PARSHVANATH CHARITABLE TRUST'S
A. P. SHAH INSTITUTE OF TECHNOLOGY
Department of Information Technology
(NBA Accredited)

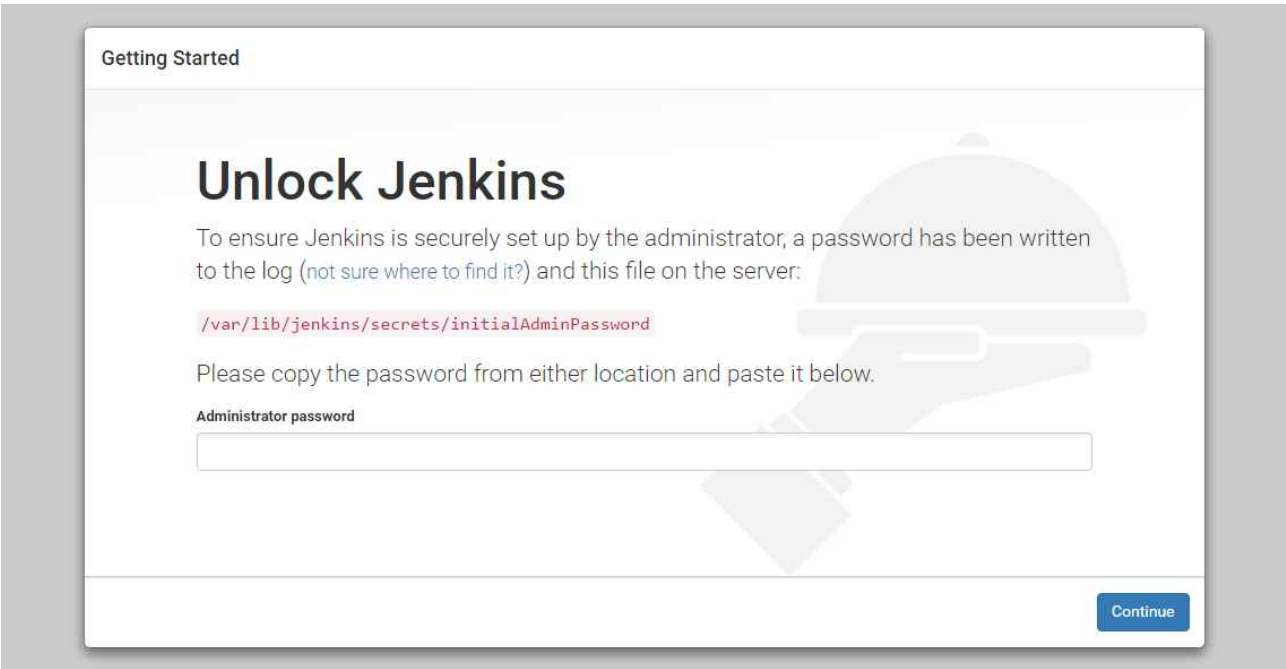
Semester: V
Academic Year: 2024-25
Class / Branch: TE IT
Subject: Advanced Devops Lab (ADL)
Name of Instructor:Prof. Manjusha Kashilkar

