Name : Sandeshkumar.M.Yadav Div : D15C Roll : 61

Experiment No :7

AIM: To understand Static Analysis SAST process and learn to integrate Jenkins SAST to SonarQube/GitLab.

PREREQUISITES:

1) Docker :
Run docker -v command. We use this command to check if docker is installed and running on your system.

```
C:\Users\praja>docker -v
Docker version 27.0.3, build 7d4bcd8
```

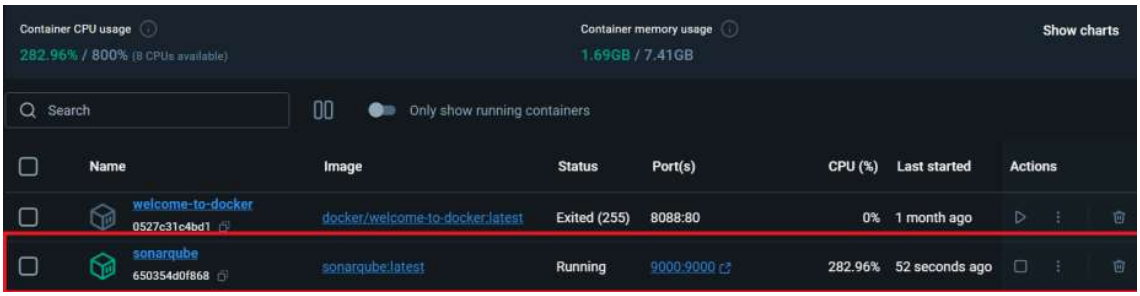
2) Install SonarQube Image:
The command docker pull sonarqube downloads a SonarQube image from Docker's online repository. This image lets you run SonarQube on your system using Docker without needing to install the full SonarQube software manually. It's like getting a ready-to-use version of SonarQube that can be started with Docker.

```
C:\Users\praja>docker pull sonarqube
Using default tag: latest
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: sha256:72e9feec71242af83faf65f95a40d5e3bb2822a6c3b2cda8568790f3d31aecde
Status: Downloaded newer image for sonarqube:latest
docker.io/library/sonarqube:latest
```

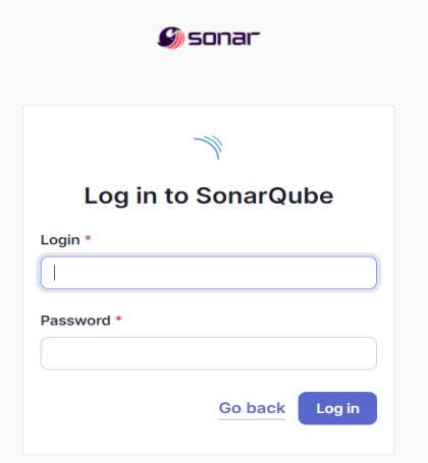
3) Make sure Jenkins is already installed on your system before starting the process. Jenkins will be used to automate tasks, like running SonarQube for code analysis. If Jenkins isn't installed yet, you can download and set it up from the official Jenkins website.

STEPS: Step1:The command docker run -d --name sonarqube -e SONAR_ES_BOOTSTRAP_CHECKS_DISABLE=true -p 9000:9000 sonarqube:latest starts SonarQube in the background on port 9000 using Docker, allowing you to access it at http://localhost:9000

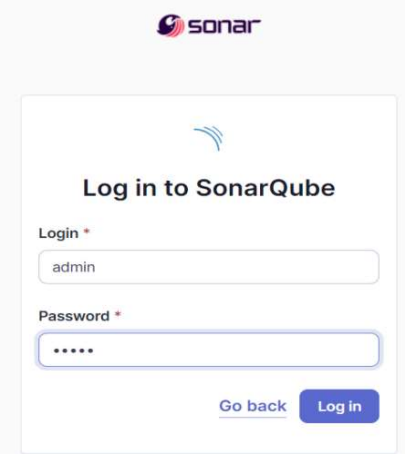
```
C:\Users\praja>docker run -d --name sonarqube -e SONAR_ES_BOOTSTRAP_CHECKS_DISABLE=true -p 9000:9000 sonarqube:latest
650354d0f868ae4ad2d800426080076c604eb09f29b10d4a251aee70f51ce907
```



Step2: After starting the SonarQube image, open your browser and go to http://localhost:9000 to access SonarQube.

