

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.

1. Creation of project on Sonarqube

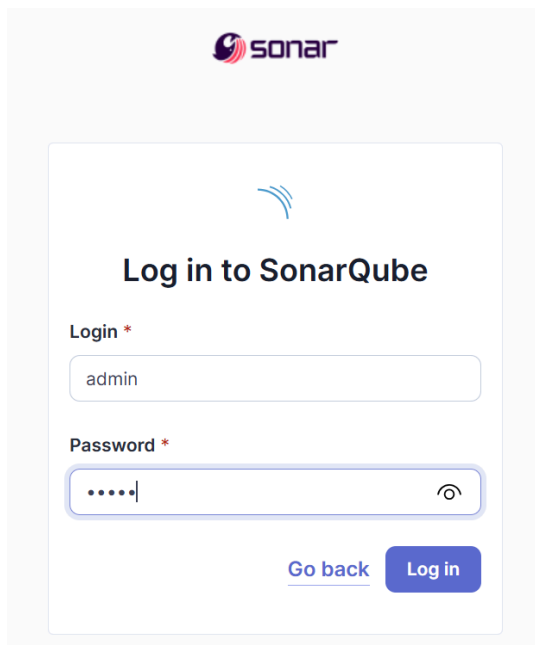
1. Open the command prompt and perform this command

(**Docker must be Installed before running this command.**)

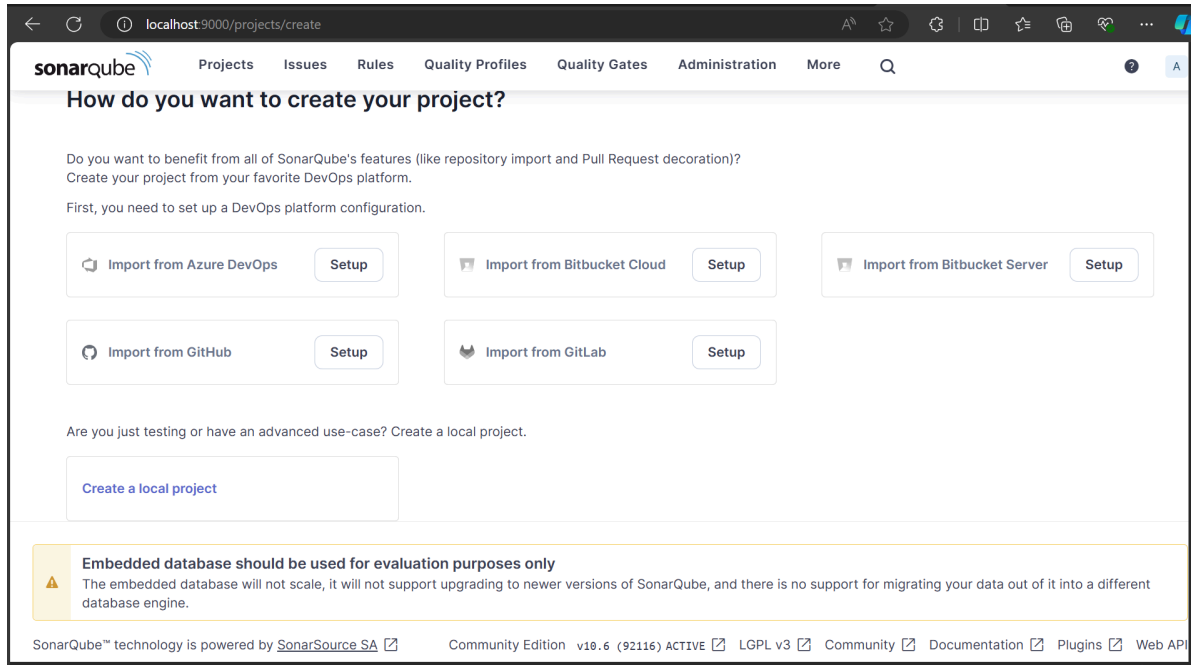
```
docker run -d --name sonarqube -e SONAR_ES_BOOTSTRAP_CHECKS_DISABLE=true -p 9000:9000 sonarqube:latest
```

```
PS C:\Users\Sadneya> docker run -d --name sonarqube -e SONAR_ES_BOOTSTRAP_CHECKS_DISABLE=true -p 9000:9000 sonarqube:latest
Unable to find image 'sonarqube:latest' locally
latest: Pulling from library/sonarqube
7478e0ac0f23: Pull complete
90a925ab929a: Pull complete
7d9a34308537: Pull complete
80338217a4ab: Pull complete
1a5fd5c7e184: Pull complete
7b87d6fa783d: Pull complete
bd819c9b5ead: Pull complete
4f4fb700ef54: Pull complete
Digest: sha256:72e9fec71242af83faf65f95a40d5e3bb2822a6c3b2cda8568790f3d31aecde
Status: Downloaded newer image for sonarqube:latest
19948c8162691fd8be61d035e355c4fe4a6a2fd0a15237e94f75c0857ff7e2ff
```