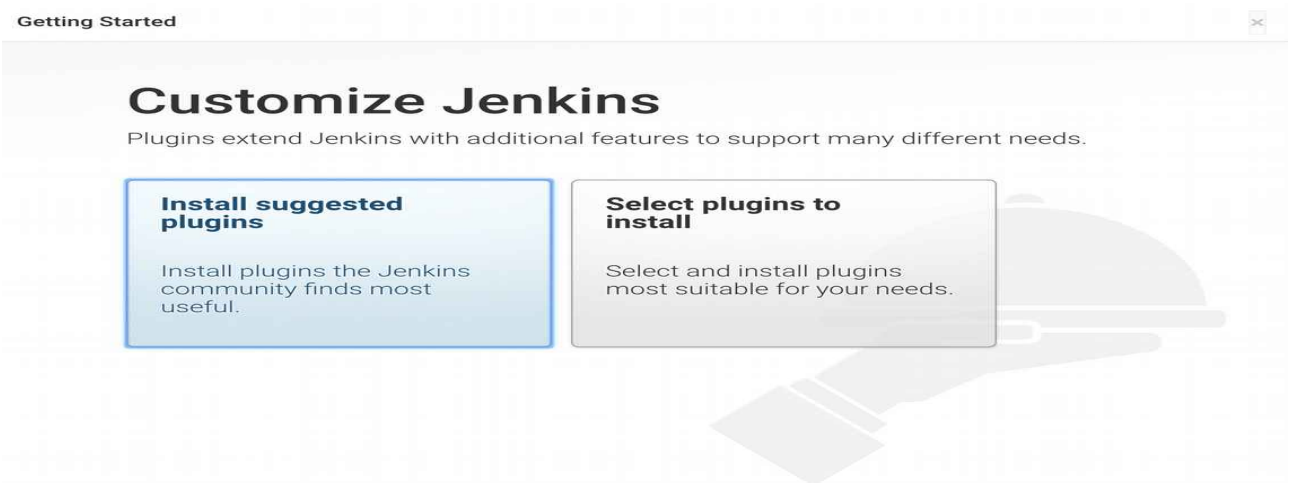
Name of Student:Harsh Prajapati
Student ID:22104188
Date of Submission:30/09/24