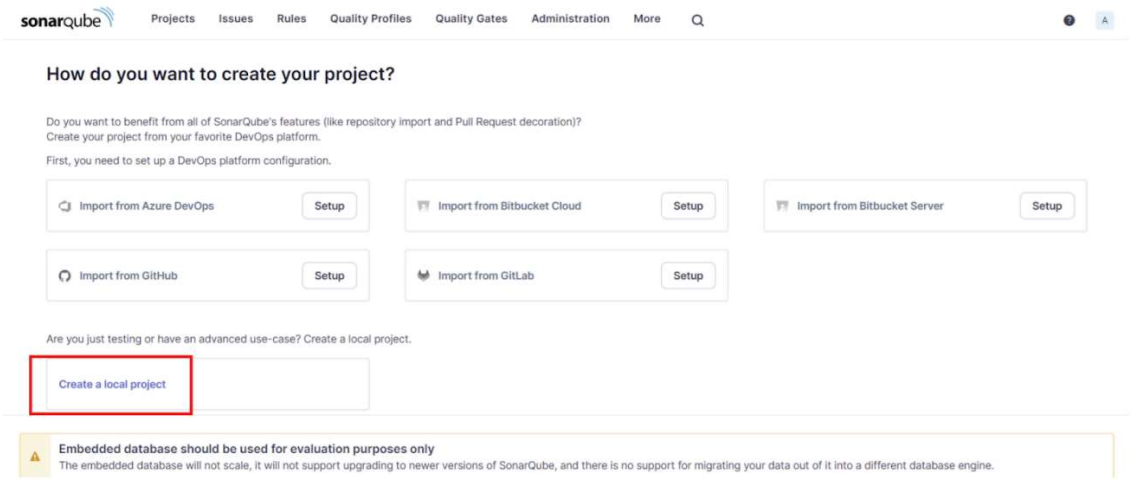


Step 3: On the SonarQube login page, use the default credentials: Username: admin , Password: admin. After logging in, you'll be prompted to change the password. Set a new password and make sure to remember it.

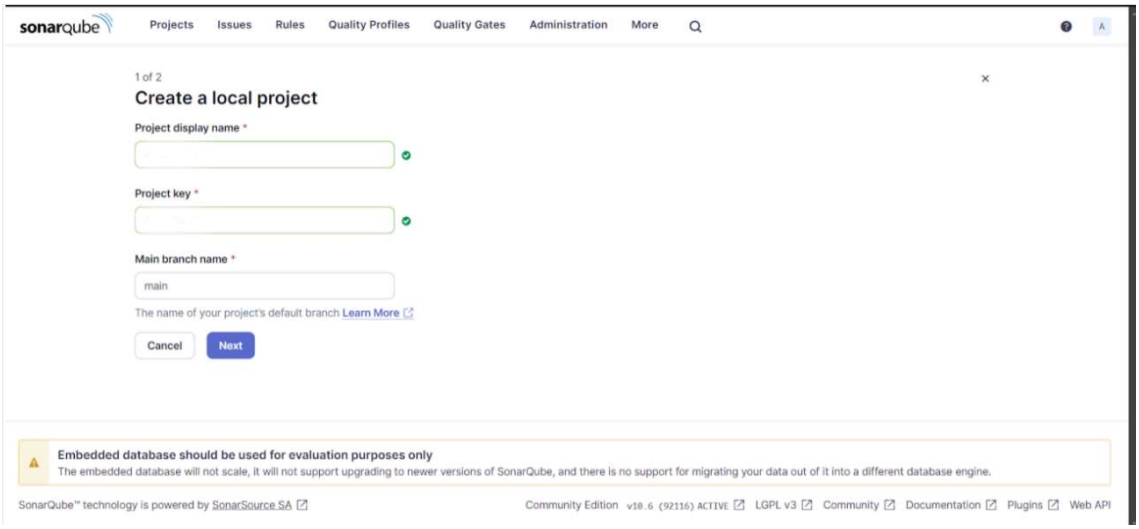


Click on Log in
Click on Update .

Step 4: After changing the password, you will be directed to this screen. Click on Create a Local Project.

