

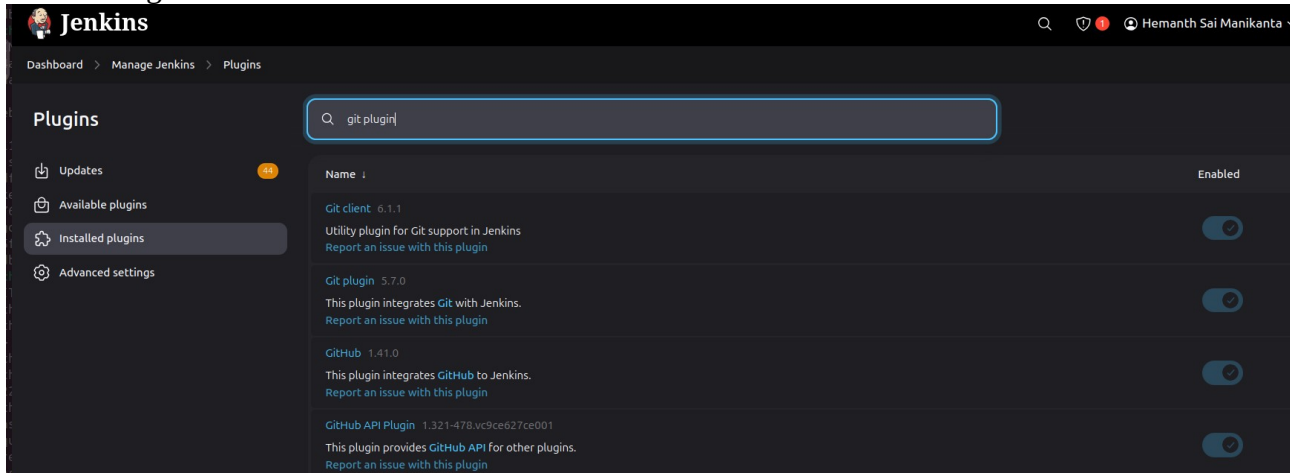
# Assignment-2

## IOE324 Introduction to DevOps and Microservices

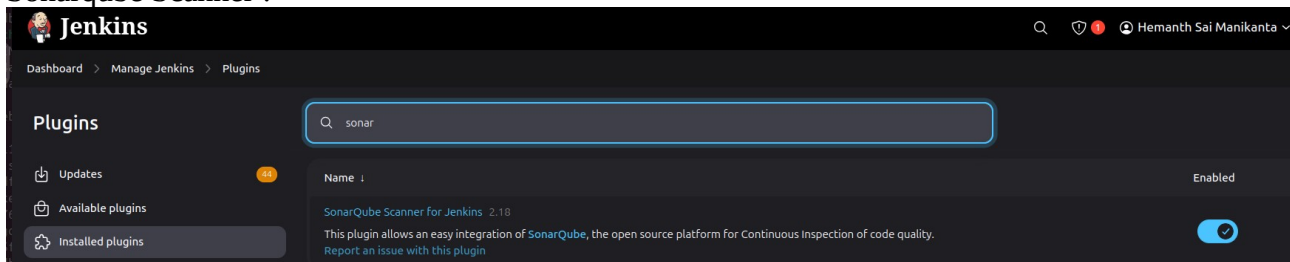
A.Hemanth Sai Manikanta  
2022BCD0008

### Set Up Plugins In Jenkins :

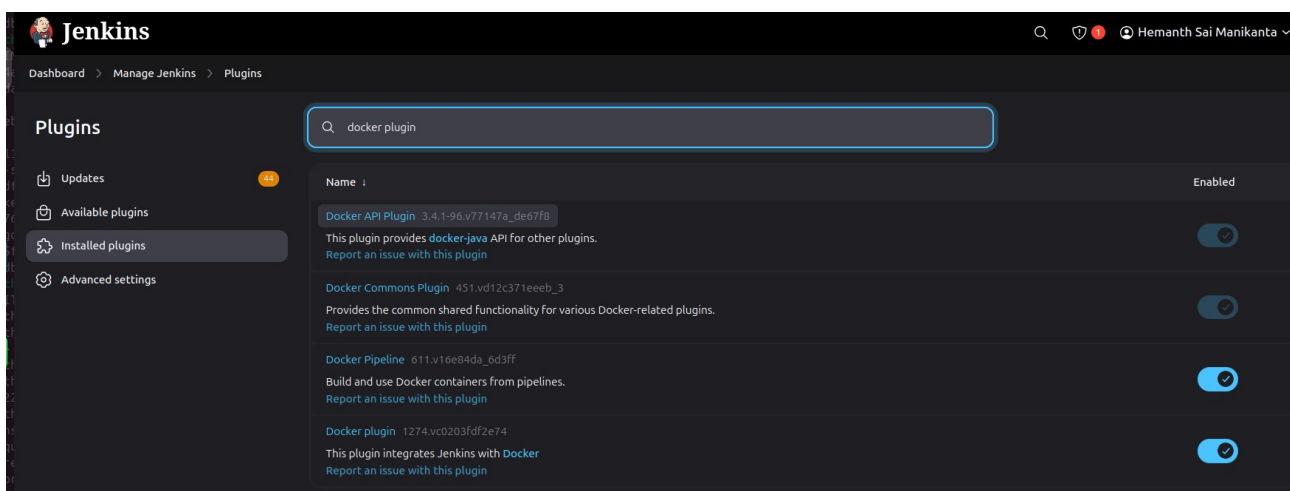
#### Github Plugin



#### Sonarqube Scanner :



#### docker Plugin:



# Adding Each Credentials to Jenkins :

## Docker :

Jenkins

Dashboard

Manage Jenkins

Credentials

System

Global credentials (unrestricted)

hemanth251/\*\*\*\*\* (Docker Hub credentials for pushing images from Jenkins)

Update

Delete

Move

Update credentials

Scope ?  
Global (Jenkins, nodes, items, all child items, etc)

Username ?  
hemanth251

☐ Treat username as secret ?

Password ?  
Concealed

Change Password

ID ?  
docker-hub-credentials

Description ?  
Docker Hub credentials for pushing images from Jenkins

## Docker Credentials:

dockeraccount center

Account information

Email

Password

2FA

Personal access tokens

Connected accounts

Convert

Deactivate

Personal access tokens

You can use a personal access token instead of a password for Docker CLI authentication. Create multiple tokens, control their scope, and delete tokens at any time. [Learn more](#)

Generate new token

Description	Scope	Status	Source	Created	Last used	Expiration date	
Access_token	Read, Write, Delete	Active	Manual	Mar 16, 2025 at 14:22:21	Mar 16, 2025 at 16:23:29	Never	

## Sonarqube

Jenkins

Dashboard

Manage Jenkins

Credentials

System

Global credentials (unrestricted)

"SonarQube API Token for Jenkins"

Update

Delete

Move

Update credentials

Scope ?  
Global (Jenkins, nodes, items, all child items, etc)

Secret  
Concealed

Change Password

ID ?  
sonar-token

Description ?  
"SonarQube API Token for Jenkins"