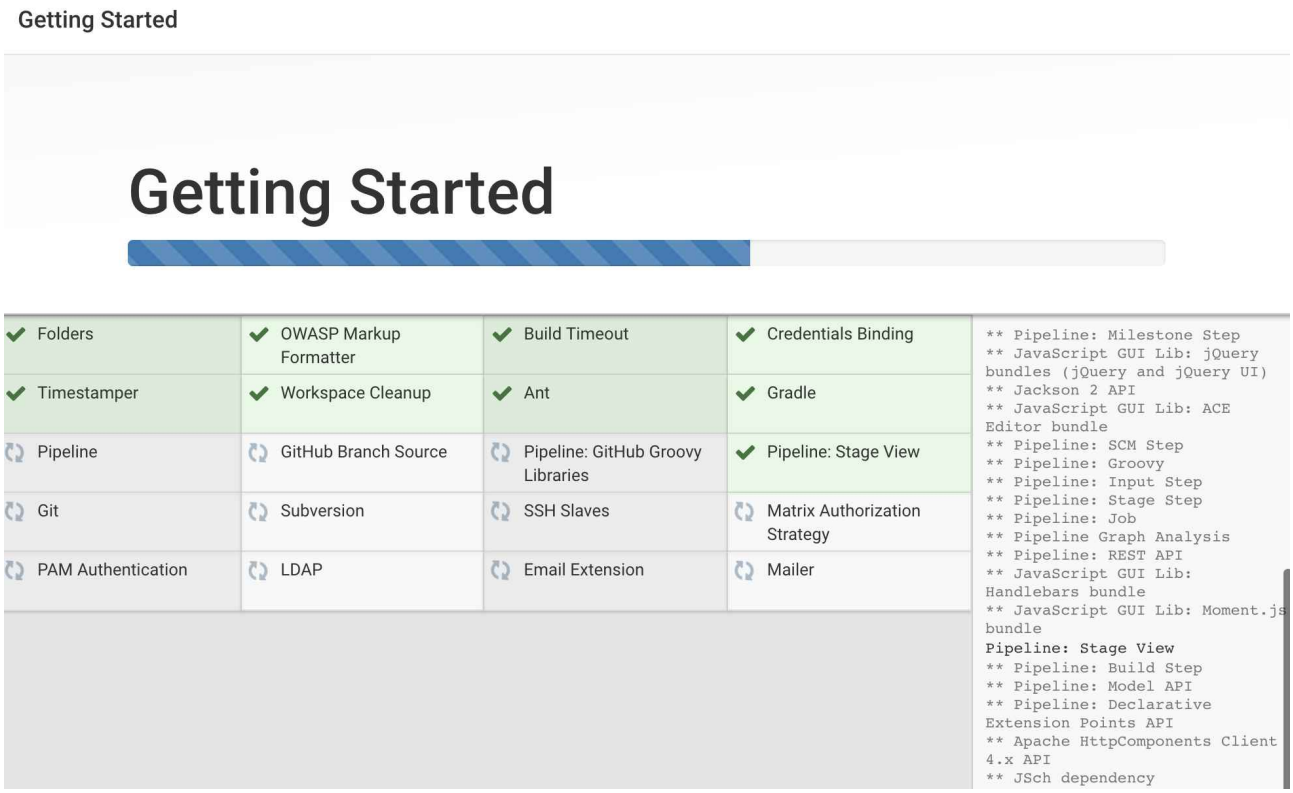
EXPERIMENT NO. 07

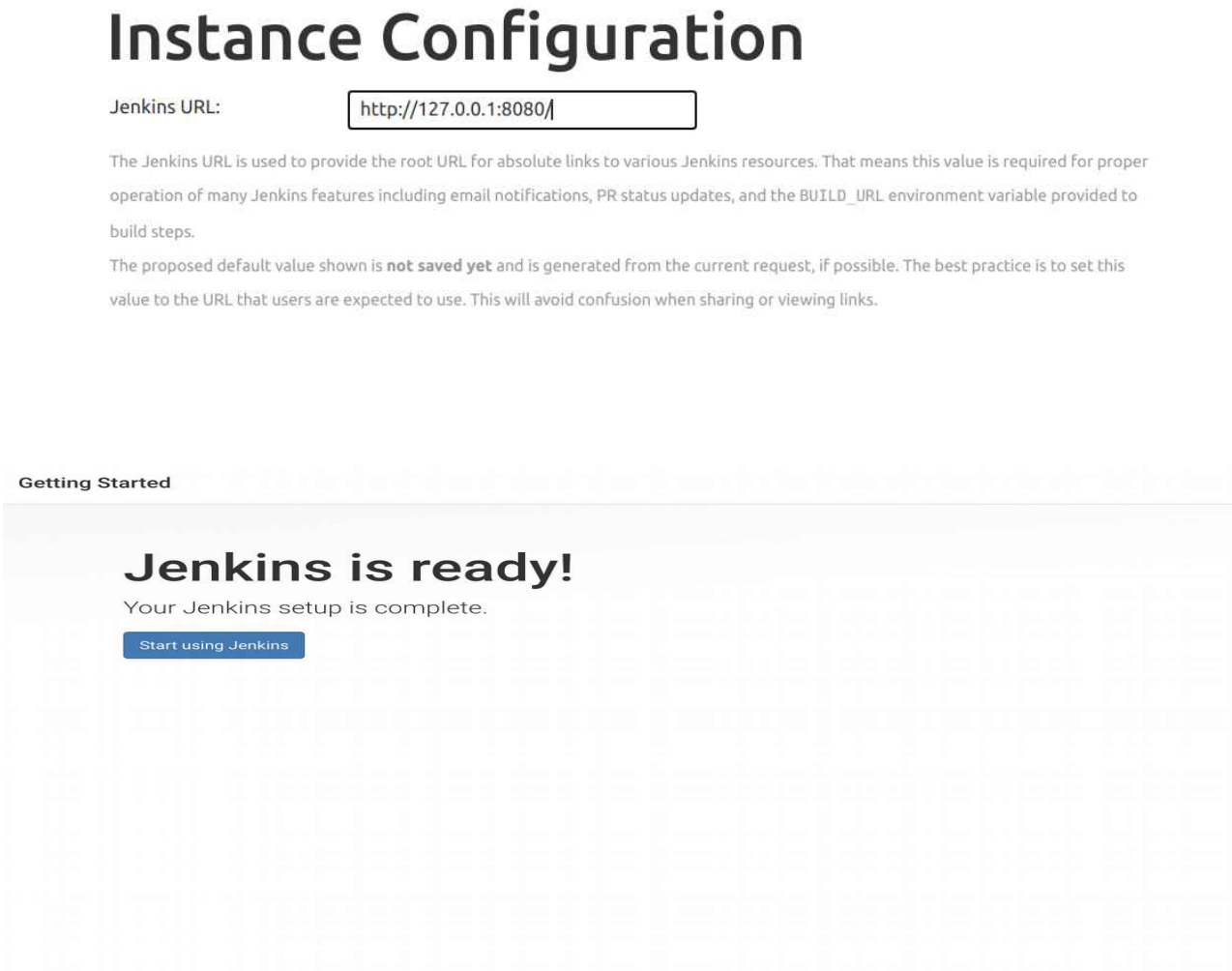
Aim: To understand Static Analysis SAST process and learn to integrate Jenkins SAST to SonarQube/GitLab.