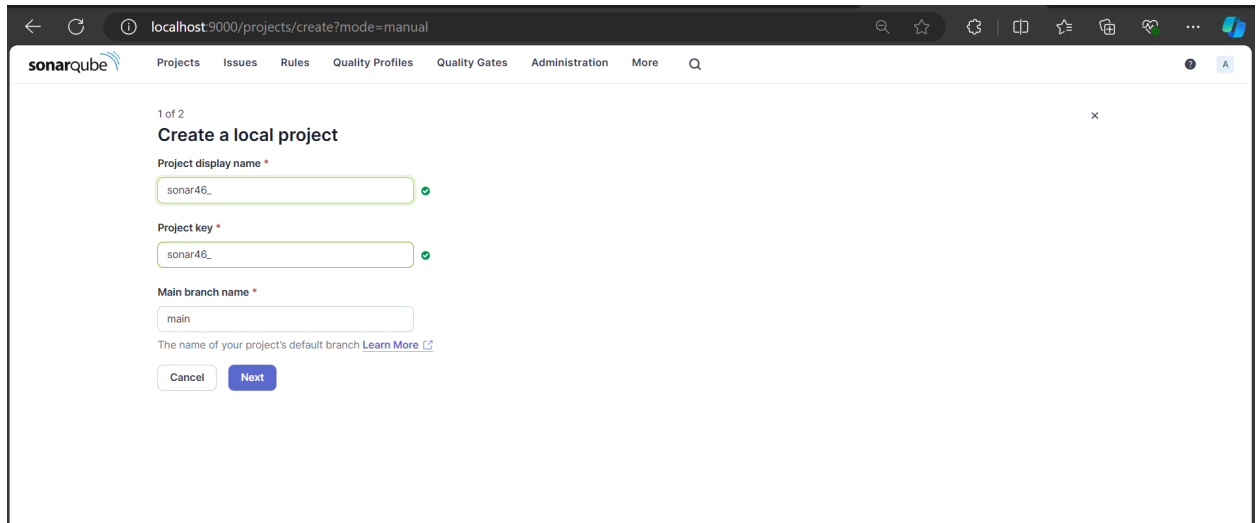
2. Then after its successful execution, run the sonarqube at <http://localhost:9000>
3. Then Login as Username admin and password admin.



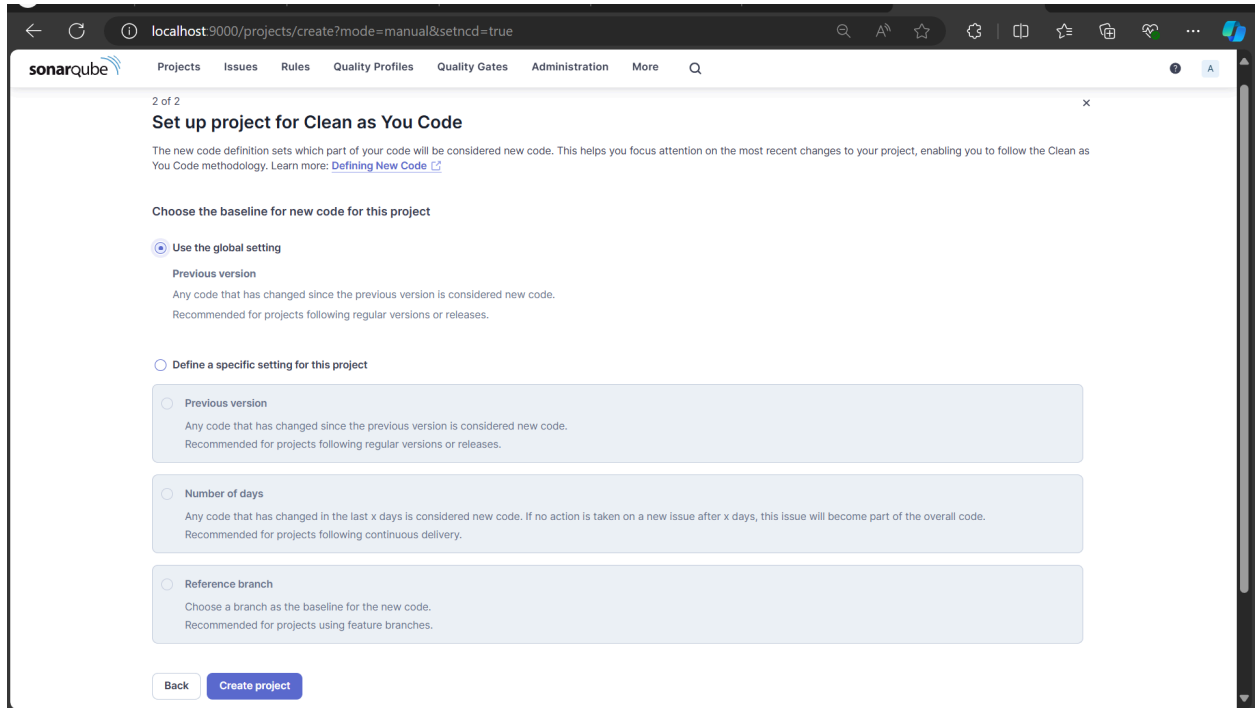
The image shows the SonarQube login page. At the top, there is the Sonar logo. Below it, the text "Log in to SonarQube" is displayed. There are two input fields: "Login *" with the value "admin" and "Password *" with masked characters ".....". To the right of the password field is an eye icon. At the bottom, there are two buttons: "Go back" (a link) and "Log in" (a button).