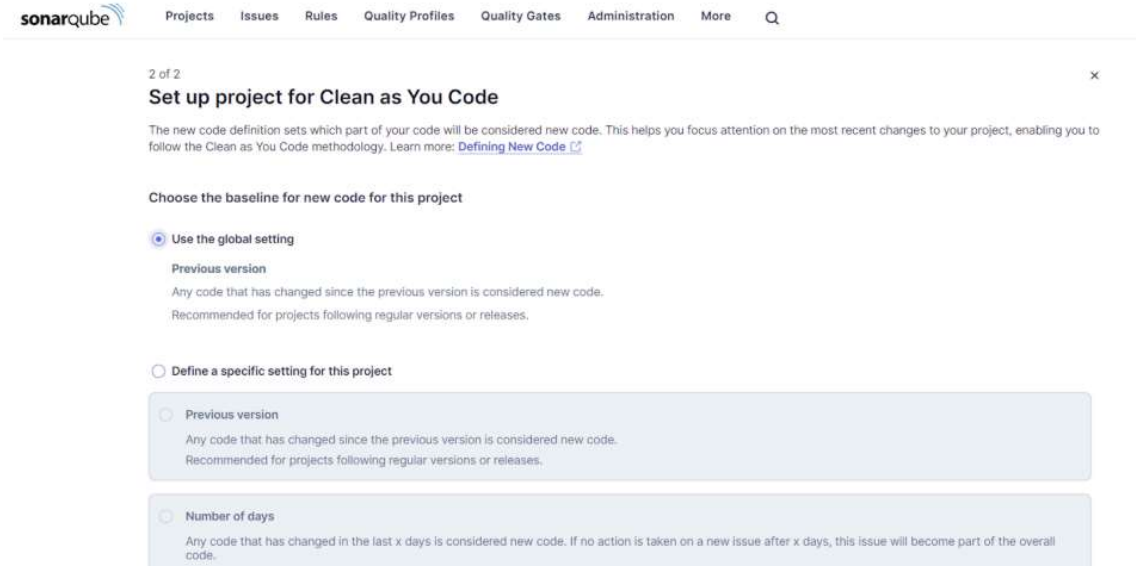


Step 5: Give your project , a display name and project key



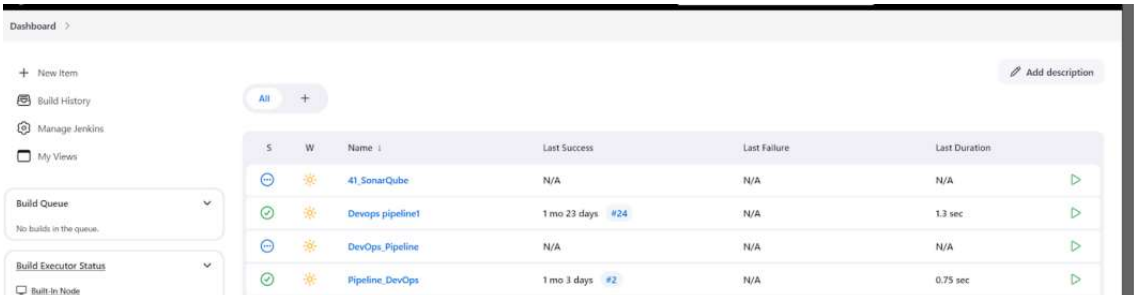
Name : Sandeshkumar.M.Yadav Div : D15C Roll : 61

Step 6: Configure the project by providing the necessary settings like choosing the baseline for the new code for the project , then click Create to finalize the setup.

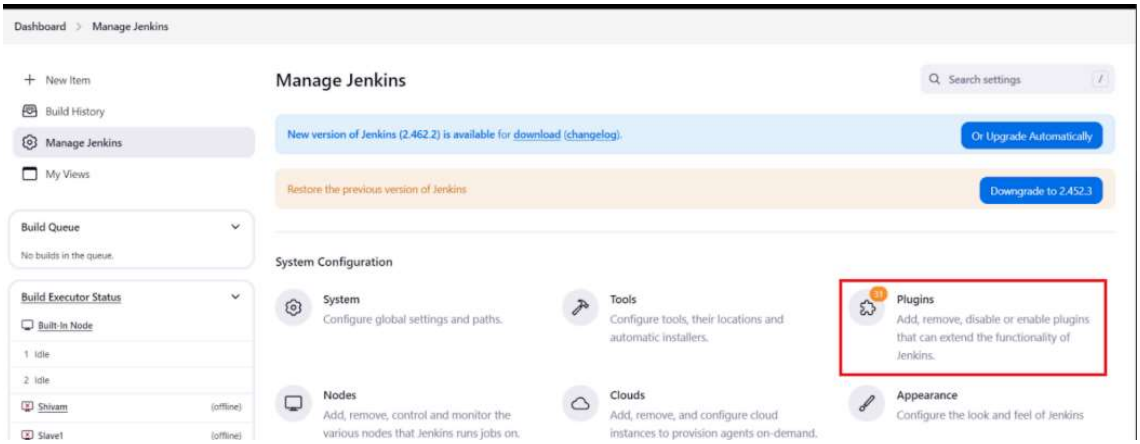


Scroll Down
Click on Create project

Step 7: Open Jenkins by going to http://localhost: in your browser, replacing with the specific port Jenkins is running on.

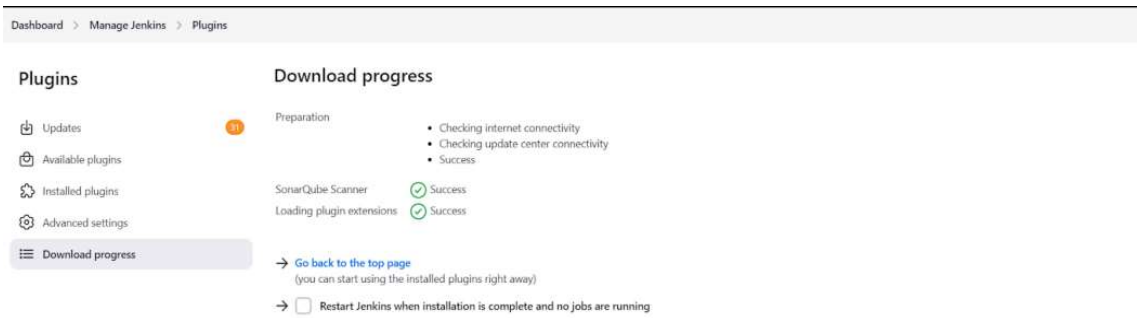


Step 8: Now go to Manage Jenkin then go for Plugins followed by Available plugins search for Sonarqube Scanner where we are going to install it as a plugin



