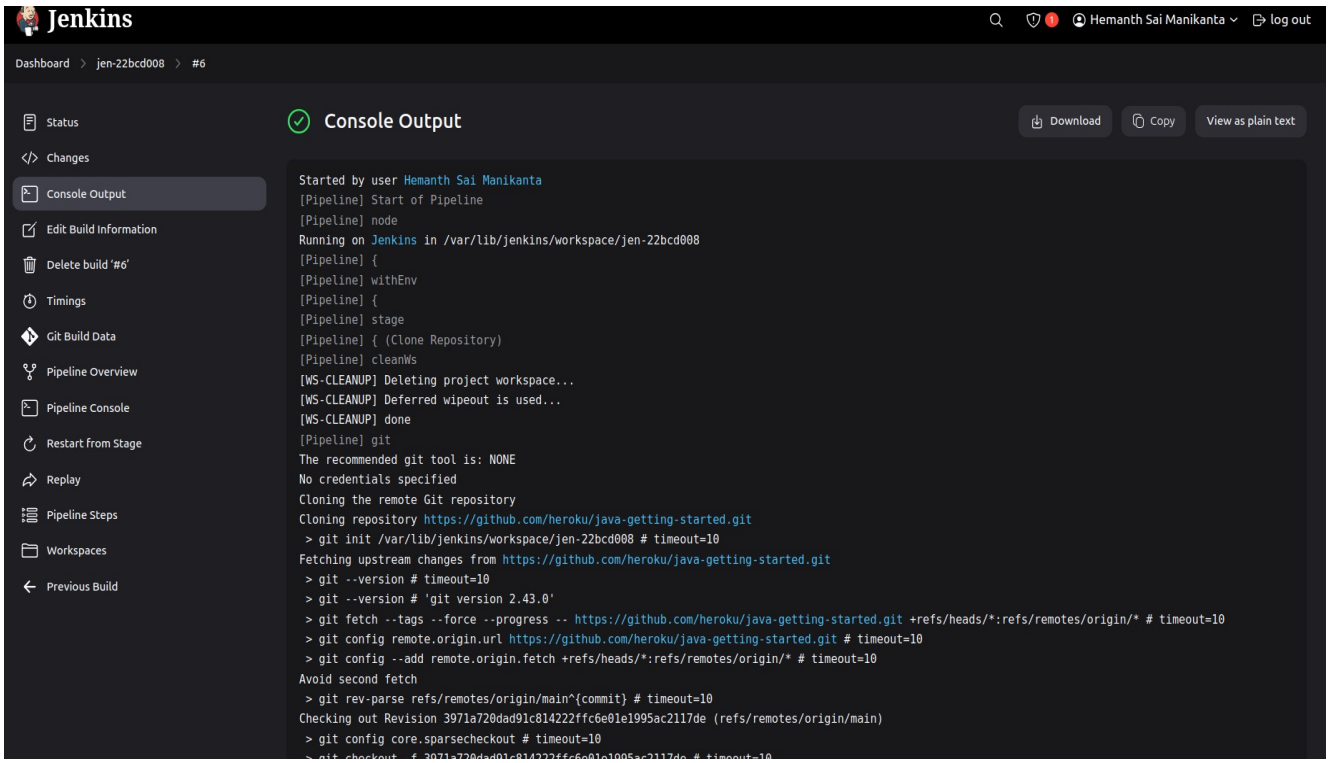


After **BUILDING now**, the pipeline configured succesfully