## Sonarqube Credentials:

SonarQube community

Projects

Issues

Rules

Quality Profiles

Quality Gates

Administration

More

A Administrator

Profile

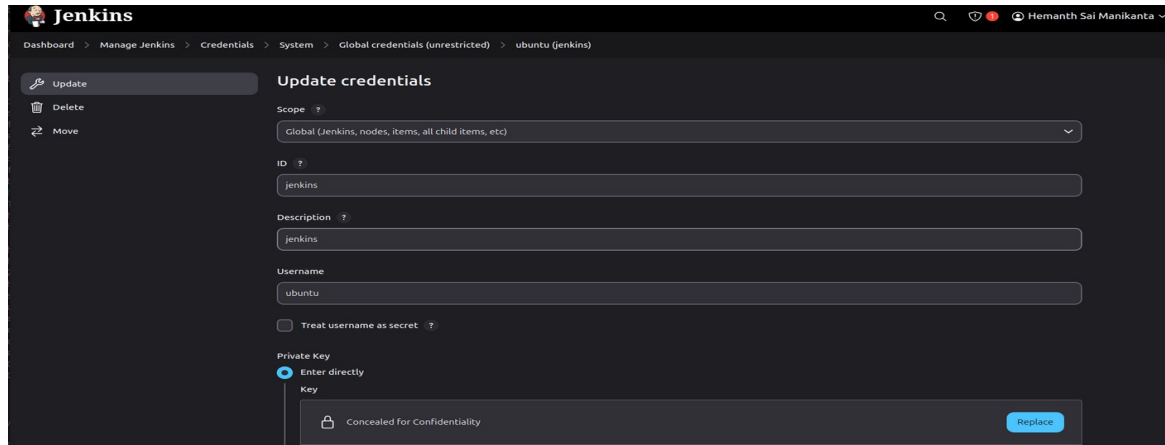
Security

Notifications

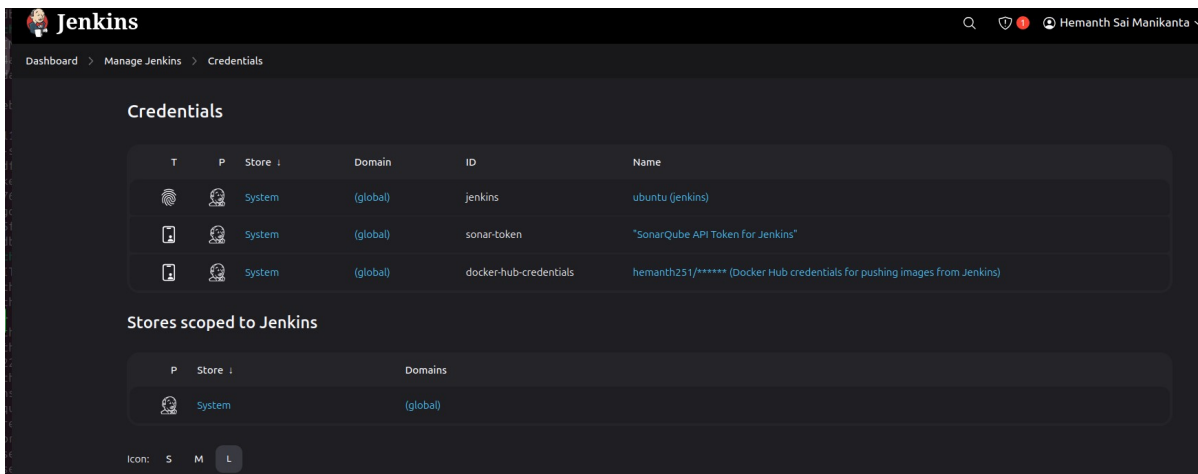
Projects

Analyze "test_repo" 1	Project	test_repo	1 day ago	March 15, 2025	April 14, 2025	Revoke
Jenkins_token	User		< 1 hour ago	March 16, 2025	-	Revoke
token_1	User		18 hours ago	March 15, 2025	April 14, 2025	Revoke

Git :Add SSH Key of Github to Jenkins :



Adding 3 credentials



## 1. Integrate a Git Repository:

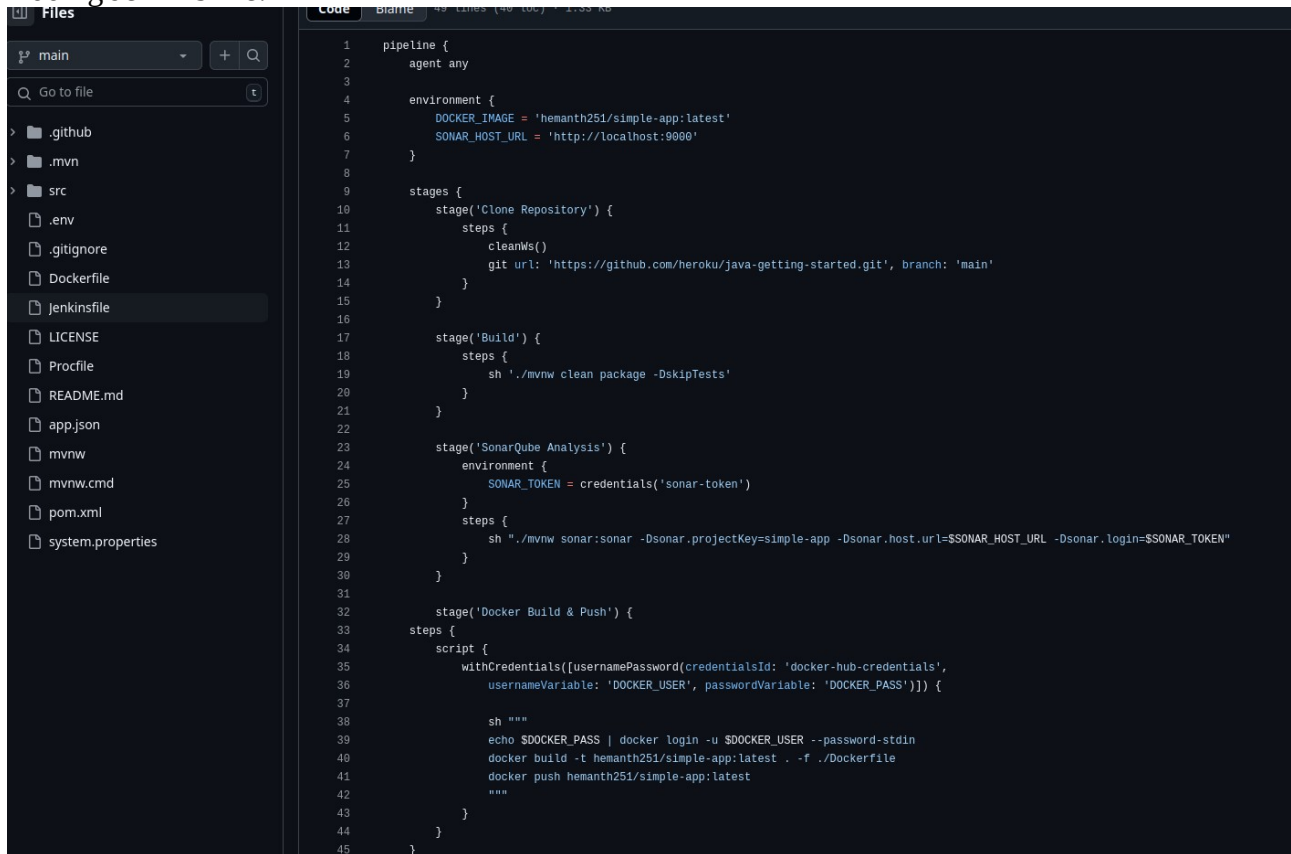
Pull the code from a Git repository of your choice. Ensure that the repository contains a simple project in any programming language.(Java)(Maven)

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

```
hemanth@hemanth-HP-Laptop-15s-fq5xxx:~$ git clone https://github.com/heroku/java-getting-started.git
Cloning into 'java-getting-started'...
remote: Enumerating objects: 597, done.
remote: Counting objects: 100% (31/31), done.
remote: Compressing objects: 100% (25/25), done.
remote: Total 597 (delta 17), reused 7 (delta 4), pack-reused 566 (from 2)
Receiving objects: 100% (597/597), 284.53 KiB | 483.00 KiB/s, done.
Resolving deltas: 100% (257/257), done.
hemanth@hemanth-HP-Laptop-15s-fq5xxx:~$ cd java-getting-started
```

```
hemanth@hemanth-HP-Laptop-15s-fq5xxx:~$ cd java-getting-started
hemanth@hemanth-HP-Laptop-15s-fq5xxx:~/java-getting-started$ ls -l
total 52
-rw-rw-r-- 1 hemanth hemanth 155 Mar 16 15:00 app.json
-rw-rw-r-- 1 hemanth hemanth 1083 Mar 16 15:00 LICENSE
-rwxrwxr-x 1 hemanth hemanth 10284 Mar 16 15:00 mvnw
-rw-rw-r-- 1 hemanth hemanth 6734 Mar 16 15:00 mvnw.cmd
-rw-rw-r-- 1 hemanth hemanth 1791 Mar 16 15:00 pom.xml
-rw-rw-r-- 1 hemanth hemanth 62 Mar 16 15:00 Procfile
-rw-rw-r-- 1 hemanth hemanth 2332 Mar 16 15:00 README.md
drwxrwxr-x 3 hemanth hemanth 4096 Mar 16 15:00 src
-rw-rw-r-- 1 hemanth hemanth 103 Mar 16 15:00 system.properties
drwxrwxr-x 6 hemanth hemanth 4096 Mar 16 15:19 target
```