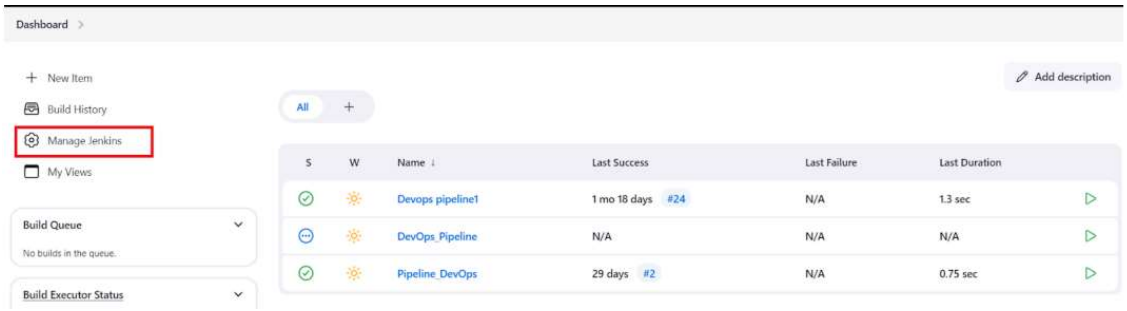
Click on Available Plugins.

Search in the Search bar the required Plugin Name and click on Install.



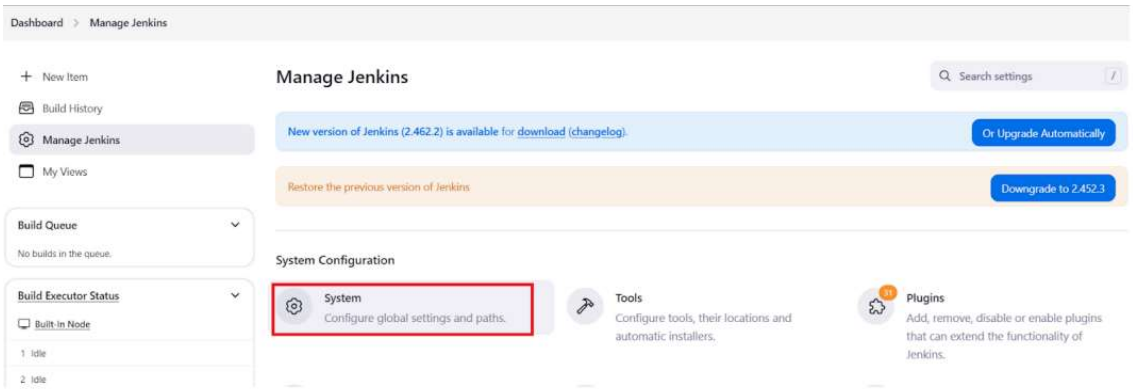
Plugin Installed Successfully

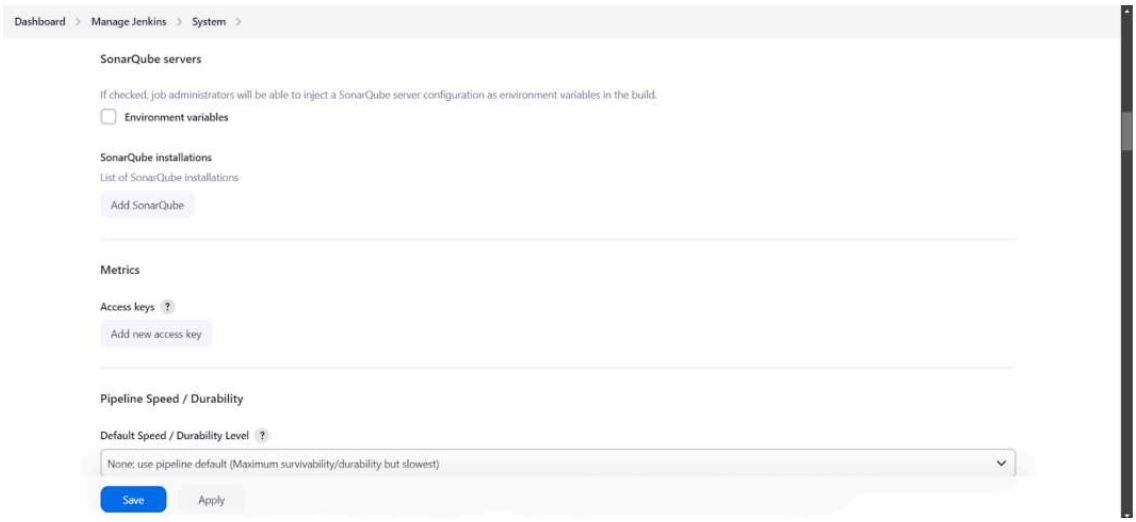
Step 9: In Jenkins, go to Manage Jenkins → System, then find SonarQube servers. Add a new server, and if required, include the authentication token for secure access