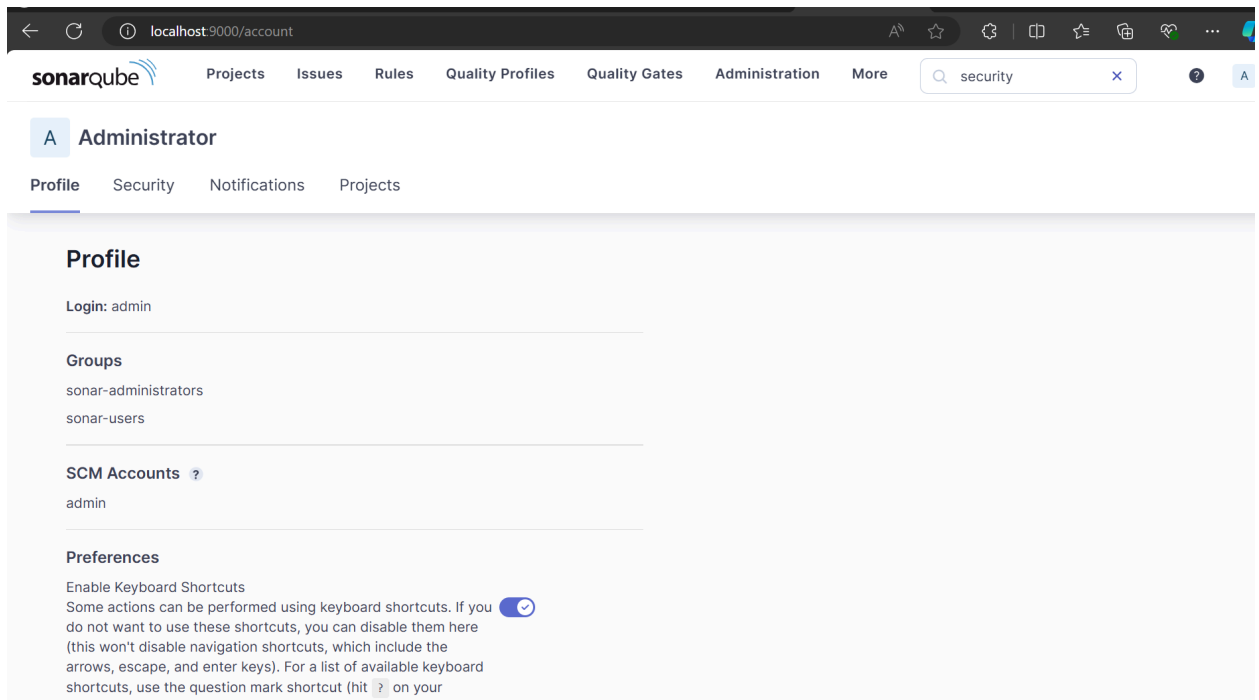
4. Then create a project. Here I have given the name as “sonar46”. Keep branch name main only and then click on next.



5. Then in the Setup project for clean as you code they will ask to choose the baseline for new code for this project. Choose Use the global setting. Then click on create project.