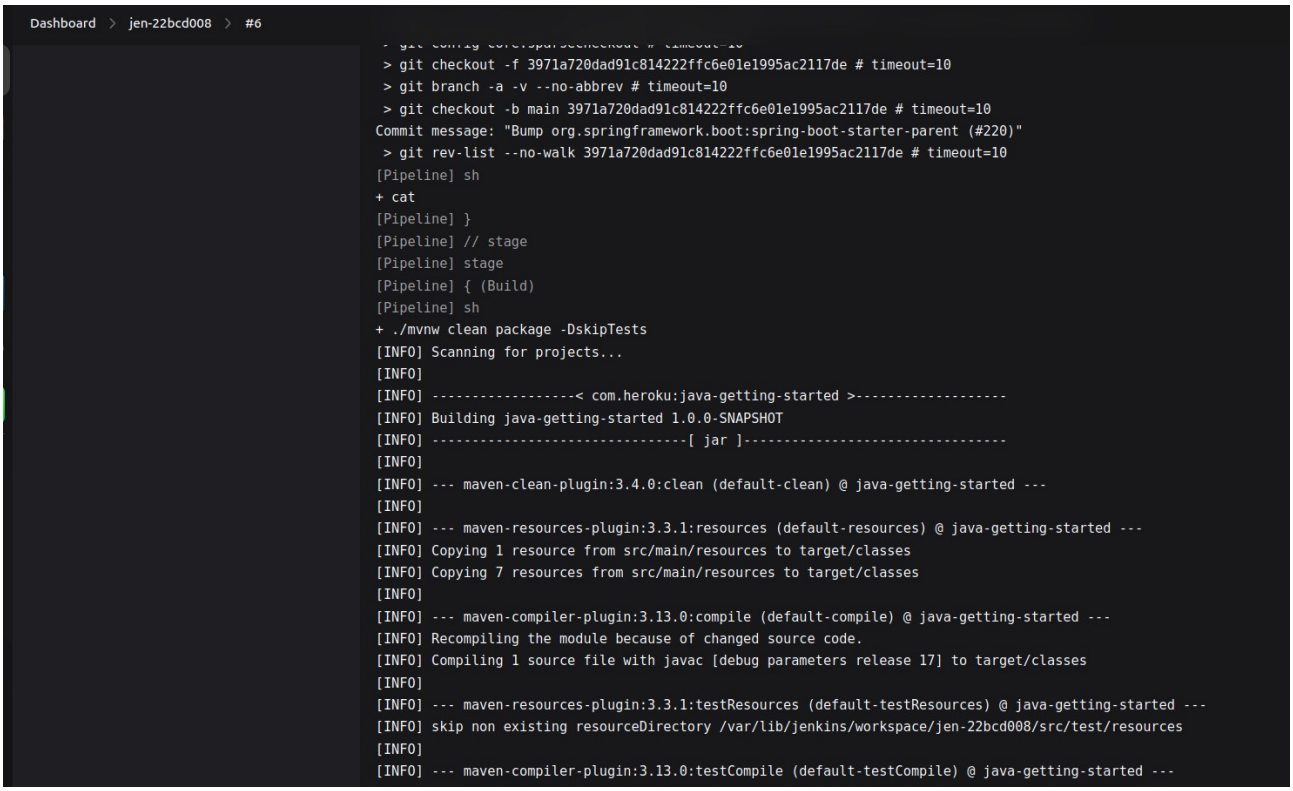


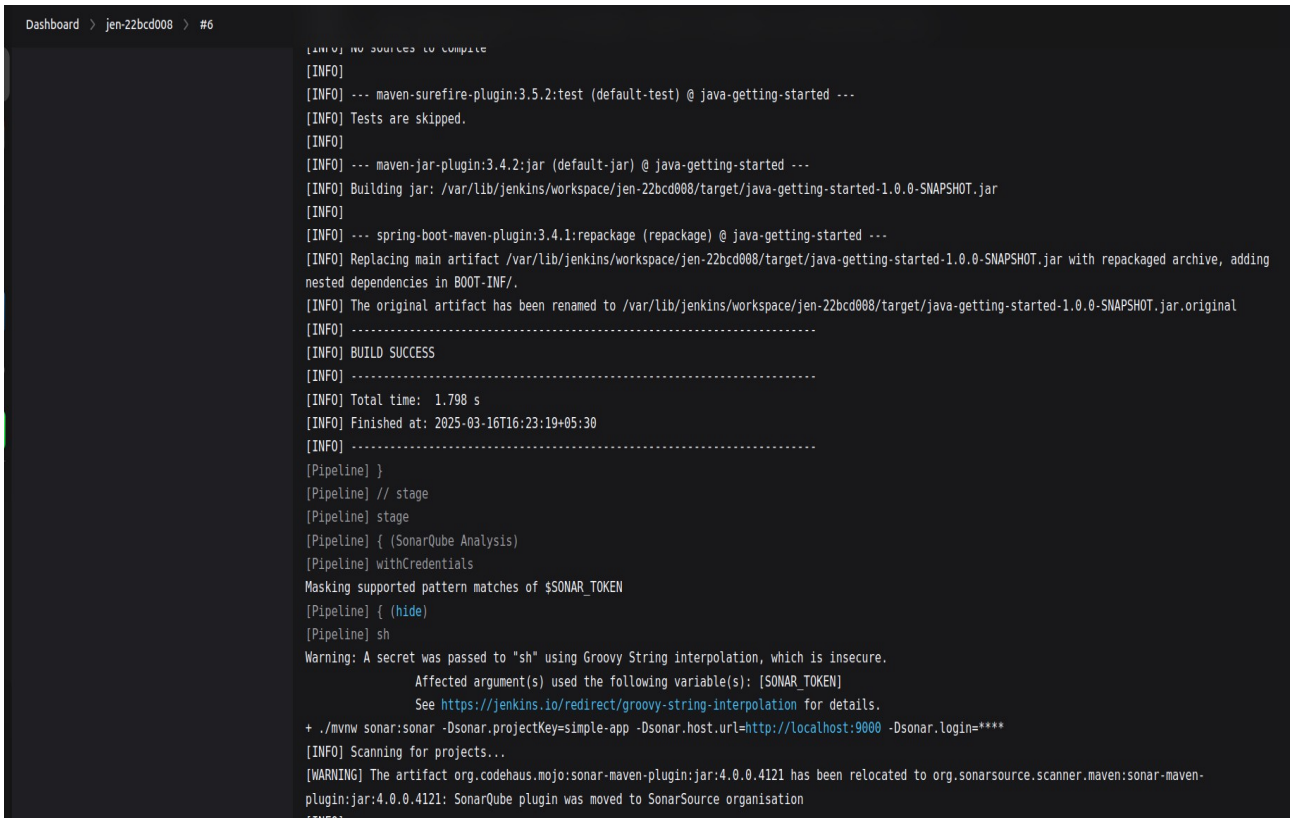


Jenkins Console Output:

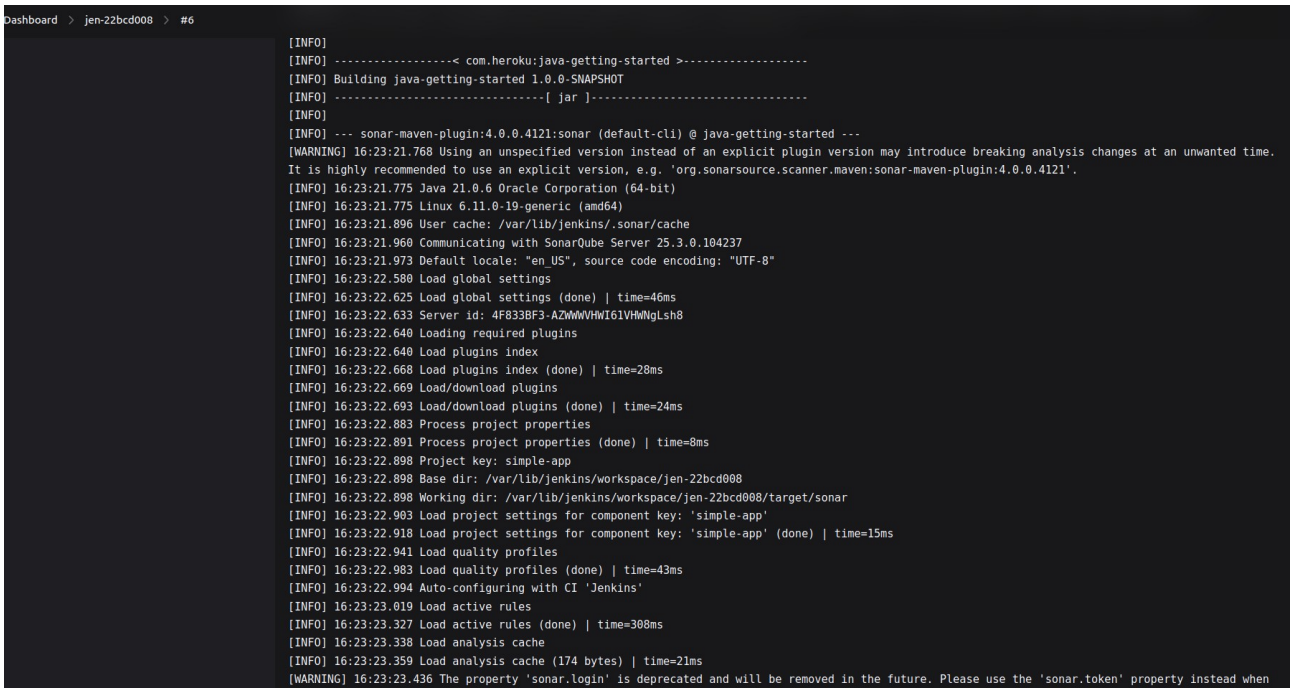


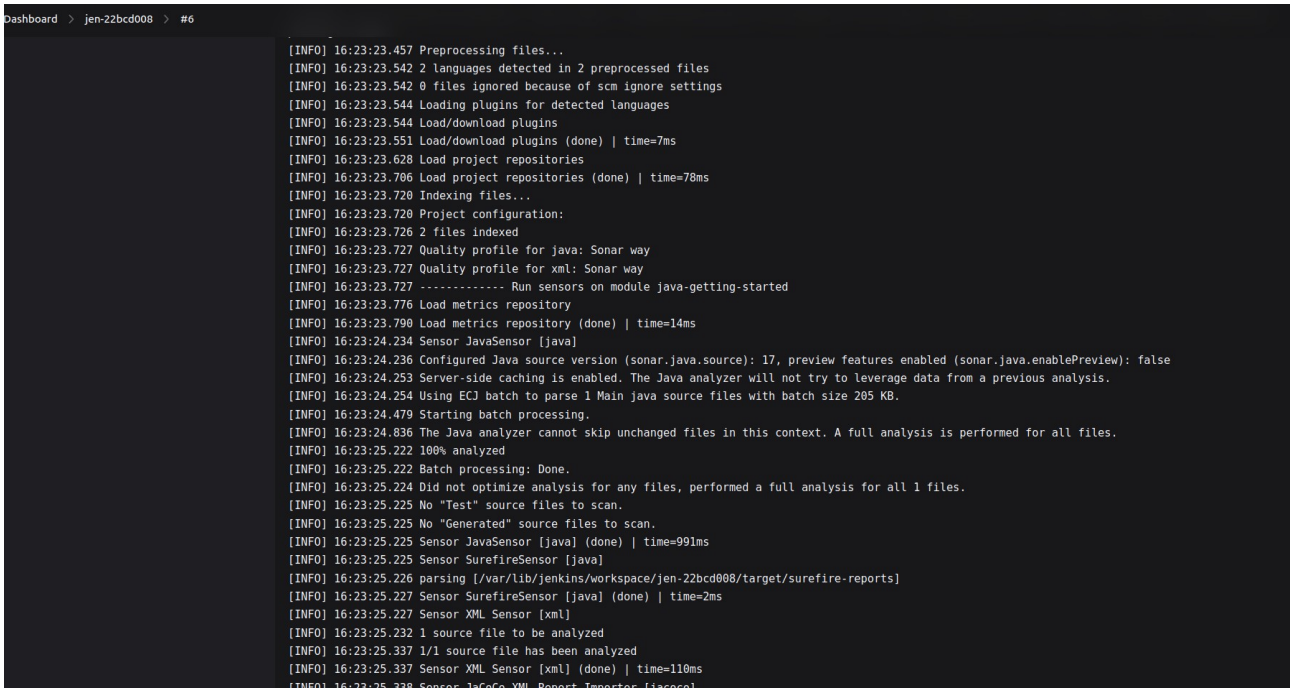
Building Stage:

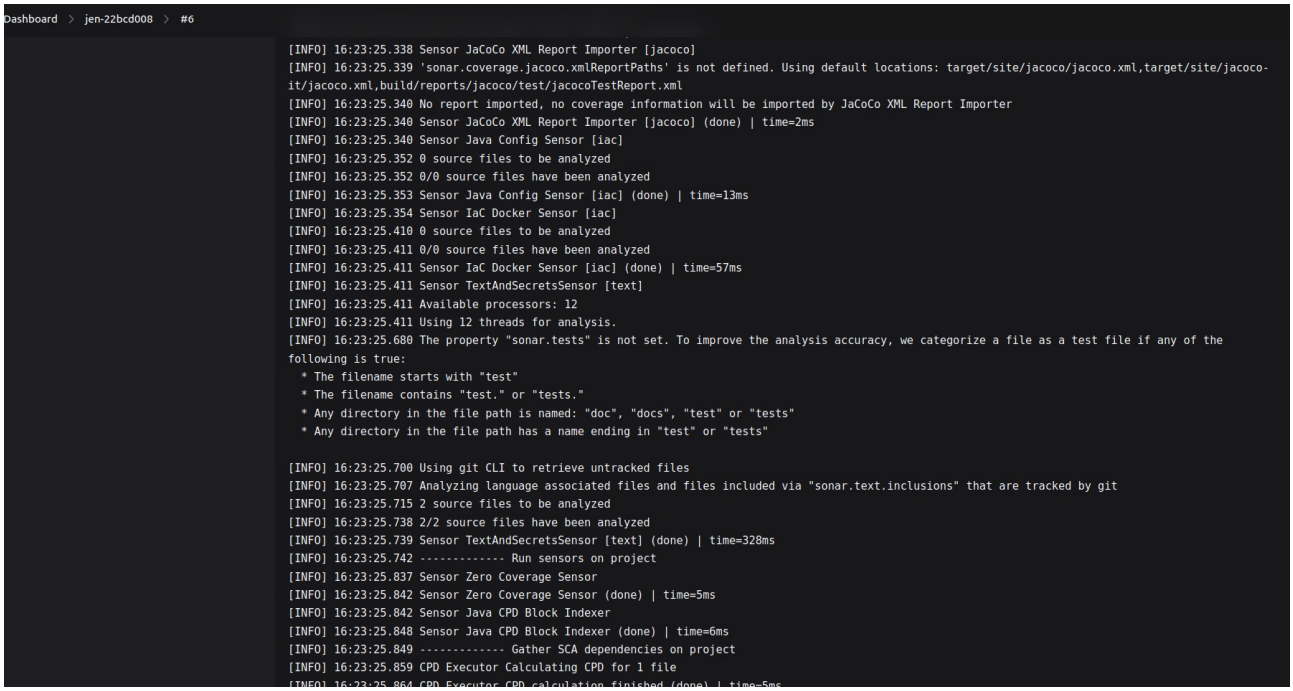




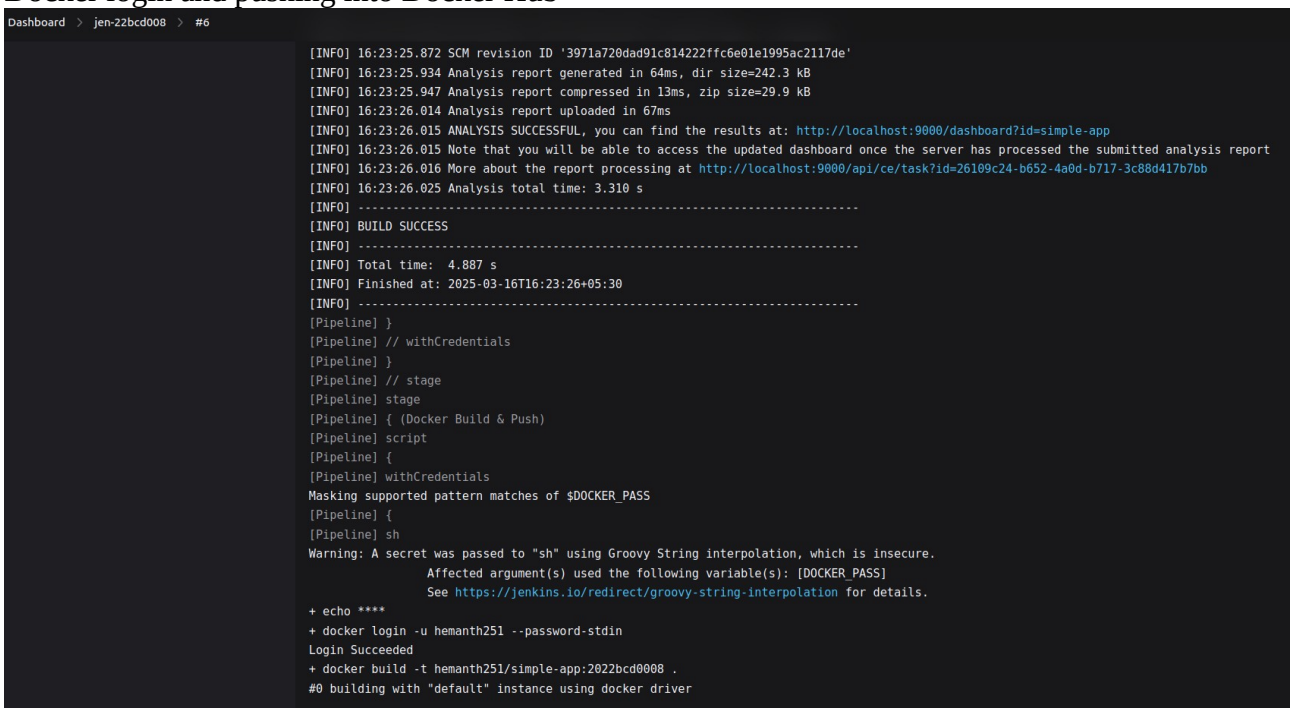
SONARQUBE Analysis:



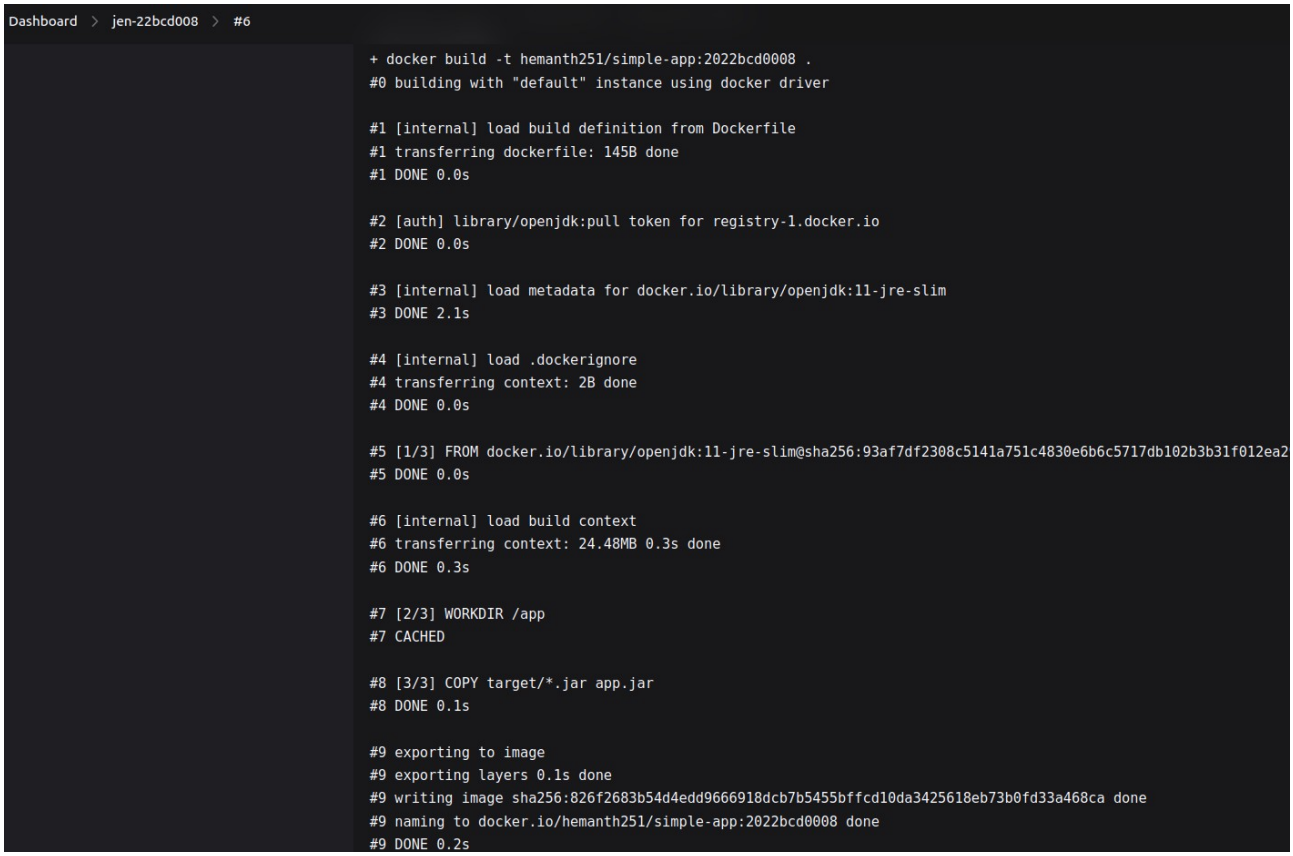




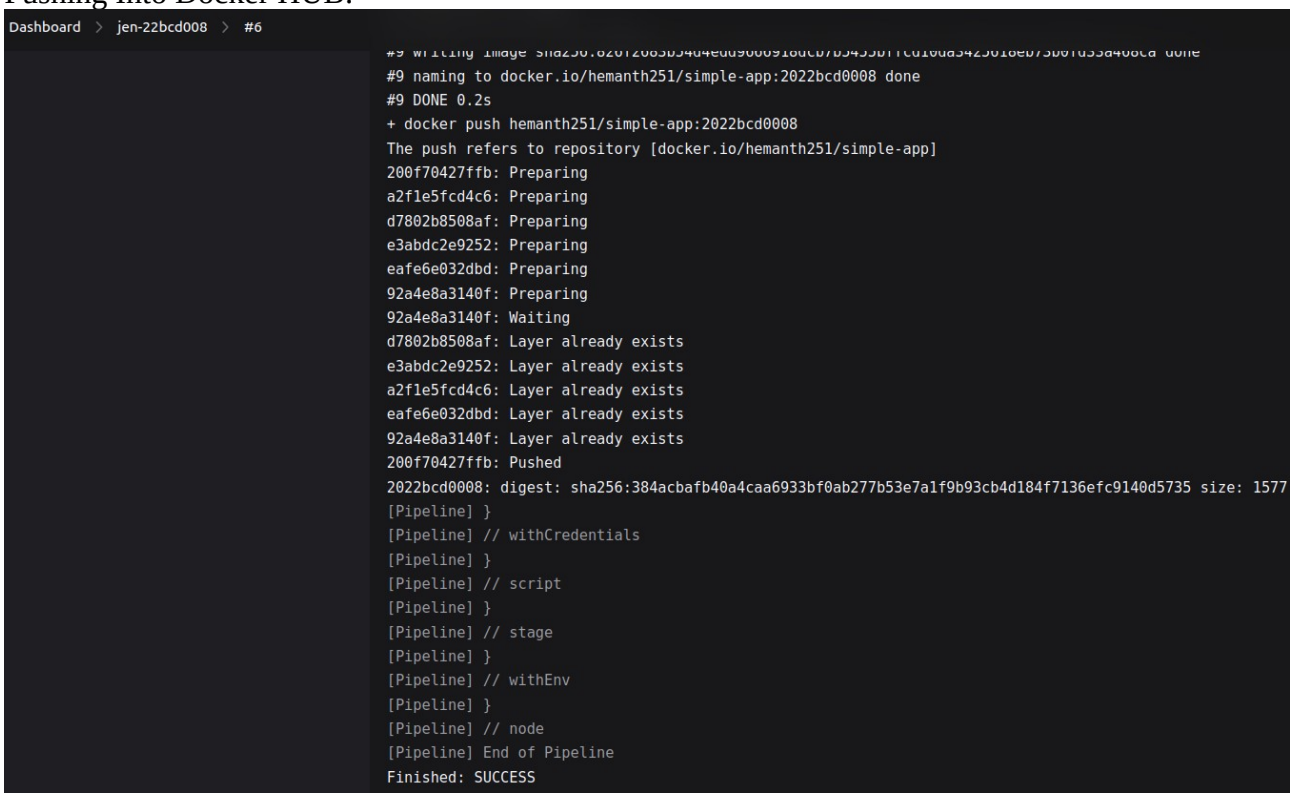
Docker login and pushing into Docker Hub



Excuting Docker file Commands :