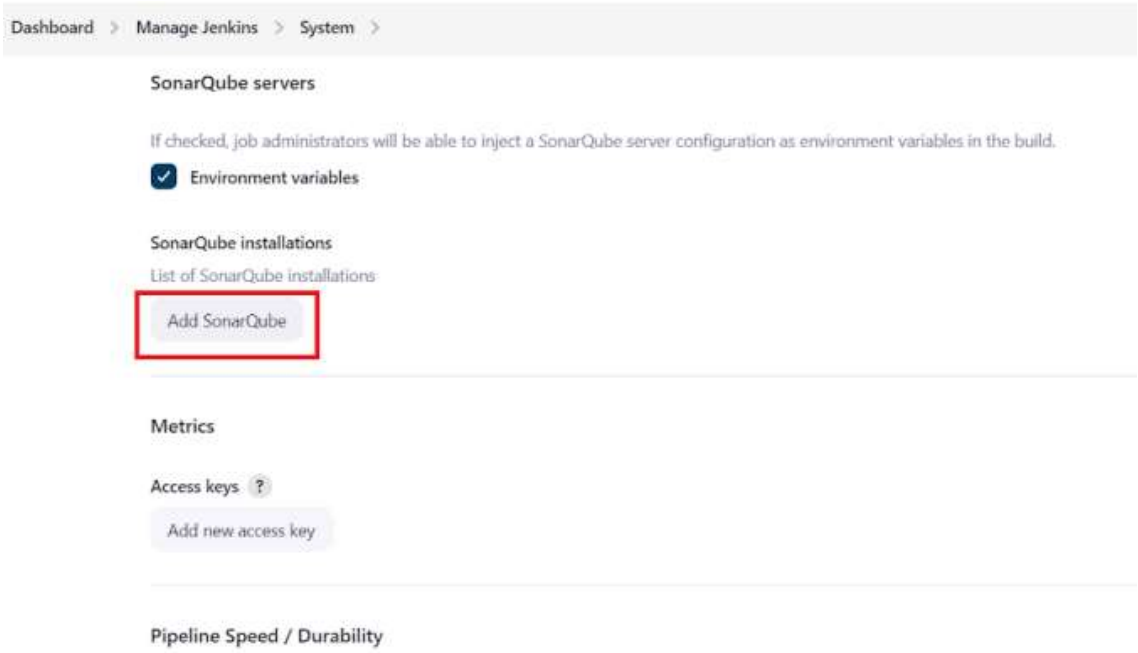
Name : Sandeshkumar.M.Yadav Div : D15C Roll : 61

Go to system

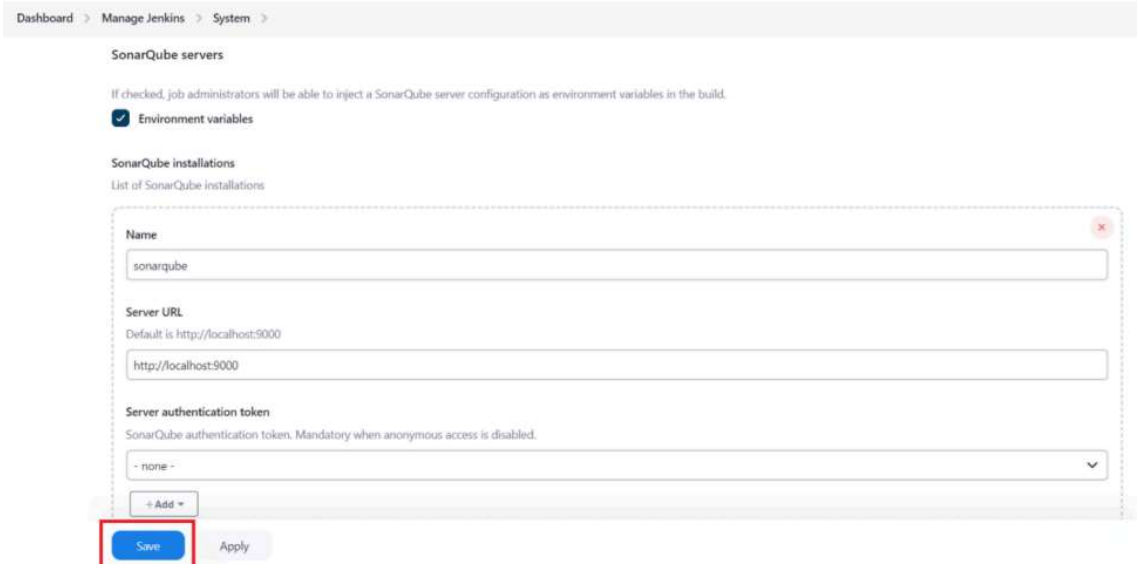




Select Environment Variable and Click on Add Sonar Qube button in order to Add SonarQube Server to Jenkin