1) Install and configure a Jenkins and SonarQube CICD environment using Docker containers.

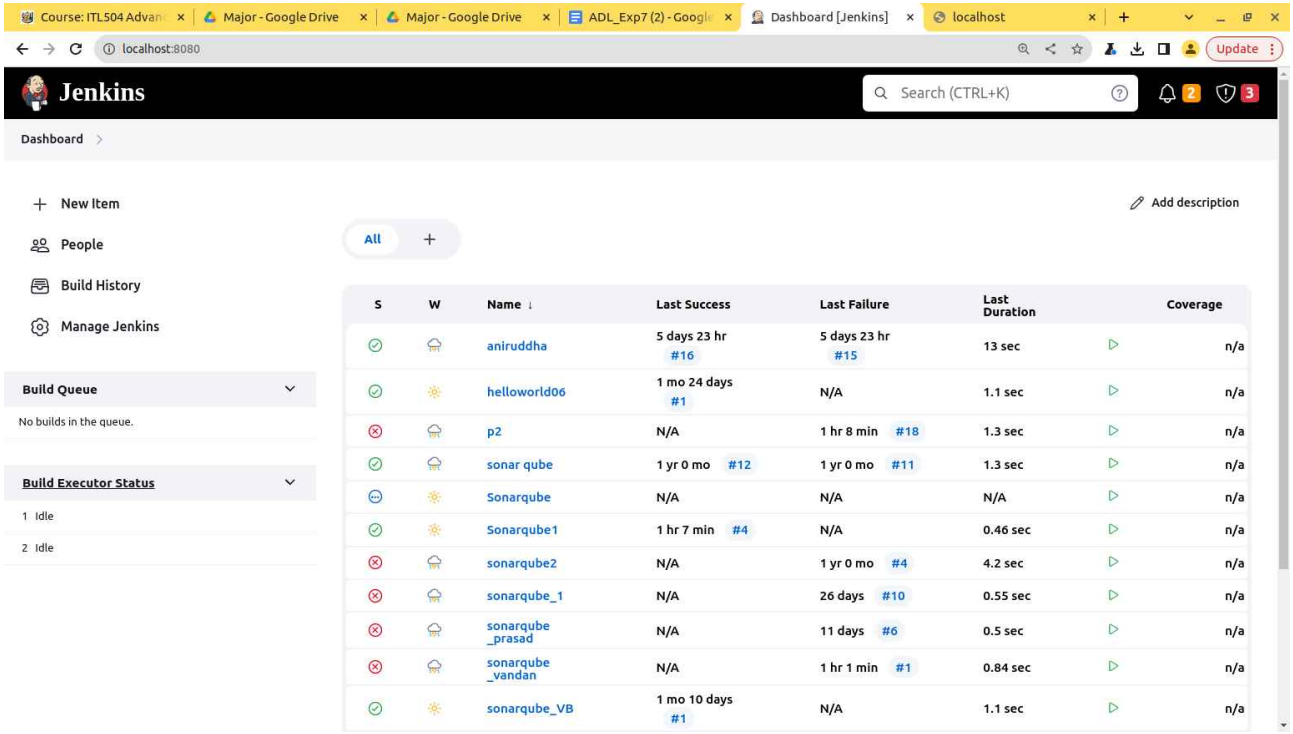



Getting Started
Customize Jenkins
Plugins extend Jenkins with additional features to support many different needs.
Install suggested plugins
Install plugins the Jenkins community finds most useful.
Select plugins to install
Select and install plugins most suitable for your needs.