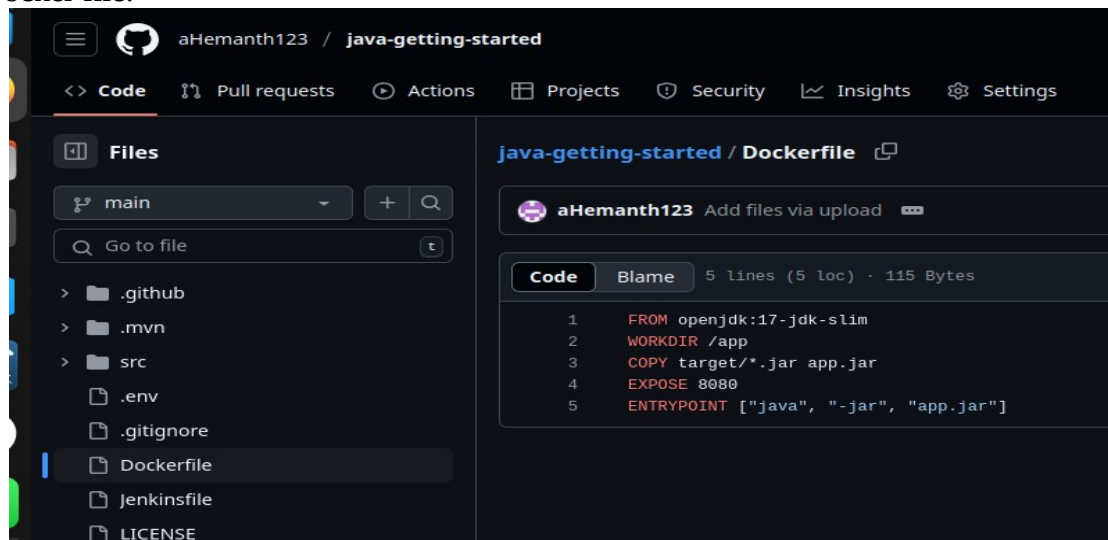
## Adding Jenkins file:



The screenshot shows a file explorer on the left with a list of files including .github, .mvn, src, .env, .gitignore, Dockerfile, Jenkinsfile, LICENSE, Procfile, README.md, app.json, mvnw, mvnw.cmd, pom.xml, and system.properties. The Jenkinsfile is selected. The code editor on the right displays the Jenkinsfile content, which defines a pipeline with stages for cloning the repository, building the application, running SonarQube analysis, and building/pushing the Docker image.

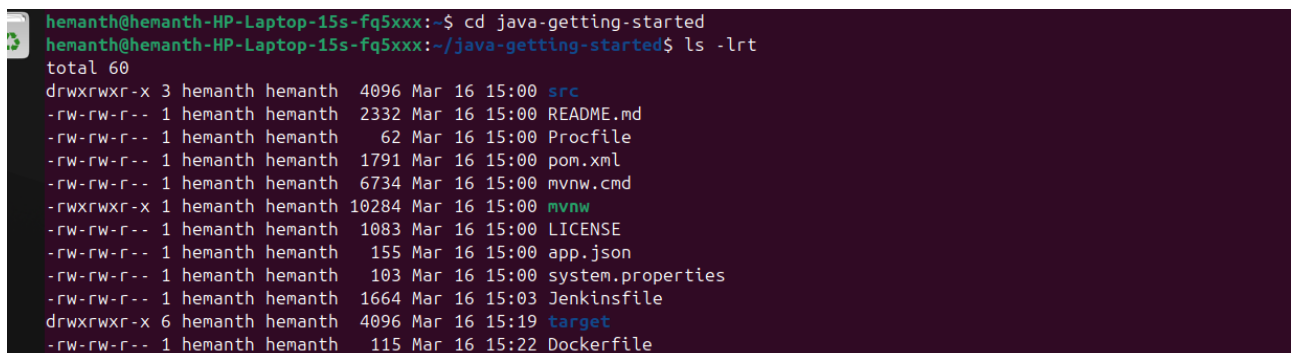
```
1 pipeline {
2   agent any
3
4   environment {
5     DOCKER_IMAGE = 'hemanth251/simple-app:latest'
6     SONAR_HOST_URL = 'http://localhost:9090'
7   }
8
9   stages {
10    stage('Clone Repository') {
11      steps {
12        cleanWs()
13        git url: 'https://github.com/heroku/java-getting-started.git', branch: 'main'
14      }
15    }
16
17    stage('Build') {
18      steps {
19        sh './mvnw clean package -DskipTests'
20      }
21    }
22
23    stage('SonarQube Analysis') {
24      environment {
25        SONAR_TOKEN = credentials('sonar-token')
26      }
27      steps {
28        sh './mvnw sonar:sonar -Dsonar.projectKey=simple-app -Dsonar.host.url=$SONAR_HOST_URL -Dsonar.login=$SONAR_TOKEN'
29      }
30    }
31
32    stage('Docker Build & Push') {
33      steps {
34        script {
35          withCredentials([usernamePassword(credentialsId: 'docker-hub-credentials',
36            usernameVariable: 'DOCKER_USER', passwordVariable: 'DOCKER_PASS')]) {
37
38            sh """
39            echo $DOCKER_PASS | docker login -u $DOCKER_USER --password-stdin
40            docker build -t hemanth251/simple-app:latest . -f ./Dockerfile
41            docker push hemanth251/simple-app:latest
42            """
43          }
44        }
45      }
46    }
47  }
48 }
```

## Added Docker file:



The screenshot shows the GitHub repository interface for 'java-getting-started'. The 'Files' tab is selected, and the 'Dockerfile' is highlighted. The Dockerfile content is displayed in the code editor, showing the base image, working directory, copying the application jar, exposing the port, and setting the entrypoint.

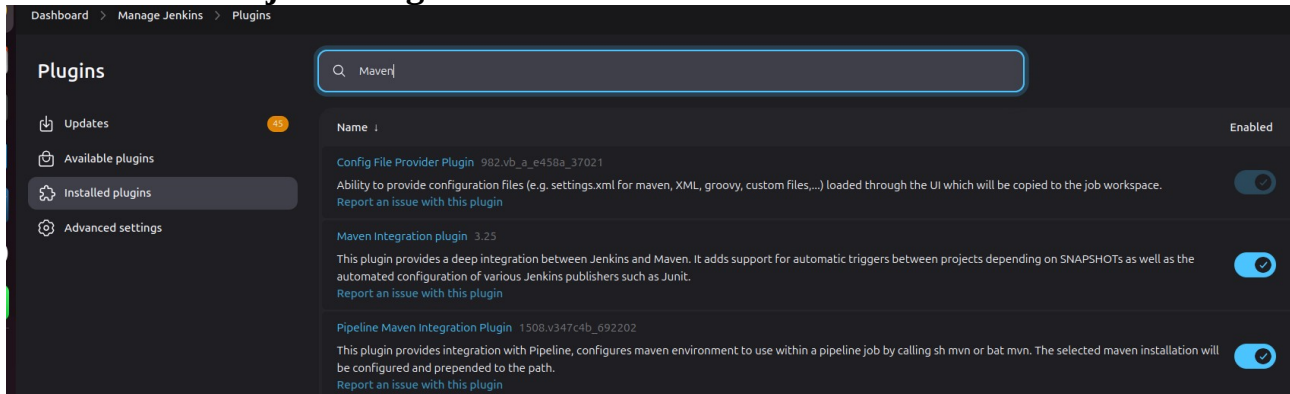
```
1 FROM openjdk:17-jdk-slim
2 WORKDIR /app
3 COPY target/*.jar app.jar
4 EXPOSE 8080
5 ENTRYPOINT ["java", "-jar", "app.jar"]
```



The screenshot shows a terminal window with the following commands and output:

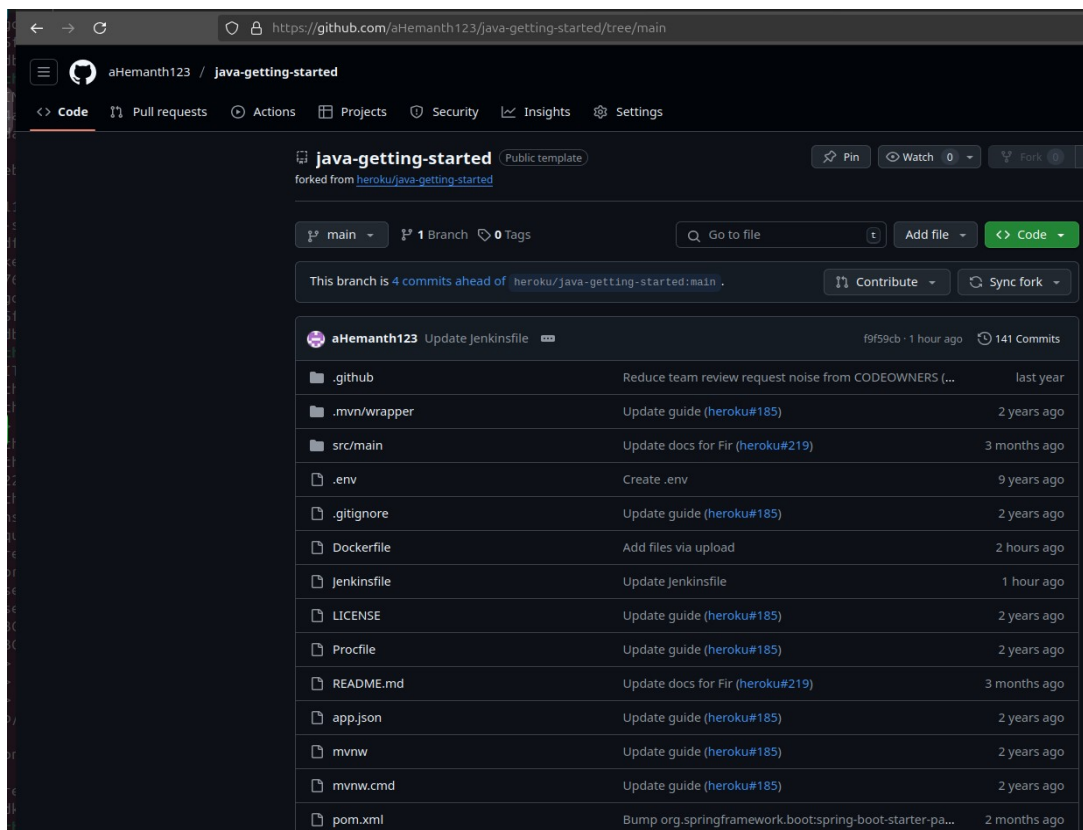
```
hemanth@hemanth-HP-Laptop-15s-fq5xxx:~$ cd java-getting-started
hemanth@hemanth-HP-Laptop-15s-fq5xxx:~/java-getting-started$ ls -lrt
total 60
drwxrwxr-x 3 hemanth hemanth 4096 Mar 16 15:00 src
-rw-rw-r-- 1 hemanth hemanth 2332 Mar 16 15:00 README.md
-rw-rw-r-- 1 hemanth hemanth 62 Mar 16 15:00 Procfile
-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

The screenshot shows the Jenkins 'Configure' page for a pipeline named 'jen-22bcd008'. The left sidebar has tabs for 'General', 'Triggers', 'Pipeline', and 'Advanced', with 'Pipeline' selected. The main area is titled 'Define your Pipeline using Groovy directly or pull it from source control.' and has a 'Definition' section with a dropdown set to 'Pipeline script from SCM'. Below this, the 'SCM' dropdown is set to 'Git'. The 'Repositories' section contains a 'Repository URL' field with the value 'https://github.com/heroku/java-getting-started.git', a 'Credentials' dropdown set to 'ubuntu (jenkins)', and an '+ Add' button. Below the repository section is an 'Add Repository' button. The 'Branches to build' section has a 'Branch Specifier (blank for 'any')' field with the value '\*/main|'. The top navigation bar shows 'Dashboard > jen-22bcd008 > Configuration'.

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

The screenshot shows the Jenkins Dashboard for the pipeline 'jen-22bcd008'. The top navigation bar shows 'Dashboard > jen-22bcd008'. The left sidebar has tabs for 'Status', 'Changes', 'Build Now', 'Configure', 'Delete Pipeline', 'Stages', 'Rename', and 'Pipeline Syntax', with 'Status' selected. The main area shows the pipeline status as 'jen-22bcd008' with a green checkmark icon. Below the status is a 'Permalinks' section with a list of build links: 'Last build (#6), 9 min 9 sec ago', 'Last stable build (#6), 9 min 9 sec ago', 'Last successful build (#6), 9 min 9 sec ago', 'Last failed build (#4), 40 min ago', 'Last unsuccessful build (#4), 40 min ago', and 'Last completed build (#6), 9 min 9 sec ago'. The bottom left shows a 'Builds' section with a filter input and a dropdown menu showing 'Today' and '6 4:23 PM'.



Jenkins

🔍

🛡️

👤 Hemanth Sai Manikanta

🚪 log out

Dashboard > jen-22bcd008 > #6

Status

Changes

Console Output

Edit Build Information

Delete build '#6'

Timings

Git Build Data

Pipeline Overview

Pipeline Console

Restart from Stage

Replay

Pipeline Steps

Workspaces

✅ #6 (Mar 16, 2025, 4:23:13 PM)

Add description

Keep this build forever

🕒

Started by user Hemanth Sai Manikanta

Started 9 min 37 sec ago  
Took 42 sec

🕒

This run spent:

- 13 ms waiting;
- 42 sec build duration;
- 42 sec total from scheduled to completion.

📦 git

Revision: 3971a720dad91c814222ffc6e01e1995ac2117de  
Repository: <https://github.com/heroku/java-getting-started.git>

- refs/remotes/origin/main

⚠️

The following steps that have been detected may have insecure interpolation of sensitive variables ([click here for an explanation](#)):

- sh: [SONAR\_TOKEN]
- sh: [DOCKER\_PASS]

</>

No changes.

## Jenkins Console Output:

Jenkins

🔍

🛡️

👤 Hemanth Sai Manikanta

🚪 log out

Dashboard > jen-22bcd008 > #6

Status

Changes

Console Output

Edit Build Information

Delete build '#6'

Timings

Git Build Data

Pipeline Overview

Pipeline Console

Restart from Stage

Replay

Pipeline Steps

Workspaces

Previous Build

✅ Console Output

Download

Copy

View as plain text

Started by user Hemanth Sai Manikanta

[Pipeline] Start of Pipeline

[Pipeline] node

Running on Jenkins in /var/lib/jenkins/workspace/jen-22bcd008

[Pipeline] {

[Pipeline] withEnv

[Pipeline] {

[Pipeline] stage

[Pipeline] { (Clone Repository)

[Pipeline] cleanWs

[WS-CLEANUP] Deleting project workspace...

[WS-CLEANUP] Deferred wipeout is used...

[WS-CLEANUP] done

[Pipeline] git

The recommended git tool is: NONE

No credentials specified

Cloning the remote Git repository

Cloning repository <https://github.com/heroku/java-getting-started.git>

> git init /var/lib/jenkins/workspace/jen-22bcd008 # timeout=10

Fetching upstream changes from <https://github.com/heroku/java-getting-started.git>

> git --version # timeout=10

> git --version # 'git version 2.43.0'

> git fetch --tags --force --progress -- <https://github.com/heroku/java-getting-started.git> +refs/heads/\*:refs/remotes/origin/\* # timeout=10

> git config remote.origin.url <https://github.com/heroku/java-getting-started.git> # timeout=10

> git config --add remote.origin.fetch +refs/heads/\*:refs/remotes/origin/\* # timeout=10

Avoid second fetch

> git rev-parse refs/remotes/origin/main^{commit} # timeout=10

Checking out Revision 3971a720dad91c814222ffc6e01e1995ac2117de (refs/remotes/origin/main)

> git config core.sparsecheckout # timeout=10

> git checkout -f 3971a720dad91c814222ffc6e01e1995ac2117de # timeout=10

## Building Stage:

```
Dashboard > jen-22bcd008 > #6

+ git commit --no-gpg-sign --no-verify -m "Bump org.springframework.boot:spring-boot-starter-parent (#220)"
+ git checkout -f 3971a720dad91c814222ffc6e01e1995ac2117de # timeout=10
+ git branch -a -v --no-abbrev # timeout=10
+ git checkout -b main 3971a720dad91c814222ffc6e01e1995ac2117de # timeout=10
Commit message: "Bump org.springframework.boot:spring-boot-starter-parent (#220)"
+ git rev-list --no-walk 3971a720dad91c814222ffc6e01e1995ac2117de # timeout=10
[Pipeline] sh
+ cat
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Build)
[Pipeline] sh
+ ./mvnw clean package -DskipTests
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.heroku:java-getting-started >-----
[INFO] Building java-getting-started 1.0.0-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-clean-plugin:3.4.0:clean (default-clean) @ java-getting-started ---
[INFO]
[INFO] --- maven-resources-plugin:3.3.1:resources (default-resources) @ java-getting-started ---
[INFO] Copying 1 resource from src/main/resources to target/classes
[INFO] Copying 7 resources from src/main/resources to target/classes
[INFO]
[INFO] --- maven-compiler-plugin:3.13.0:compile (default-compile) @ java-getting-started ---
[INFO] Recompiling the module because of changed source code.
[INFO] Compiling 1 source file with javac [debug parameters release 17] to target/classes
[INFO]
[INFO] --- maven-resources-plugin:3.3.1:testResources (default-testResources) @ java-getting-started ---
[INFO] skip non existing resourceDirectory /var/lib/jenkins/workspace/jen-22bcd008/src/test/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.13.0:testCompile (default-testCompile) @ java-getting-started ---
```

```
Dashboard > jen-22bcd008 > #6

[INFO] mv sources to compile
[INFO]
[INFO] --- maven-surefire-plugin:3.5.2:test (default-test) @ java-getting-started ---
[INFO] Tests are skipped.
[INFO]
[INFO] --- maven-jar-plugin:3.4.2:jar (default-jar) @ java-getting-started ---
[INFO] Building jar: /var/lib/jenkins/workspace/jen-22bcd008/target/java-getting-started-1.0.0-SNAPSHOT.jar
[INFO]
[INFO] --- spring-boot-maven-plugin:3.4.1:repackage (repackage) @ java-getting-started ---
[INFO] Replacing main artifact /var/lib/jenkins/workspace/jen-22bcd008/target/java-getting-started-1.0.0-SNAPSHOT.jar with repackaged archive, adding
nested dependencies in BOOT-INF/.
[INFO] The original artifact has been renamed to /var/lib/jenkins/workspace/jen-22bcd008/target/java-getting-started-1.0.0-SNAPSHOT.jar.original
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 1.798 s
[INFO] Finished at: 2025-03-16T16:23:19+05:30
[INFO]
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (SonarQube Analysis)
[Pipeline] withCredentials
Masking supported pattern matches of $SONAR_TOKEN
[Pipeline] { (hide)
[Pipeline] sh
Warning: A secret was passed to "sh" using Groovy String interpolation, which is insecure.
Affected argument(s) used the following variable(s): [SONAR_TOKEN]
See https://jenkins.io/redirect/groovy-string-interpolation for details.
+ ./mvnw sonar:sonar -Dsonar.projectKey=simple-app -Dsonar.host.url=http://localhost:9000 -Dsonar.login=****
[INFO] Scanning for projects...
[WARNING] The artifact org.codehaus.mojo:sonar-maven-plugin:jar:4.0.0.4121 has been relocated to org.sonarsource.scanner.maven:sonar-maven-
plugin:jar:4.0.0.4121: SonarQube plugin was moved to SonarSource organisation
```



## SONARQUBE Analysis:

```
Dashboard > jen-22bcd008 > #6

[INFO]
[INFO] -----< com.heroku:java-getting-started >-----
[INFO] Building java-getting-started 1.0.0-SNAPSHOT
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- sonar-maven-plugin:4.0.0.4121:sonar (default-cli) @ java-getting-started ---
[WARNING] 16:23:21.768 Using an unspecified version instead of an explicit plugin version may introduce breaking analysis changes at an unwanted time.
It is highly recommended to use an explicit version, e.g. 'org.sonarsource.scanner.maven:sonar-maven-plugin:4.0.0.4121'.
[INFO] 16:23:21.775 Java 21.0.6 Oracle Corporation (64-bit)
[INFO] 16:23:21.775 Linux 6.11.0-19-generic (amd64)
[INFO] 16:23:21.896 User cache: /var/lib/jenkins/.sonar/cache
[INFO] 16:23:21.960 Communicating with SonarQube Server 25.3.0.104237
[INFO] 16:23:21.973 Default locale: "en_US", source code encoding: "UTF-8"
[INFO] 16:23:22.580 Load global settings
[INFO] 16:23:22.625 Load global settings (done) | time=46ms
[INFO] 16:23:22.633 Server id: 4F833BF3-AZWMVHWI61VHWNGLsh8
[INFO] 16:23:22.640 Loading required plugins
[INFO] 16:23:22.640 Load plugins index
[INFO] 16:23:22.668 Load plugins index (done) | time=28ms
[INFO] 16:23:22.669 Load/download plugins
[INFO] 16:23:22.693 Load/download plugins (done) | time=24ms
[INFO] 16:23:22.883 Process project properties
[INFO] 16:23:22.891 Process project properties (done) | time=8ms
[INFO] 16:23:22.898 Project key: simple-app
[INFO] 16:23:22.898 Base dir: /var/lib/jenkins/workspace/jen-22bcd008
[INFO] 16:23:22.898 Working dir: /var/lib/jenkins/workspace/jen-22bcd008/target/sonar
[INFO] 16:23:22.903 Load project settings for component key: 'simple-app'
[INFO] 16:23:22.918 Load project settings for component key: 'simple-app' (done) | time=15ms
[INFO] 16:23:22.941 Load quality profiles
[INFO] 16:23:22.983 Load quality profiles (done) | time=43ms
[INFO] 16:23:22.994 Auto-configuring with CI 'Jenkins'
[INFO] 16:23:23.019 Load active rules
[INFO] 16:23:23.327 Load active rules (done) | time=308ms
[INFO] 16:23:23.338 Load analysis cache
[INFO] 16:23:23.359 Load analysis cache (174 bytes) | time=21ms
[WARNING] 16:23:23.436 The property 'sonar.login' is deprecated and will be removed in the future. Please use the 'sonar.token' property instead when
```

```
Dashboard > jen-22bcd008 > #6

[INFO] 16:23:23.457 Preprocessing files...
[INFO] 16:23:23.542 2 languages detected in 2 preprocessed files
[INFO] 16:23:23.542 0 files ignored because of scm ignore settings
[INFO] 16:23:23.544 Loading plugins for detected languages
[INFO] 16:23:23.544 Load/download plugins
[INFO] 16:23:23.551 Load/download plugins (done) | time=7ms
[INFO] 16:23:23.628 Load project repositories
[INFO] 16:23:23.706 Load project repositories (done) | time=78ms
[INFO] 16:23:23.720 Indexing files...
[INFO] 16:23:23.720 Project configuration:
[INFO] 16:23:23.726 2 files indexed
[INFO] 16:23:23.727 Quality profile for java: Sonar way
[INFO] 16:23:23.727 Quality profile for xml: Sonar way
[INFO] 16:23:23.727 ----- Run sensors on module java-getting-started
[INFO] 16:23:23.776 Load metrics repository
[INFO] 16:23:23.790 Load metrics repository (done) | time=14ms
[INFO] 16:23:24.234 Sensor JavaSensor [java]
[INFO] 16:23:24.236 Configured Java source version (sonar.java.source): 17, preview features enabled (sonar.java.enablePreview): false
[INFO] 16:23:24.253 Server-side caching is enabled. The Java analyzer will not try to leverage data from a previous analysis.
[INFO] 16:23:24.254 Using ECJ batch to parse 1 Main java source files with batch size 205 KB.
[INFO] 16:23:24.479 Starting batch processing.
[INFO] 16:23:24.836 The Java analyzer cannot skip unchanged files in this context. A full analysis is performed for all files.
[INFO] 16:23:25.222 100% analyzed
[INFO] 16:23:25.222 Batch processing: Done.
[INFO] 16:23:25.224 Did not optimize analysis for any files, performed a full analysis for all 1 files.
[INFO] 16:23:25.225 No "Test" source files to scan.
[INFO] 16:23:25.225 No "Generated" source files to scan.
[INFO] 16:23:25.225 Sensor JavaSensor [java] (done) | time=991ms
[INFO] 16:23:25.225 Sensor SurefireSensor [java]
[INFO] 16:23:25.226 parsing [/var/lib/jenkins/workspace/jen-22bcd008/target/surefire-reports]
[INFO] 16:23:25.227 Sensor SurefireSensor [java] (done) | time=2ms
[INFO] 16:23:25.227 Sensor XML Sensor [xml]
[INFO] 16:23:25.232 1 source file to be analyzed
[INFO] 16:23:25.337 1/1 source file has been analyzed
[INFO] 16:23:25.337 Sensor XML Sensor [xml] (done) | time=110ms
[INFO] 16:23:25.338 Sensor JaCoCo XML Report Inspector [jacoco]
```