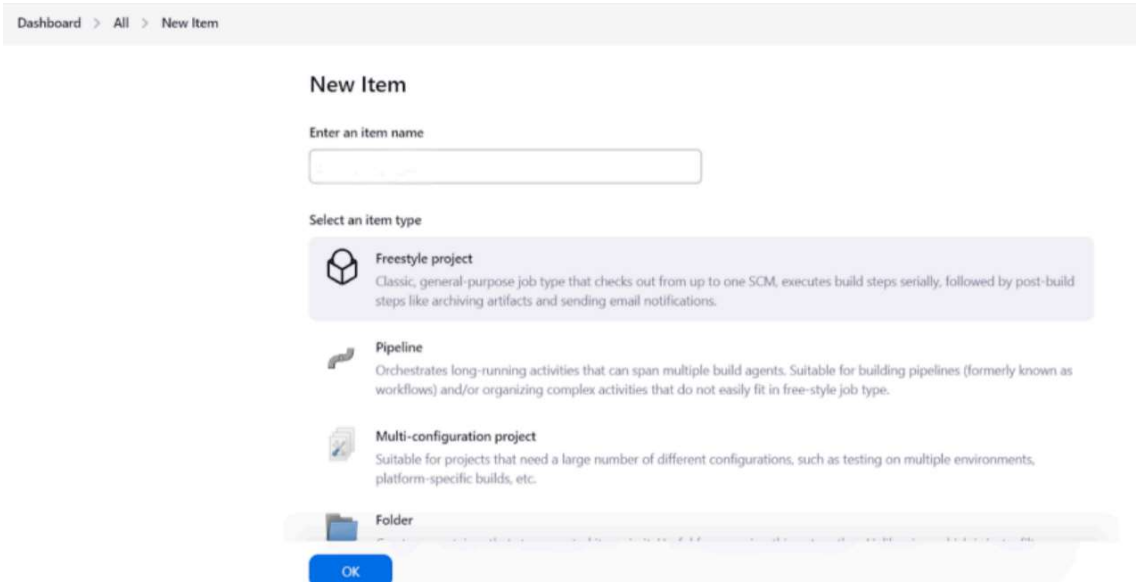


Do the required entries as shown below

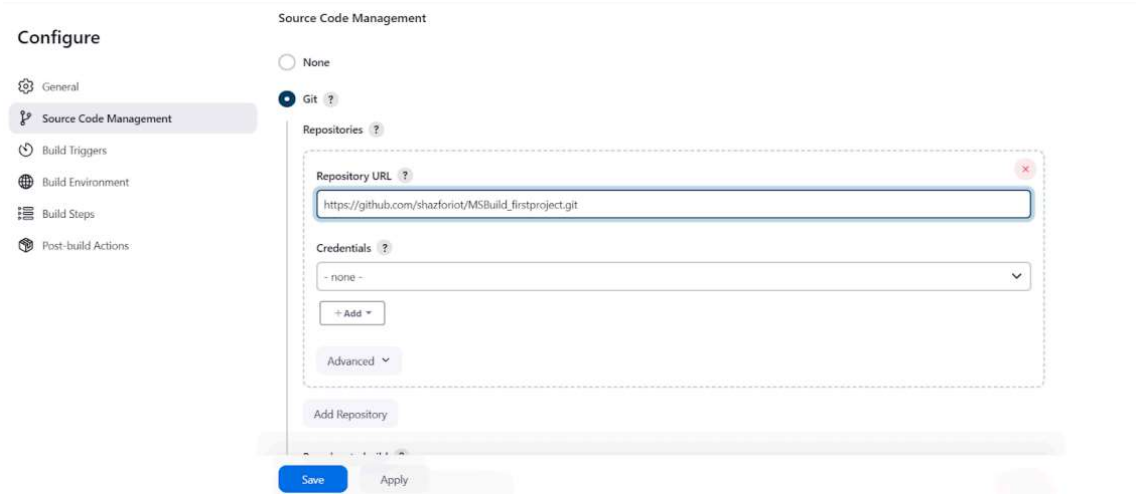


Click on save

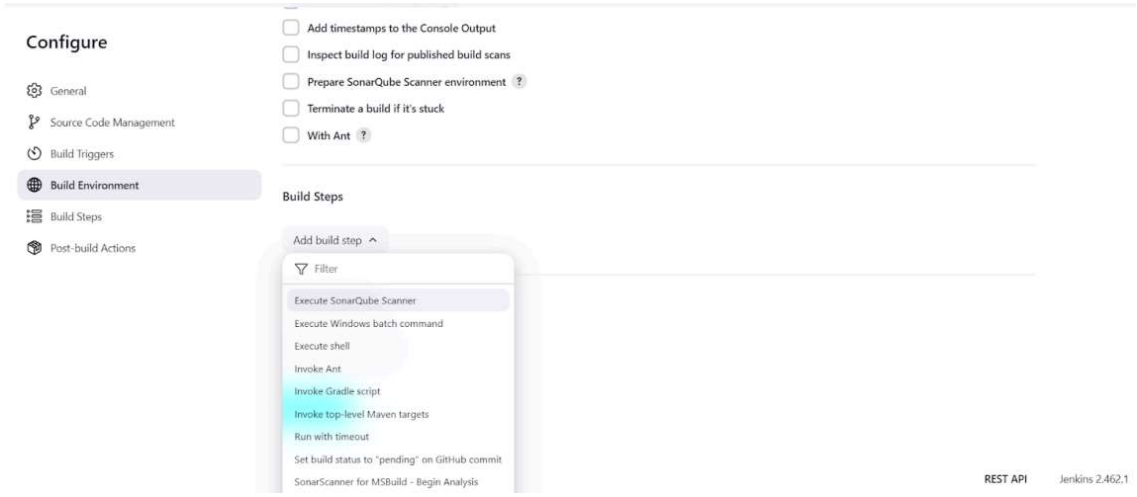
Step 10: After configuration, create a New Item → choose a freestyle project



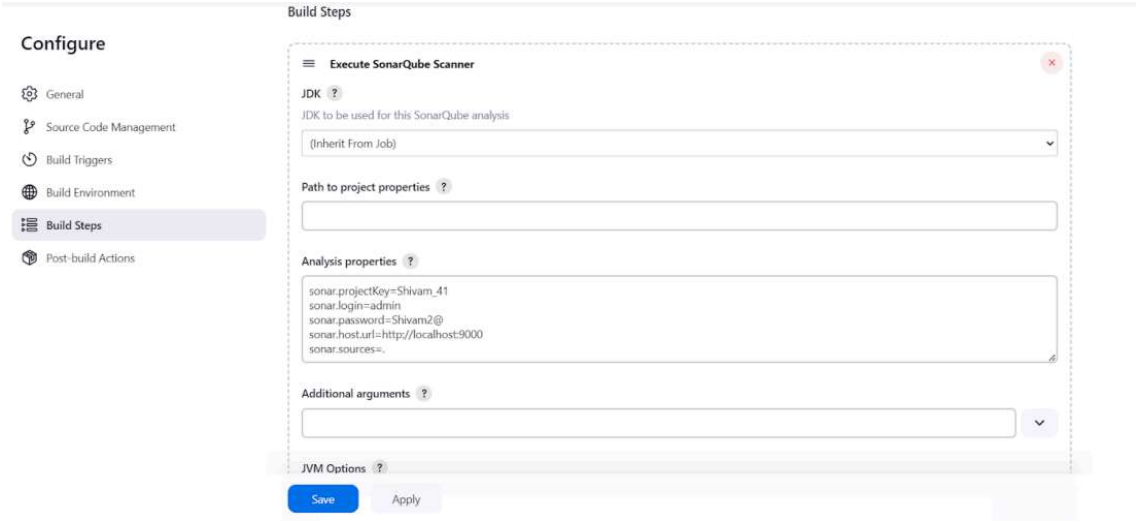