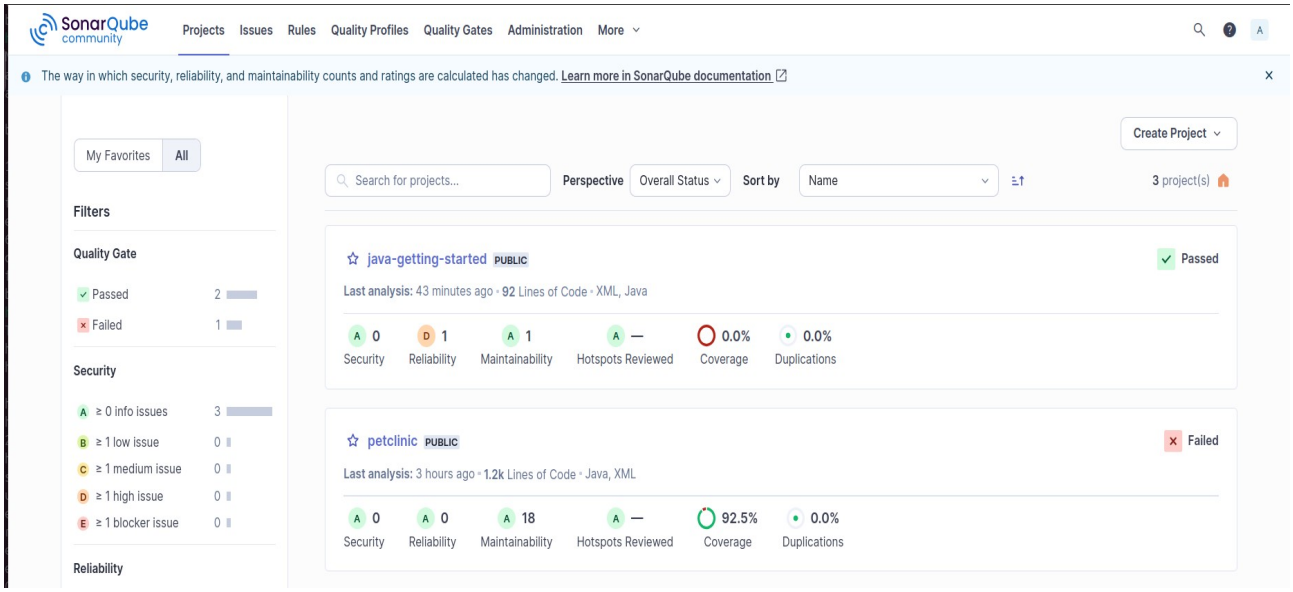


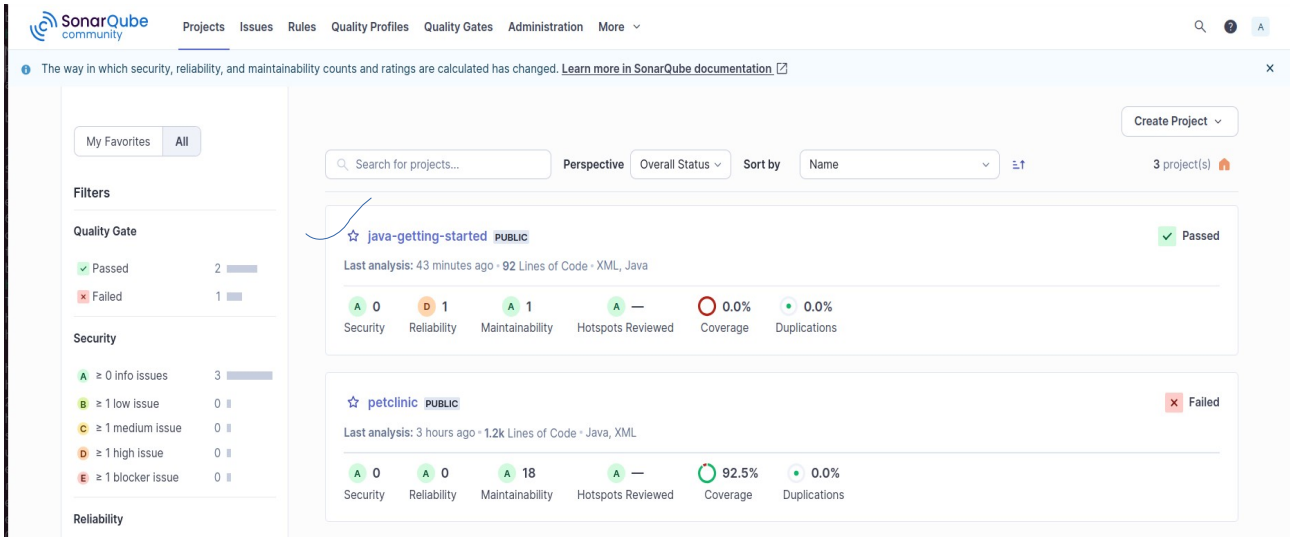
Pushing Into Docker HUB:

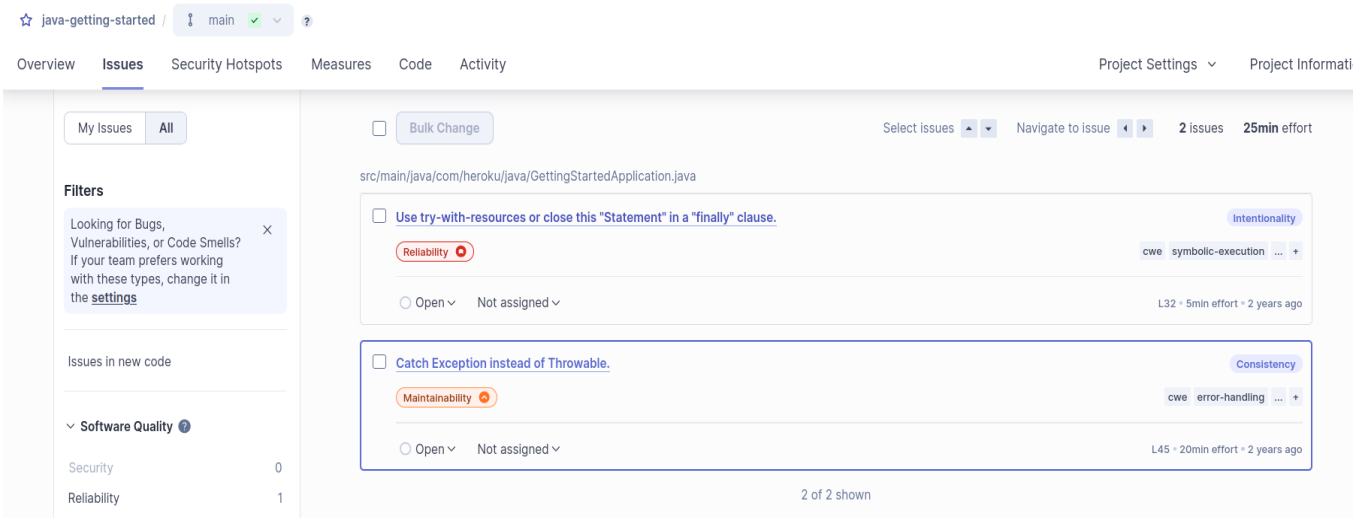


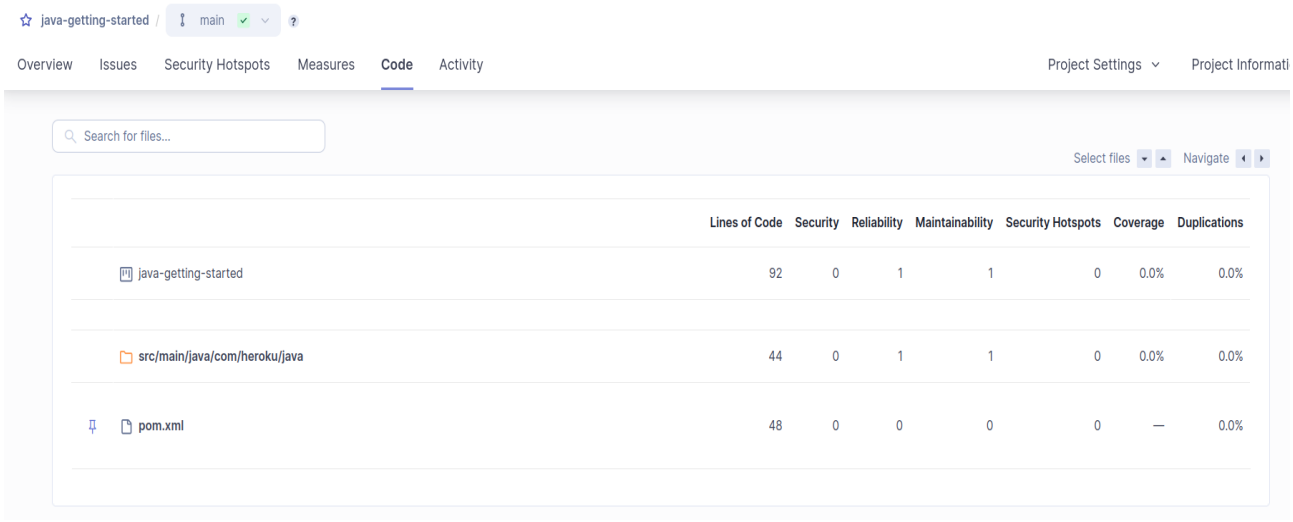
3.Integrate with SonarQube for Code Analysis:

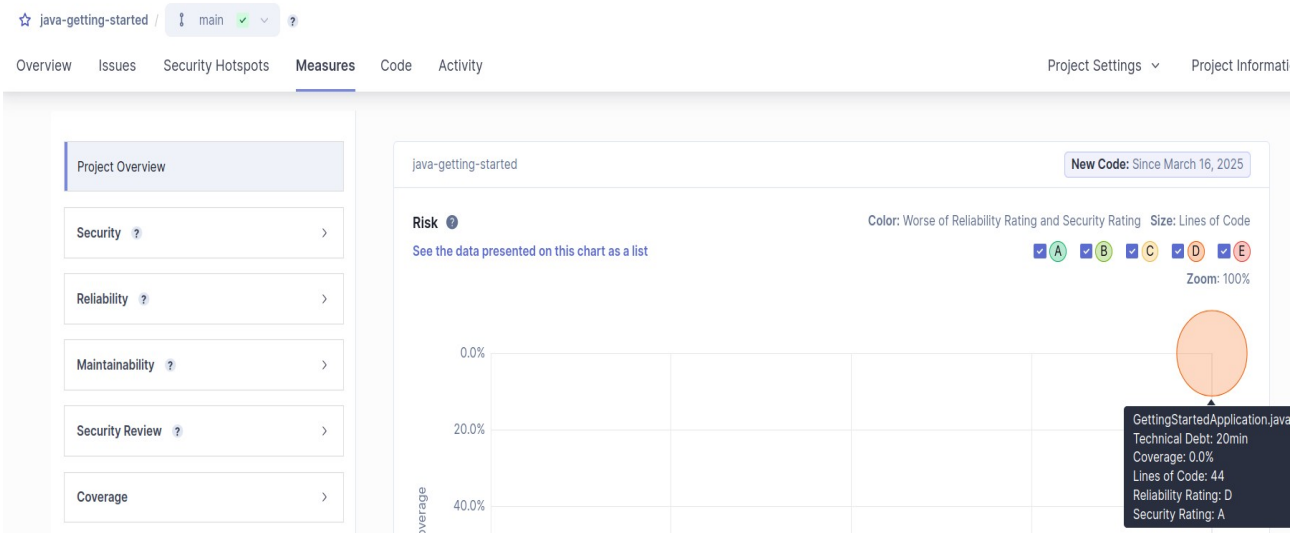
Configure the pipeline to run a SonarQube analysis on the code using the SonarQube plugin, ensuring that the project is analyzed for code quality and any issues are identified.