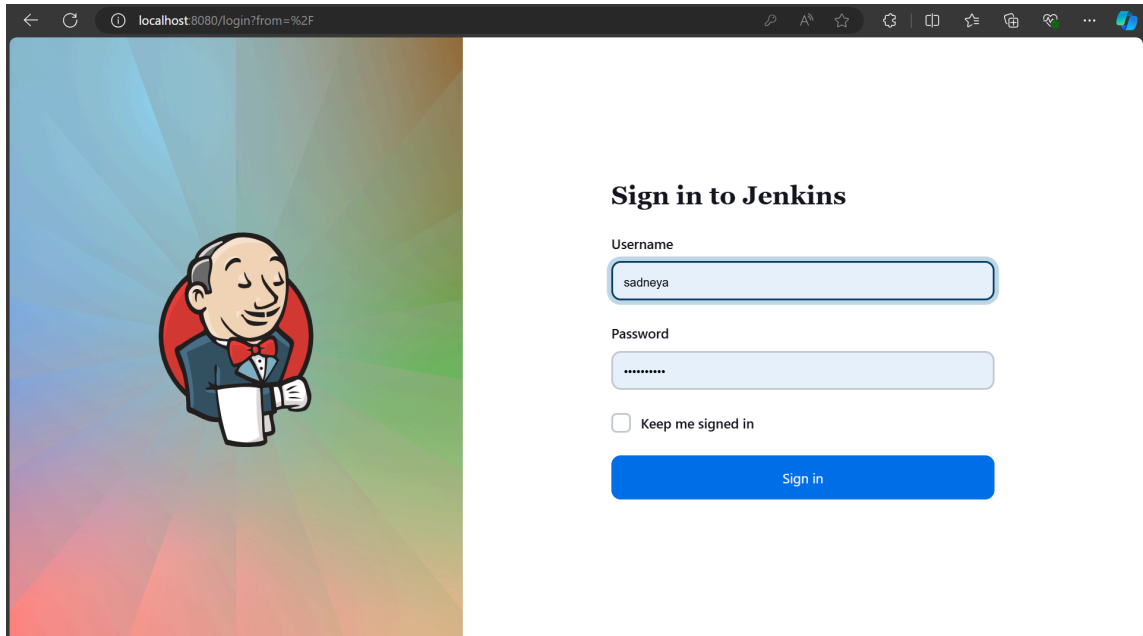
6. Then click on your account profile and select my account. Inside this click on security option.



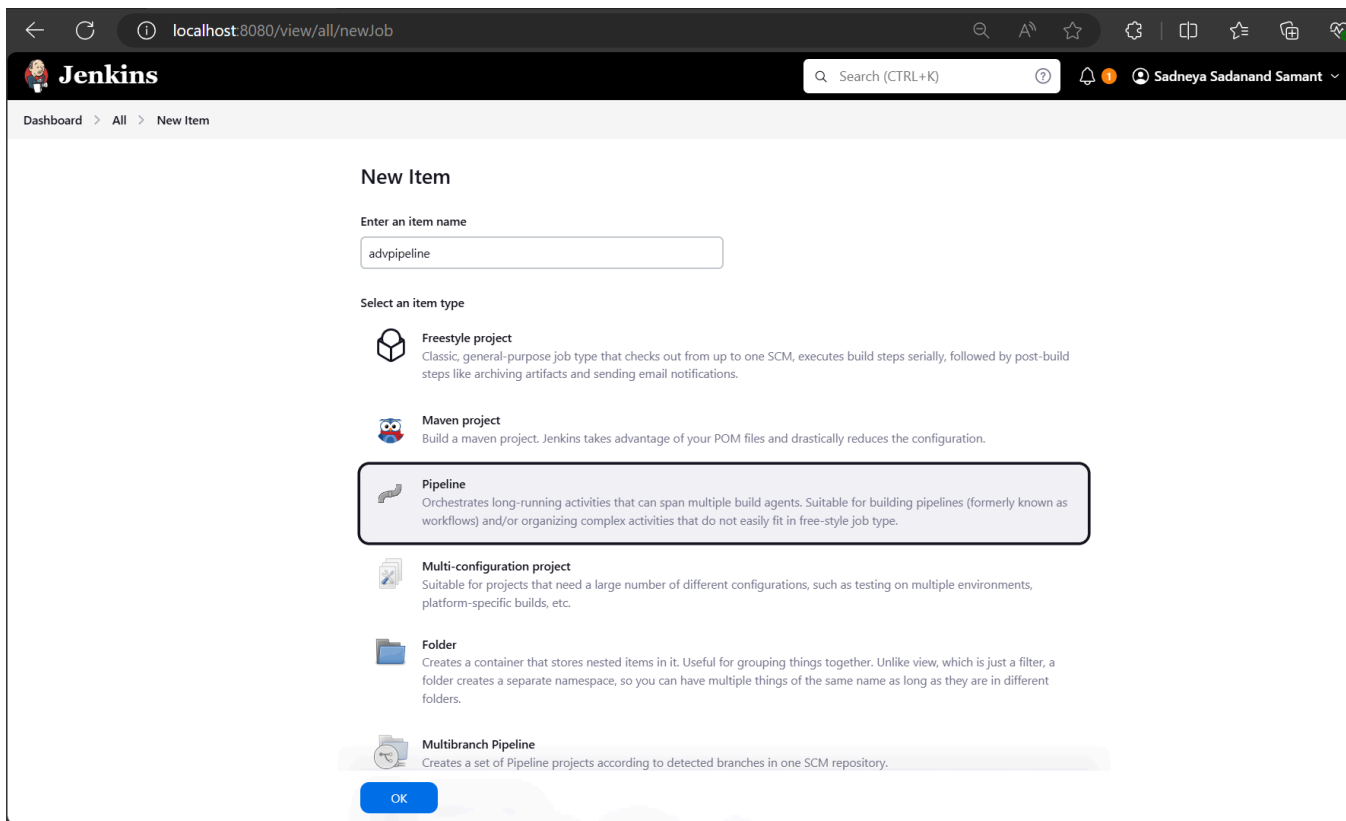
7. Then set the name of your token and here I have chosen the global scope of the token and then clicked on generate token, thus token created successfully. (Here I have given my token name as 'jenkins token'.)