```
Dashboard > jen-22bcd008 > #6

[INFO] 16:23:25.338 Sensor JaCoCo XML Report Importer [jacoco]
[INFO] 16:23:25.339 'sonar.coverage.jacoco.xmlReportPaths' is not defined. Using default locations: target/site/jacoco/jacoco.xml,target/site/jacoco-it/jacoco.xml,build/reports/jacoco/test/jacocoTestReport.xml
[INFO] 16:23:25.340 No report imported, no coverage information will be imported by JaCoCo XML Report Importer
[INFO] 16:23:25.340 Sensor JaCoCo XML Report Importer [jacoco] (done) | time=2ms
[INFO] 16:23:25.340 Sensor Java Config Sensor [iac]
[INFO] 16:23:25.352 0 source files to be analyzed
[INFO] 16:23:25.352 0/0 source files have been analyzed
[INFO] 16:23:25.353 Sensor Java Config Sensor [iac] (done) | time=13ms
[INFO] 16:23:25.354 Sensor IaC Docker Sensor [iac]
[INFO] 16:23:25.410 0 source files to be analyzed
[INFO] 16:23:25.411 0/0 source files have been analyzed
[INFO] 16:23:25.411 Sensor IaC Docker Sensor [iac] (done) | time=57ms
[INFO] 16:23:25.411 Sensor TextAndSecretsSensor [text]
[INFO] 16:23:25.411 Available processors: 12
[INFO] 16:23:25.411 Using 12 threads for analysis.
[INFO] 16:23:25.680 The property "sonar.tests" is not set. To improve the analysis accuracy, we categorize a file as a test file if any of the following is true:
  * The filename starts with "test"
  * The filename contains "test." or "tests."
  * Any directory in the file path is named: "doc", "docs", "test" or "tests"
  * Any directory in the file path has a name ending in "test" or "tests"

[INFO] 16:23:25.700 Using git CLI to retrieve untracked files
[INFO] 16:23:25.707 Analyzing language associated files and files included via "sonar.text.inclusions" that are tracked by git
[INFO] 16:23:25.715 2 source files to be analyzed
[INFO] 16:23:25.738 2/2 source files have been analyzed
[INFO] 16:23:25.739 Sensor TextAndSecretsSensor [text] (done) | time=328ms
[INFO] 16:23:25.742 ----- Run sensors on project
[INFO] 16:23:25.837 Sensor Zero Coverage Sensor
[INFO] 16:23:25.842 Sensor Zero Coverage Sensor (done) | time=5ms
[INFO] 16:23:25.842 Sensor Java CPD Block Indexer
[INFO] 16:23:25.848 Sensor Java CPD Block Indexer (done) | time=6ms
[INFO] 16:23:25.849 ----- Gather SCA dependencies on project
[INFO] 16:23:25.859 CPD Executor Calculating CPD for 1 file
[INFO] 16:23:25.864 CPD Executor CPD calculation finished (done) | time=5ms
```

## Docker login and pushing into Docker Hub

```
Dashboard > jen-22bcd008 > #6

[INFO] 16:23:25.872 SCM revision ID '3971a720dad91c814222ffc6e01e1995ac2117de'
[INFO] 16:23:25.934 Analysis report generated in 64ms, dir size=242.3 kB
[INFO] 16:23:25.947 Analysis report compressed in 13ms, zip size=29.9 kB
[INFO] 16:23:26.014 Analysis report uploaded in 67ms
[INFO] 16:23:26.015 ANALYSIS SUCCESSFUL, you can find the results at: http://localhost:9000/dashboard?id=simple-app
[INFO] 16:23:26.015 Note that you will be able to access the updated dashboard once the server has processed the submitted analysis report
[INFO] 16:23:26.016 More about the report processing at http://localhost:9000/api/ce/task?id=26109c24-b652-4a0d-b717-3c88d417b7bb
[INFO] 16:23:26.025 Analysis total time: 3.310 s
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 4.887 s
[INFO] Finished at: 2025-03-16T16:23:26+05:30
[INFO] -----
[Pipeline] }
[Pipeline] // withCredentials
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Docker Build & Push)
[Pipeline] script
[Pipeline] {
[Pipeline] withCredentials
Masking supported pattern matches of $DOCKER_PASS
[Pipeline] {
[Pipeline] sh
Warning: A secret was passed to "sh" using Groovy String interpolation, which is insecure.
    Affected argument(s) used the following variable(s): [DOCKER_PASS]
    See https://jenkins.io/redirect/groovy-string-interpolation for details.

+ echo ****
+ docker login -u hemanth251 --password-stdin
Login Succeeded
+ docker build -t hemanth251/simple-app:2022bcd0008 .
#0 building with "default" instance using docker driver
```

## Excuting Docker file Commands :

```
Dashboard > jen-22bcd008 > #6
+ docker build -t hemanth251/simple-app:2022bcd0008 .
#0 building with "default" instance using docker driver

#1 [internal] load build definition from Dockerfile
#1 transferring dockerfile: 145B done
#1 DONE 0.0s

#2 [auth] library/openjdk:pull token for registry-1.docker.io
#2 DONE 0.0s

#3 [internal] load metadata for docker.io/library/openjdk:11-jre-slim
#3 DONE 2.1s

#4 [internal] load .dockerignore
#4 transferring context: 2B done
#4 DONE 0.0s

#5 [1/3] FROM docker.io/library/openjdk:11-jre-slim@sha256:93af7df2308c5141a751c4830e6b6c5717db102b3b31f012ea2
#5 DONE 0.0s

#6 [internal] load build context
#6 transferring context: 24.48MB 0.3s done
#6 DONE 0.3s

#7 [2/3] WORKDIR /app
#7 CACHED

#8 [3/3] COPY target/*.jar app.jar
#8 DONE 0.1s

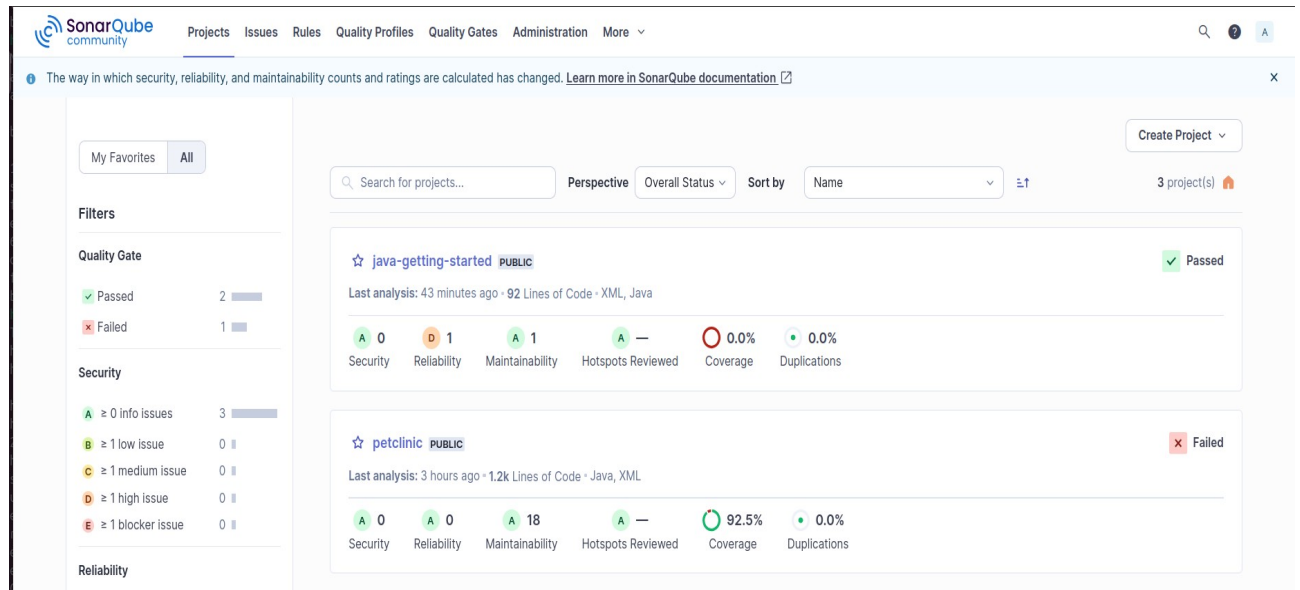
#9 exporting to image
#9 exporting layers 0.1s done
#9 writing image sha256:826f2683b54d4edd9666918dcb7b5455bffc10da3425618eb73b0fd33a468ca done
#9 naming to docker.io/hemanth251/simple-app:2022bcd0008 done
#9 DONE 0.2s
```

## Pushing Into Docker HUB:

```
Dashboard > jen-22bcd008 > #6
#9 writing image sha256:826f2683b54d4edd9666918dcb7b5455bffc10da3425618eb73b0fd33a468ca done
#9 naming to docker.io/hemanth251/simple-app:2022bcd0008 done
#9 DONE 0.2s
+ docker push hemanth251/simple-app:2022bcd0008
The push refers to repository [docker.io/hemanth251/simple-app]
200f70427ffb: Preparing
a2f1e5fcd4c6: Preparing
d7802b8508af: Preparing
e3abdc2e9252: Preparing
eafe6e032dbd: Preparing
92a4e8a3140f: Preparing
92a4e8a3140f: Waiting
d7802b8508af: Layer already exists
e3abdc2e9252: Layer already exists
a2f1e5fcd4c6: Layer already exists
eafe6e032dbd: Layer already exists
92a4e8a3140f: Layer already exists
200f70427ffb: Pushed
2022bcd0008: digest: sha256:384acbafeb40a4caa6933bf0ab277b53e7a1f9b93cb4d184f7136efc9140d5735 size: 1577
[Pipeline] }
[Pipeline] // withCredentials
[Pipeline] }
[Pipeline] // script
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

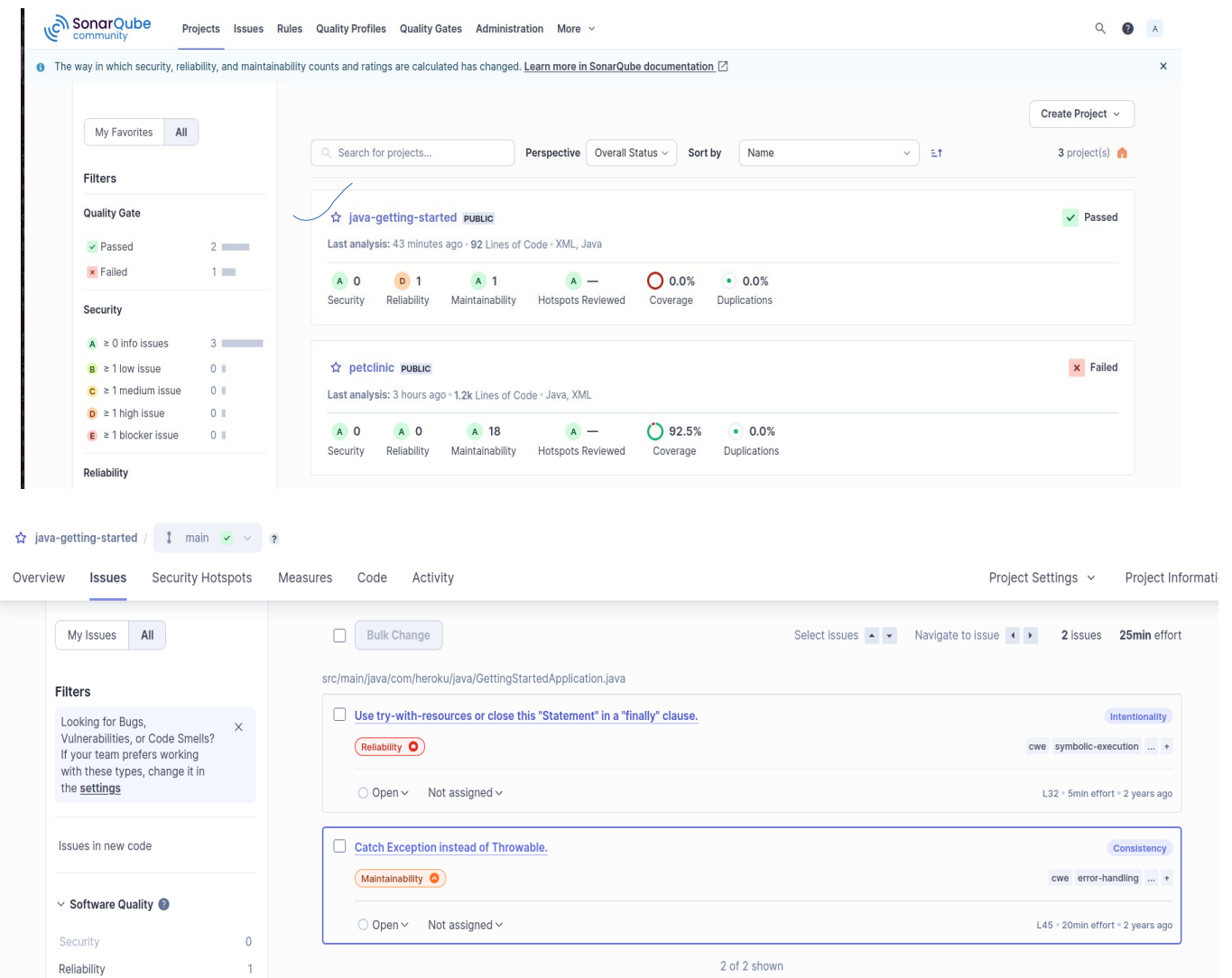
### 3.Integrate with SonarQube for Code Analysis:

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.



The screenshot shows the SonarQube web interface. The top navigation bar includes links for Projects, Issues, Rules, Quality Profiles, Quality Gates, Administration, and More. A notification banner at the top states: "The way in which security, reliability, and maintainability counts and ratings are calculated has changed. [Learn more in SonarQube documentation](#)".

On the left sidebar, there are filters for Quality Gate (Passed: 2, Failed: 1) and Security (A: 0 info issues, B: 0 low issue, C: 0 medium issue, D: 0 high issue, E: 0 blocker issue). The main area displays a list of projects. The first project, "java-getting-started", is marked as "Passed" and shows metrics: Security (A 0), Reliability (D 1), Maintainability (A 1), Hotspots Reviewed (A —), Coverage (0.0%), and Duplications (0.0%). The second project, "petclinic", is marked as "Failed" and shows metrics: Security (A 0), Reliability (A 0), Maintainability (A 18), Hotspots Reviewed (A —), Coverage (92.5%), and Duplications (0.0%).



The screenshot shows the SonarQube web interface, specifically the "Issues" page for the "java-getting-started" project. The top navigation bar is the same as the previous screenshot. The left sidebar shows filters for Quality Gate (Passed: 2, Failed: 1) and Security (A: 0 info issues, B: 0 low issue, C: 0 medium issue, D: 0 high issue, E: 0 blocker issue). The main area displays a list of issues. The first issue, "Use try-with-resources or close this 'Statement' in a 'finally' clause.", is marked as "Reliability" and "Intentionality". The second issue, "Catch Exception instead of Throwable.", is marked as "Maintainability" and "Consistency".

Below the issues list, there is a section for "Software Quality" with a table showing the number of issues for each category: Security (0) and Reliability (1).