Getting Started
Getting Started
Folders
OWASP Markup Formatter
Build Timeout
Credentials Binding
Timestamper
Workspace Cleanup
Ant
Gradle
Pipeline
GitHub Branch Source
Pipeline: GitHub Groovy Libraries
Pipeline: Stage View
Git
Subversion
SSH Slaves
Matrix Authorization Strategy
PAM Authentication
LDAP
Email Extension
Mailer
** Pipeline: Milestone Step
** JavaScript GUI Lib: jQuery bundles (jQuery and jQuery UI)
** Jackson 2 API
** JavaScript GUI Lib: ACE Editor bundle
** Pipeline: SCM Step
** Pipeline: Groovy
** Pipeline: Input Step
** Pipeline: Stage Step
** Pipeline: Job
** Pipeline Graph Analysis
** Pipeline: REST API
** JavaScript GUI Lib: Handlebars bundle
** JavaScript GUI Lib: Moment.js bundle
Pipeline: Stage View
** Pipeline: Build Step
** Pipeline: Model API
** Pipeline: Declarative Extension Points API
** Apache HttpComponents Client 4.x API
** JSch dependency



Click Start using Jenkins to visit the main Jenkins dashboard:



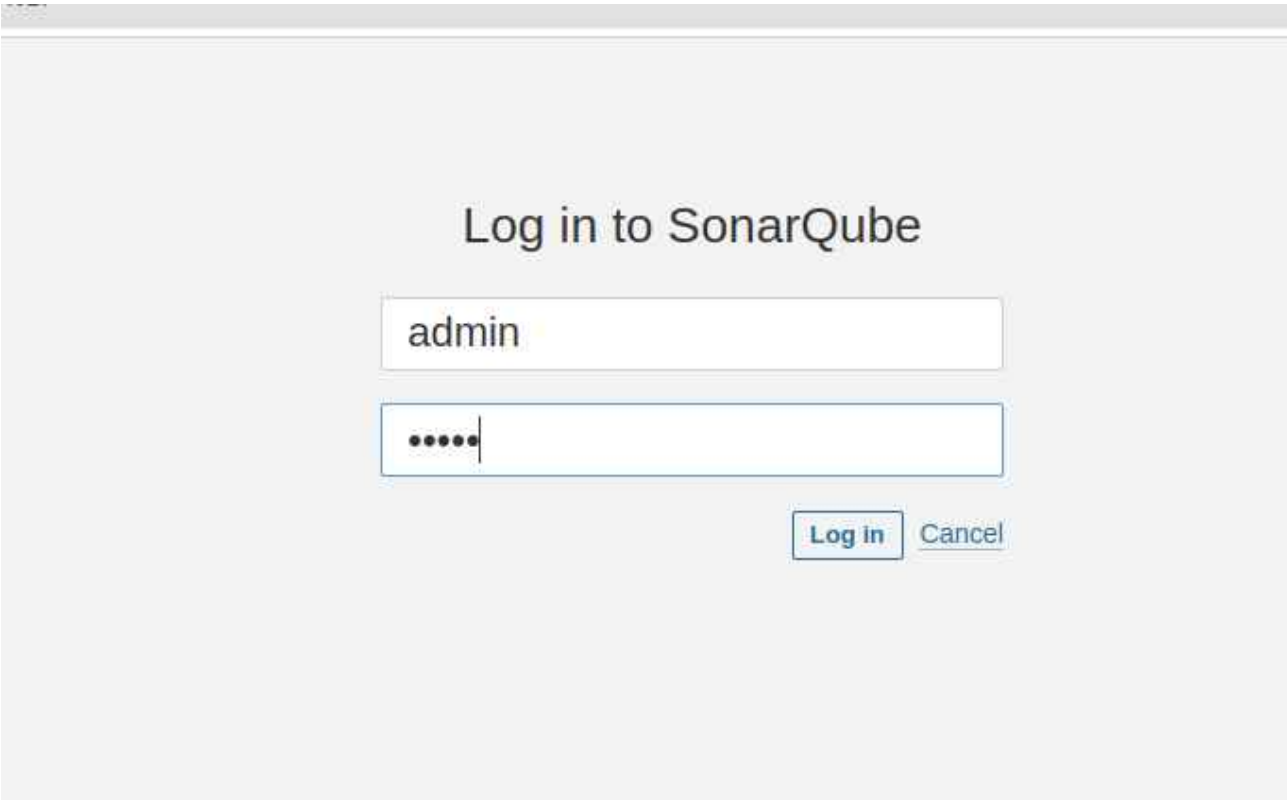