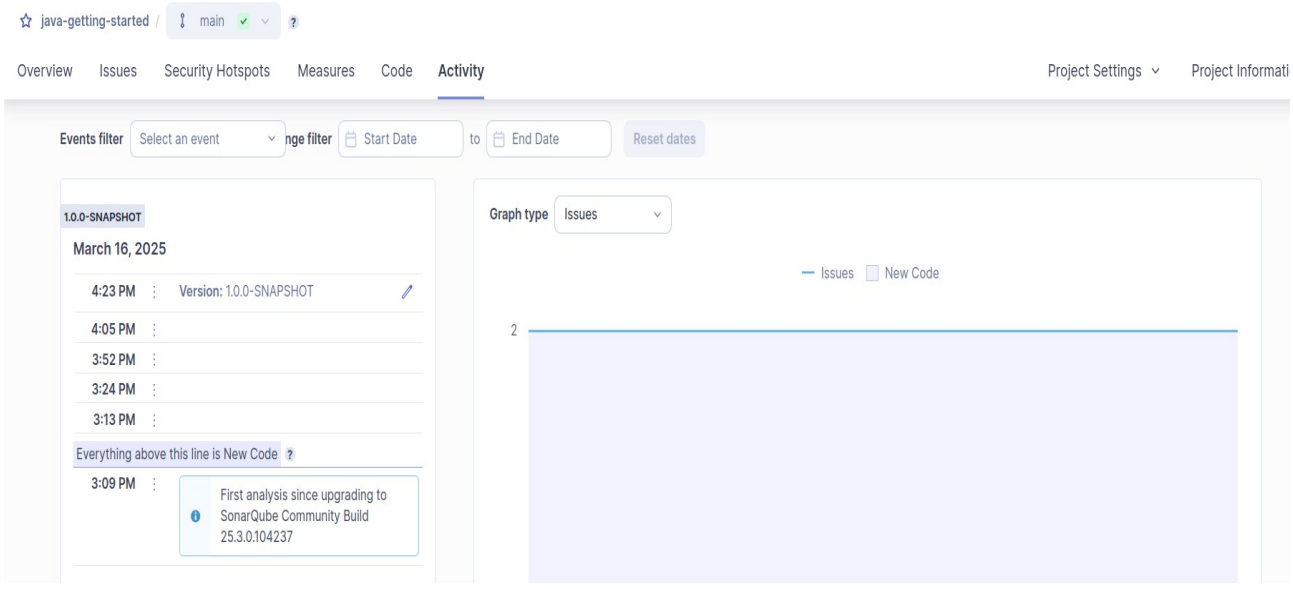




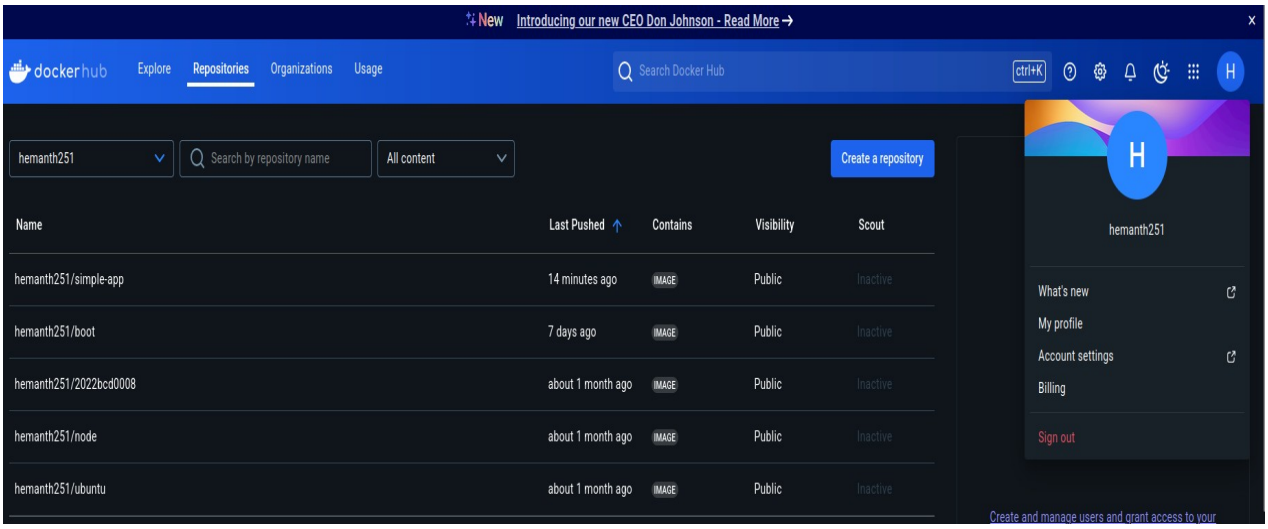


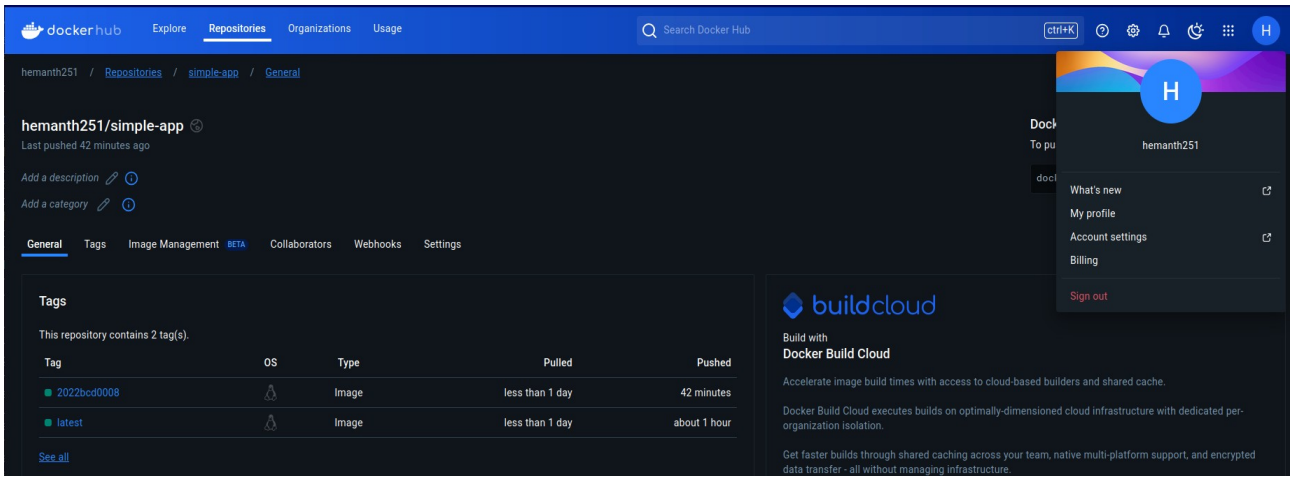

java-getting-started / main
Overview Issues Security Hotspots Measures Code Activity Project Settings Project Informati
Search for files...
Select files Navigate
Lines of Code Security Reliability Maintainability Security Hotspots Coverage Duplications
java-getting-started 92 0 1 1 0 0.0% 0.0%
src/main/java/com/heroku/java 44 0 1 1 0 0.0% 0.0%
pom.xml 48 0 0 0 0 — 0.0%


java-getting-started / main
Overview Issues Security Hotspots Measures Code Activity Project Settings Project Informati
Project Overview
Security
Reliability
Maintainability
Security Review
Coverage
java-getting-started
New Code: Since March 16, 2025
Risk
See the data presented on this chart as a list
Color: Worse of Reliability Rating and Security Rating Size: Lines of Code
A B C D E
Zoom: 100%
0.0%
20.0%
40.0%
GettingStartedApplication.java
Technical Debt: 20min
Coverage: 0.0%
Lines of Code: 44
Reliability Rating: D
Security Rating: A


java-getting-started / main
Overview Issues Security Hotspots Measures Code Activity Project Settings Project Informati
Events filter Select an event nge filter Start Date to End Date Reset dates
1.0.0-SNAPSHOT
March 16, 2025
4:23 PM Version: 1.0.0-SNAPSHOT
4:05 PM
3:52 PM
3:24 PM
3:13 PM
Everything above this line is New Code
3:09 PM
First analysis since upgrading to SonarQube Community Build 25.3.0.104237
Graph type Issues
Issues New Code
2

Deploy the Docker Container:
once the container is built, deploy it to your local machine or a container registry (e.g., Docker Hub,)






```
022BCD0008_db
hemanth@hemanth-HP-Laptop-15s-fq5xxx:~$ docker images
REPOSITORY                    TAG       IMAGE ID       CREATED          SIZE
hemanth251/simple-app         latest    709e8864b303   6 minutes ago    248MB
hemanth251/simple-app         <none>    6a67a222e876   19 minutes ago   248MB
<none>                        <none>    92c40ce1edab   50 minutes ago   432MB
```