2. Creation and building of jenkins pipeline

1. Run the jenkins at <http://localhost:8080> and enter username and password and click on sign in



2. Then create a pipeline item type in jenkins.



- Go to [SonarScanner CLI \(sonarsource.com\)](https://sonarsource.com) this website and download the latest version of sonar scanner on the computer.
- Then select the machine here I am using windows x64

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SonarScanner CLI

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6.2
2024-09-17

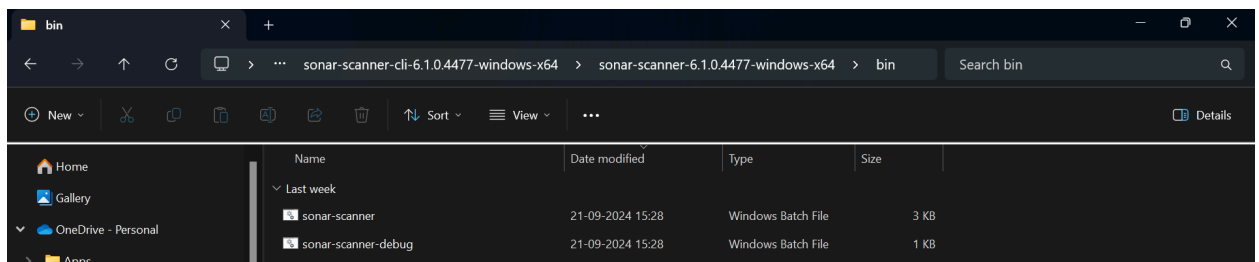
Support PKCS12 truststore generated with OpenSSL

Download scanner for: [Linux x64](#) [Linux AArch64](#) [Windows x64](#)
[macOS x64](#) [macOS AArch64](#) [Docker](#) [Any \(Requires a pre-installed JVM\)](#)

[Release notes](#)

Once it is downloaded, copy its path as it is required in the pipeline script.

C:\\Users\\Sadneya\\Downloads\\sonar-scanner-cli-6.1.0.4477-windows-x64\\sonar-scanner-6.1.0.4477-windows-x64\\bin\\sonar-scanner.bat"



- Inside the pipeline script section write the following script.

```
node {
  stage('Cloning the GitHub Repo') {
    git "https://github.com/shazforiot/GOL.git" (cloning this repo)
  }
  stage('SonarQube analysis') {
    withSonarQubeEnv('sonarqube') {
      bat ""
```

```
"C:\\Users\\Sadneya\\Downloads\\sonar-scanner-cli-6.1.0.4477-windows-x64\\sonar-scanner-6.1.0.4477-windows-x64\\bin\\sonar-scanner.bat" ^
```

```
-Dsonar.login=sqp_fab91d70fc5db32bb83641a23decbbf04470ba2d ^ (login token)
```

```
-Dsonar.projectKey=sonar46 ^ (your project name)
```

-Dsonar.exclusions=vendor/**,resources/**,**/*.java ^ (libraries u want to exclude)

-Dsonar.host.url=http://localhost:9000 (server URL)

""""