SonarQube Setup

Before proceeding with the integration, we will setup SonarQube Instance. we are using SonarQube Docker Container.

manjusha@apsit:~$docker run -d -p 9000:9000 sonarqube

```
root@ubuntu:/home/manasi# docker run -d -p 9000:9000 sonarqube
Unable to find image 'sonarqube:latest' locally
latest: Pulling from library/sonarqube
9621f1afde84: Pull complete
1220b1fb64e6: Pull complete
f0a3b7127ede: Pull complete
Digest: sha256:9ca40ae23bb2228a6c4cc8c20de41fcd72a8ed7358331b4bd5910cd20dcee995
Status: Downloaded newer image for sonarqube:latest
ed54d42e5aa9a31f212c204e48e47b80e63478abbf7960ce65c6c56a99a35e24
root@ubuntu:/home/manasi#
```

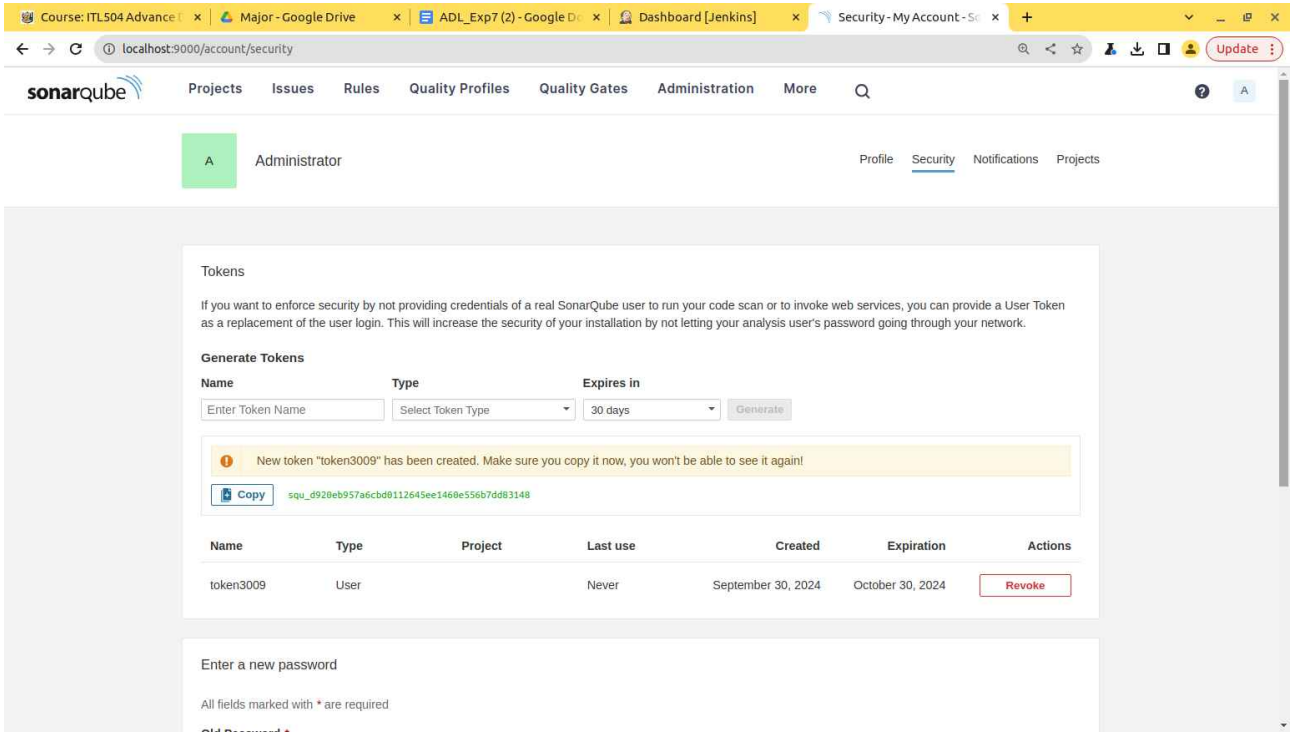
In the above command, we are forwarding port 9000 of the container to the port 9000 of the host machine as SonarQube is will run on port 9000. Then, from the browser, enter http://localhost:9000. After That, you will see the SonarQube is running. Then, login using default credentials (admin:admin).