Step 11: Use this github repository in Source Code Management. https://github.com/shazforiot/MSBuild_firstproject. It is a sample hello-world project with no vulnerabilities.



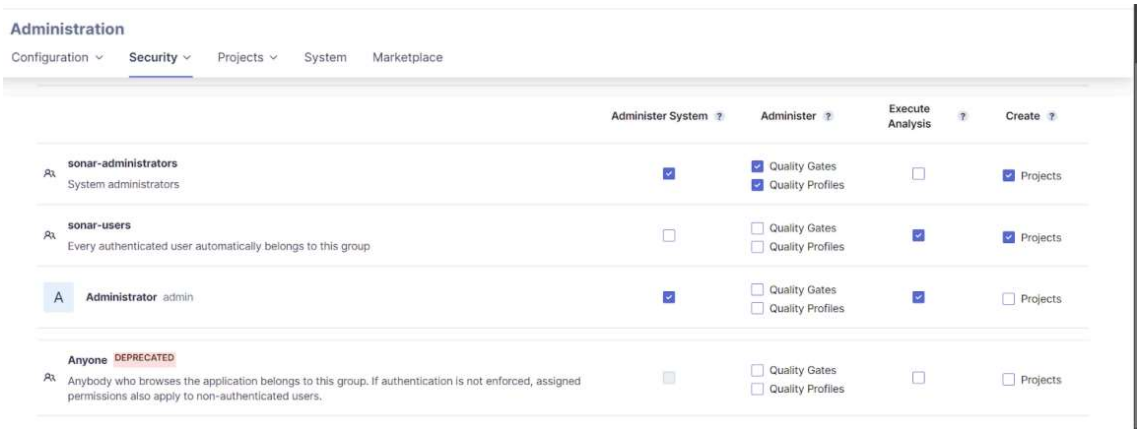
Step 12: Under Build Steps, enter Sonarqube Scanner, enter these Analysis properties. Mention the SonarQube Project Key, Login, Password, Source path and Host URL.