☆ java-getting-started / main

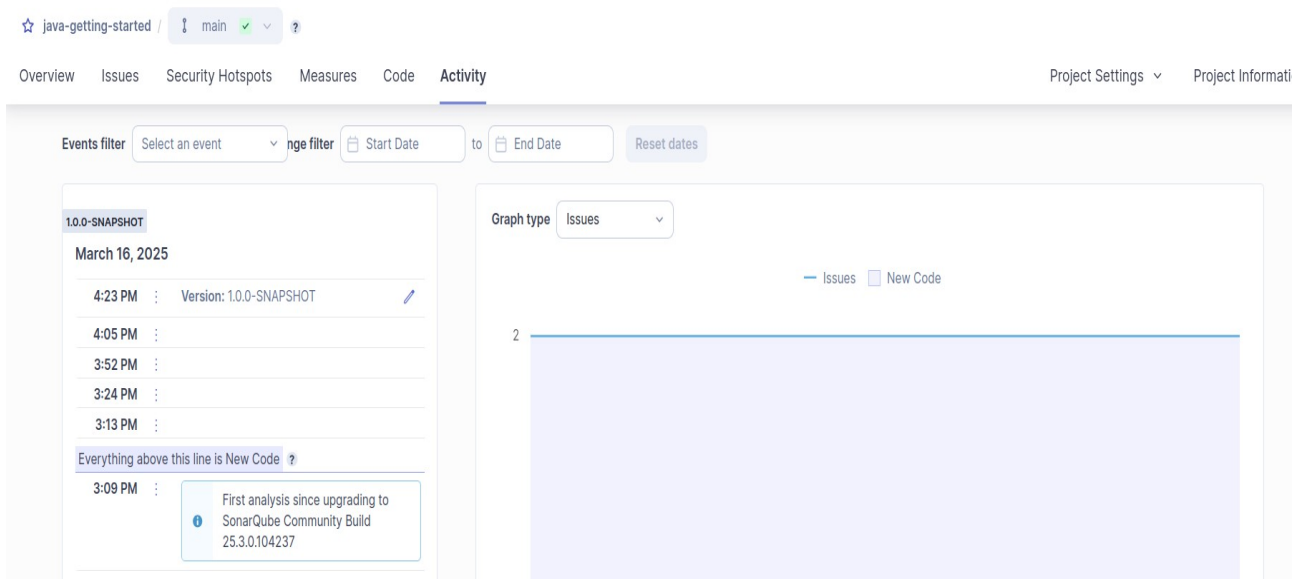
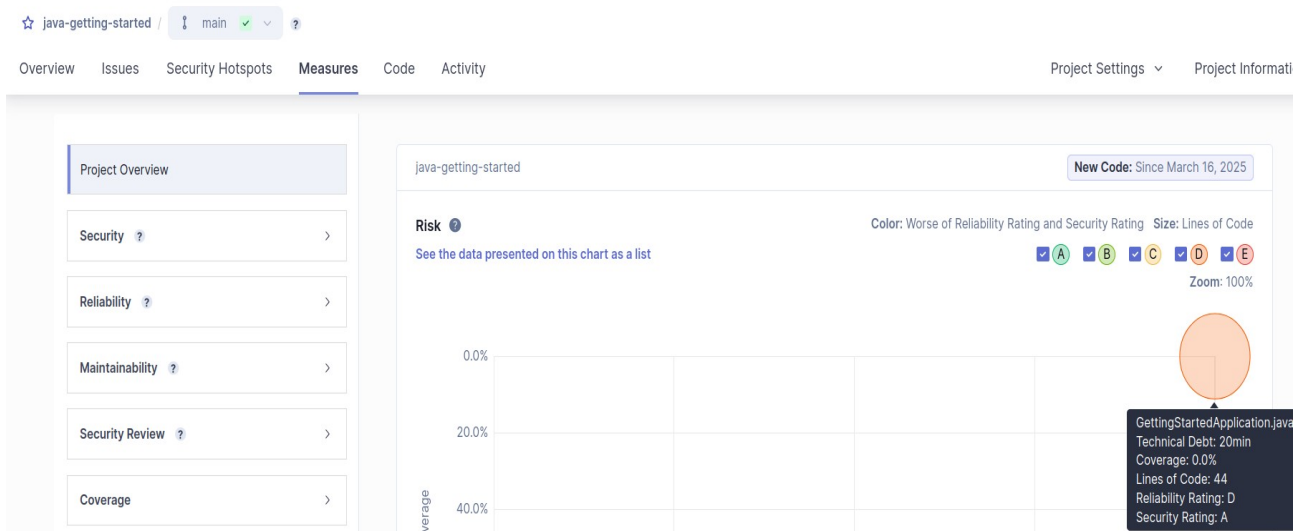
OverviewIssuesSecurity HotspotsMeasuresCodeActivity

Project SettingsProject Information

Search for files...

Select filesNavigate

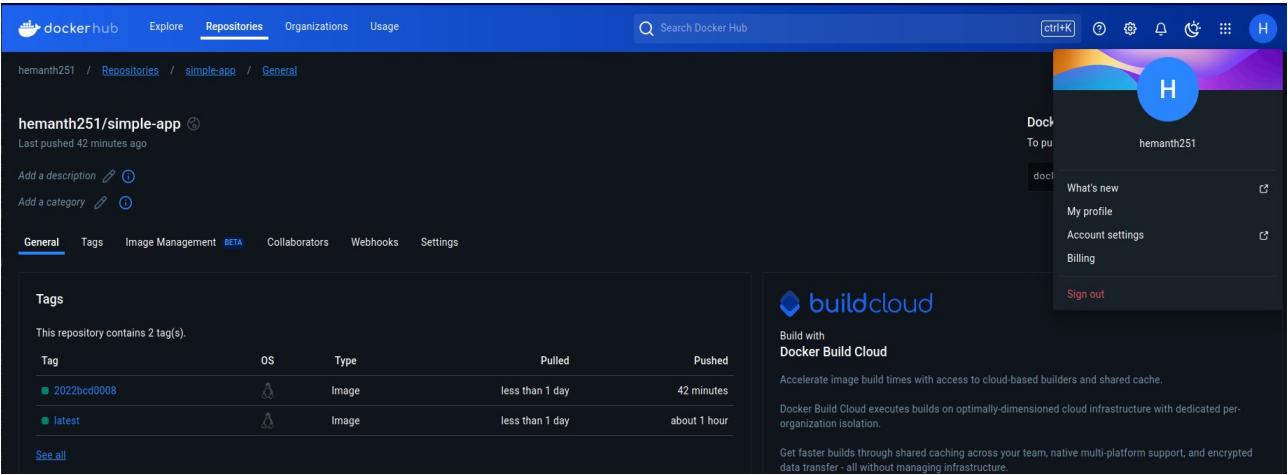
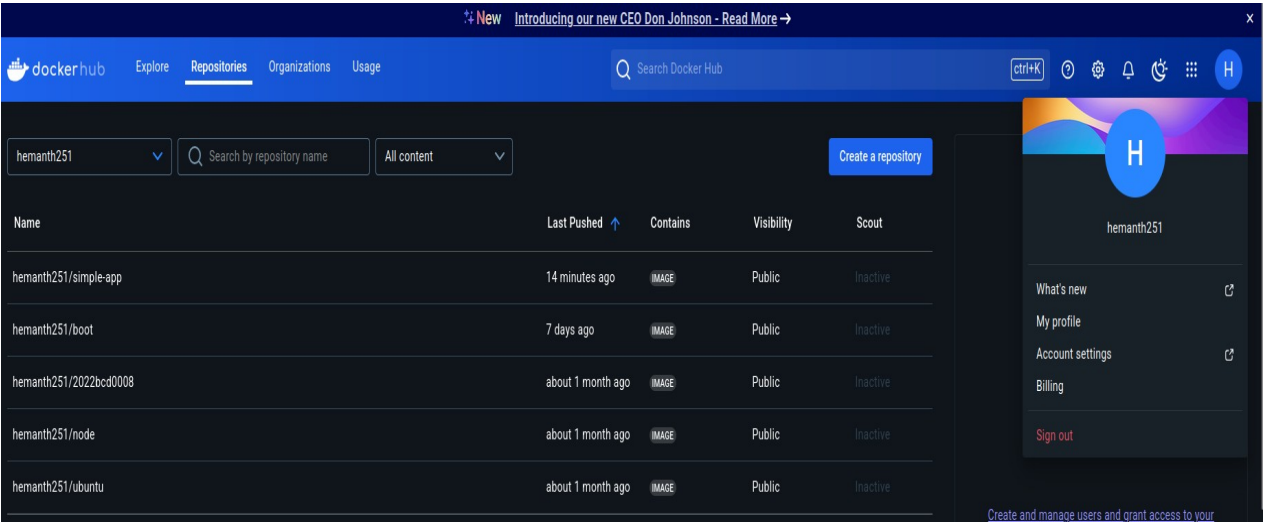
	Lines of Code	Security	Reliability	Maintainability	Security Hotspots	Coverage	Duplications
java-getting-started	92	0	1	1	0	0.0%	0.0%
src/main/java/com/heroku/java	44	0	1	1	0	0.0%	0.0%
pom.xml	48	0	0	0	0	—	0.0%





**Deploy the Docker Container:**

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



```
022BCD0008_00
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
hemanth251/simple-app  <none>            82c40c01edab       50 minutes ago     432MB
```