Generate User Token

Now, we need to get the SonarQube user token to make connection between Jenkins and SonarQube. For the same, go to **Administration> User > My Account > Security** and then, from the bottom of the page you can create new tokens by clicking the Generate Button. Copy the Token and keep it safe.

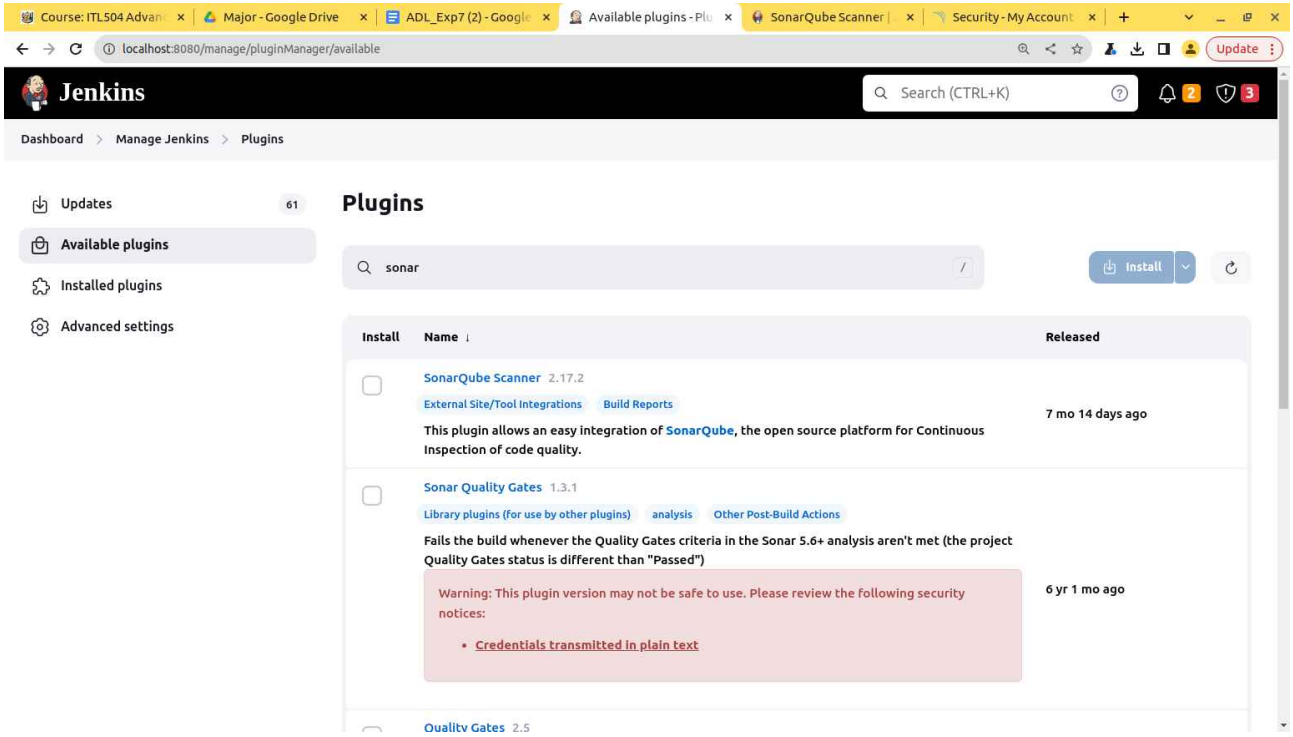
C96798e9bd081e117189b516c868ddb7d87ee785 SonarQube