}

}

}

The screenshot shows the Jenkins configuration page for a pipeline named 'soanrpipeline'. The browser address bar shows 'localhost:8080/job/soanrpipeline/configure'. The page has a sidebar with 'Configure' selected, and sub-tabs for 'General', 'Advanced Project Options', and 'Pipeline'. The 'Advanced Project Options' tab is active, showing a 'Pipeline' definition. The 'Definition' dropdown is set to 'Pipeline script'. The script content is as follows:

```

1 node {
2   stage('Cloning the GitHub Repo') {
3     git "https://github.com/shazforiot/GOL.git"
4   }
5   stage('SonarQube analysis') {
6     withSonarQubeEnv('sonarqube') {
7       bat
8       "C:\Users\Sadneya\Downloads\sonar-scanner-cli-6.1.0.4477-windows-x64\sonar-scanner-6.1.0.4477-windows-x64\bin\sonar-scanner.bat" ^
9       -Dsonar.login=sqp_fab91d79fc5db32bb83641a23decbbf04470ba2d ^
10      -Dsonar.projectkey=sonar46 ^
11      -Dsonar.exclusions=vendor/**,resources/**,**/*.java ^
12      -Dsonar.host.url=http://localhost:9000
13      """"
14    }
15  }
16 }
17

```

Below the script, there is a checkbox labeled 'Use Groovy Sandbox' which is checked. At the bottom, there are 'Save' and 'Apply' buttons.

6. Then save and apply the changes. Then click on build option.

The screenshot shows the Jenkins dashboard for a project named 'advdevops project'. The browser address bar shows 'localhost:8080/job/advdevops project/'. The dashboard includes a sidebar with the following options: 'Status', 'Changes', 'Workspace', 'Build Now', 'Configure', 'Delete Project', 'SonarQube', and 'Rename'. The 'Build Now' option is highlighted.

Then it throws an error.

❌ Console Output

```

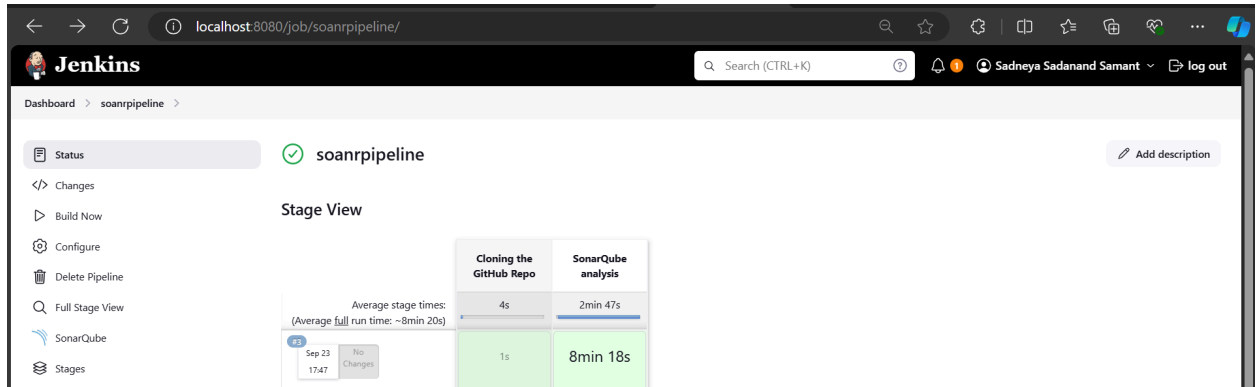
Started by user Sadneya Sadanand Samant
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in C:\ProgramData\Jenkins\.jenkins\workspace\soanripeline
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Cloning the GitHub Repo)
[Pipeline] git
The recommended git tool is: NONE
No credentials specified
Cloning the remote Git repository
Cloning repository https://github.com/shazforiot/GOL.git
> git.exe init C:\ProgramData\Jenkins\.jenkins\workspace\soanripeline # timeout=10
Fetching upstream changes from https://github.com/shazforiot/GOL.git
> git.exe --version # timeout=10
> git --version # 'git version 2.43.0.windows.1'
> git.exe fetch --tags --force --progress -- https://github.com/shazforiot/GOL.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git.exe config remote.origin.url https://github.com/shazforiot/GOL.git # timeout=10
> git.exe config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
Avoid second fetch
> git.exe rev-parse "refs/remotes/origin/master^{commit}" # timeout=10
17:42:26.066 INFO   JRE PROVIDING: OS[WINDOWS], ARCH[amd64]
17:42:26.066 INFO   EXECUTION FAILURE
17:42:26.066 INFO   Total time: 0.766s
17:42:26.067 ERROR Error during SonarScanner CLI execution
java.lang.IllegalStateException: Error status returned by url [http://localhost:9000/api/v2/analysis/jres?os=windows&arch=amd64]: 401
    at org.sonarsource.scanner.lib.internal.http.ServerConnection.callUrl(ServerConnection.java:182)
    at org.sonarsource.scanner.lib.internal.http.ServerConnection.callApi(ServerConnection.java:145)
    at org.sonarsource.scanner.lib.internal.http.ServerConnection.callRestApi(ServerConnection.java:123)
    at org.sonarsource.scanner.lib.internal.JavaRunnerFactory.getJreMetadata(JavaRunnerFactory.java:159)
    at org.sonarsource.scanner.lib.internal.JavaRunnerFactory.getJreFromServer(JavaRunnerFactory.java:138)
    at org.sonarsource.scanner.lib.internal.JavaRunnerFactory.createRunner(JavaRunnerFactory.java:85)
    at org.sonarsource.scanner.lib.internal.ScannerEngineLauncherFactory.createLauncher(ScannerEngineLauncherFactory.java:53)
    at org.sonarsource.scanner.lib.ScannerEngineBootstrapper.bootstrap(ScannerEngineBootstrapper.java:118)
    at org.sonarsource.scanner.cli.Main.analyze(Main.java:75)
    at org.sonarsource.scanner.cli.Main.main(Main.java:63)
17:42:26.068 ERROR
17:42:26.068 ERROR Re-run SonarScanner CLI using the -X switch to enable full debug logging.
[Pipeline] }
WARN: Unable to locate 'report-task.txt' in the workspace. Did the SonarScanner succeed?
[Pipeline] // withSonarQubeEnv
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
ERROR: script returned exit code 1
Finished: FAILURE