Click on execute sonar scanner



Step 13: Now, you need to grant the local user (here admin user) permissions to Execute the Analysis stage on SonarQube. For this, go to http://loaclhost:/admin/permissions and check the 'Execute Analysis' checkbox under Administrator.



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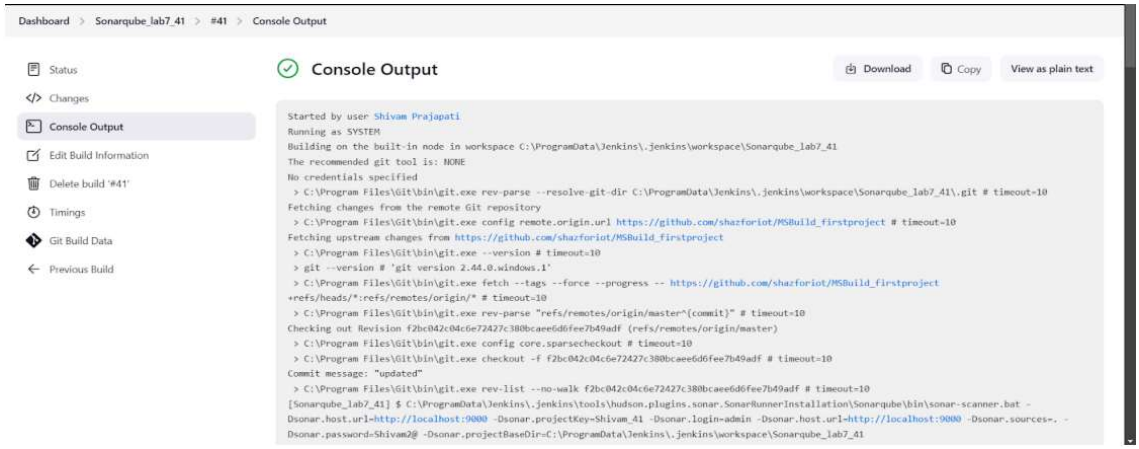
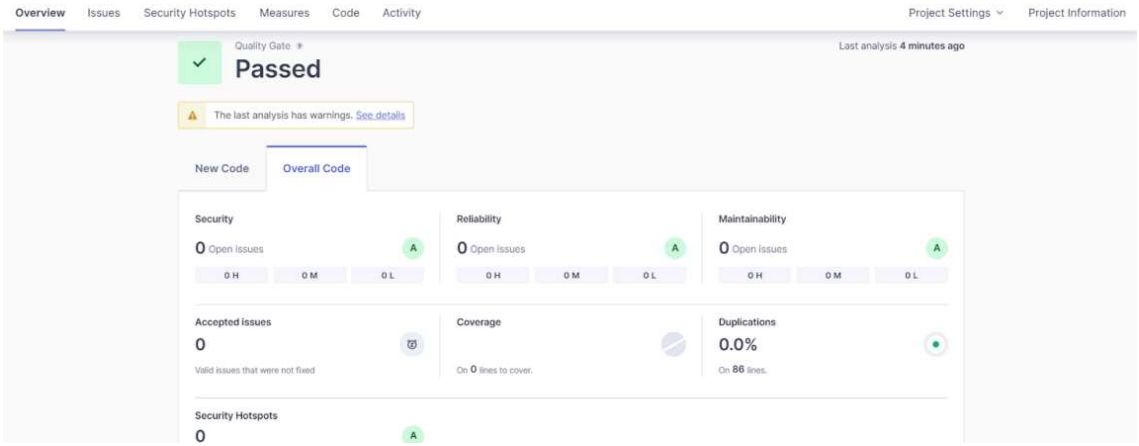
Step 14: Go back to jenkins. Go to the job you had just built and click on Build Now and Check the Console Output



Step 15: Once the build is complete, go back to SonarQube and check the project linked



CONCLUSION :

In this experiment, we successfully integrated Jenkins with SonarQube to perform static application security testing (SAST) on a project. We used Docker to run SonarQube without installing it directly on the system, simplifying the setup process. After configuring Jenkins with the SonarQube Scanner plugin and connecting it to a SonarQube server, we analysed a sample project from GitHub. The analysis demonstrated that the project had no vulnerabilities. This experiment helped us understand how to automate code analysis using Jenkins and SonarQube to ensure the security and quality of the code.