```

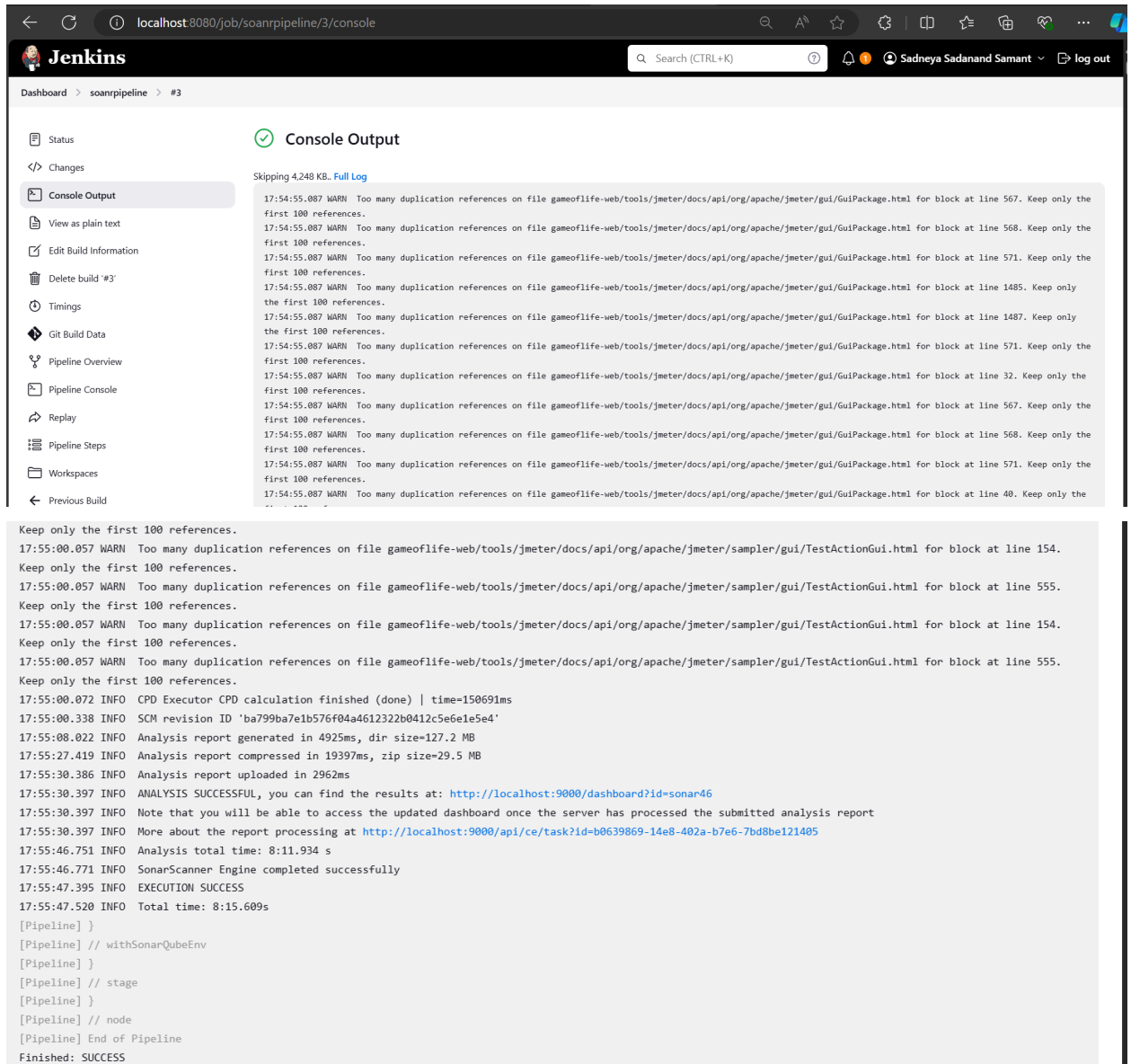
This error was due to failure in login and connection. So I generated the token again and replaced it in the pipeline script inside the configure of the pipeline.

ie. `-Dsonar.login=(new token)`

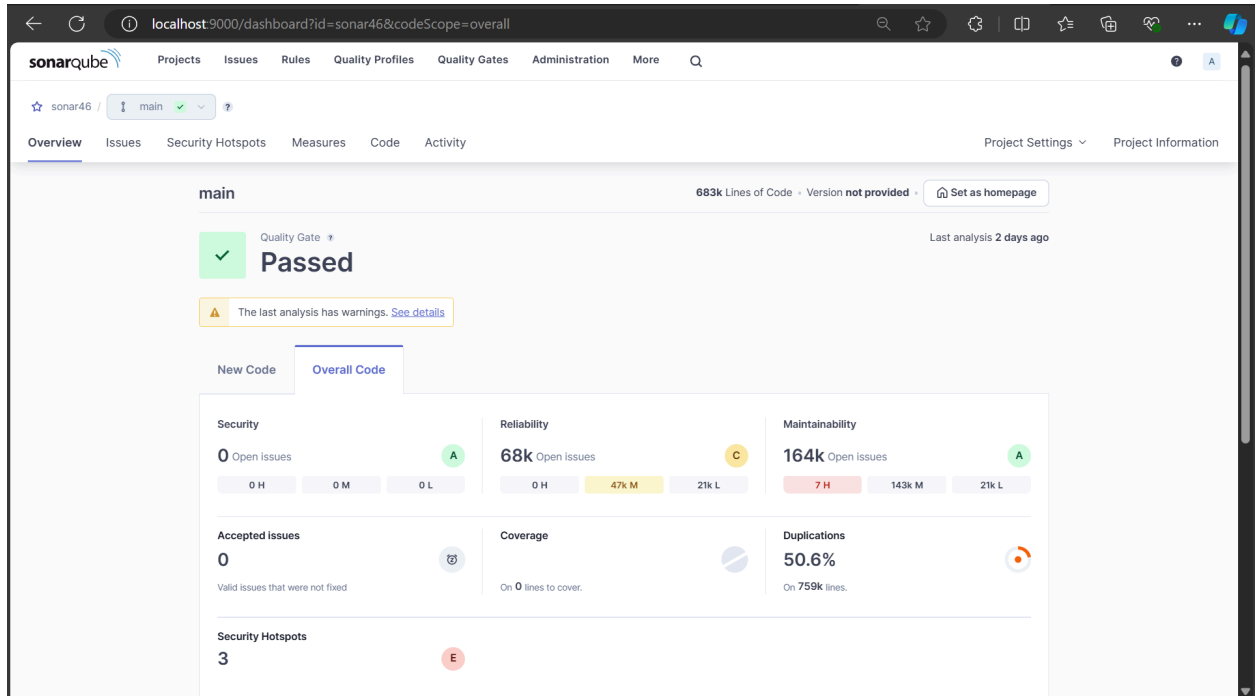
7. Then I again clicked on build ,but this time the build got executed successfully.



8. Check the Console Output.



9. Then go to SonarQube. Then go inside the project that you created. where it will show output passed.



Thus Project Build successfully.

Conclusion: Here we created the “sonarpipeline” project locally successfully. Then created a pipeline on Jenkins and installed a plugin named SonarQube Scanner. Then we build that project by adding the script inside pipeline which consists of project name, key, token and then GitHub repository to clone. Then after saving and applying the changes, the build executed successfully. Initially there was an issue in connection due to the token then I created the token again and it executed successfully. Then we also checked that SonarQube given response about passing of analysis. Thus Build is done successfully.