2) Configure Jenkins with the SonarQube Scanner plugin for automated static code analysis.

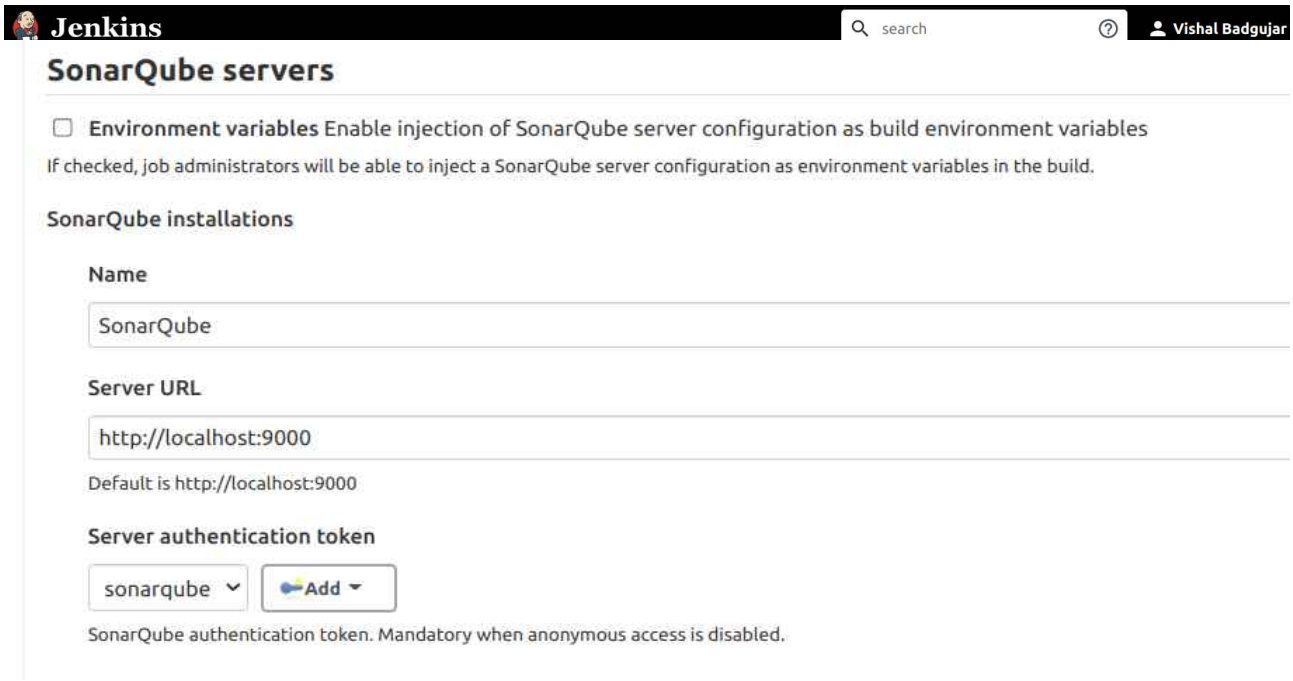
Jenkins Setup for SonarQube

Before all, we need to install the SonarQube Scanner plugin in Jenkins. For the same, go to **Manage Jenkins > Plugin Manager > Available.** From here, type SonarQube Scanner then select and install.

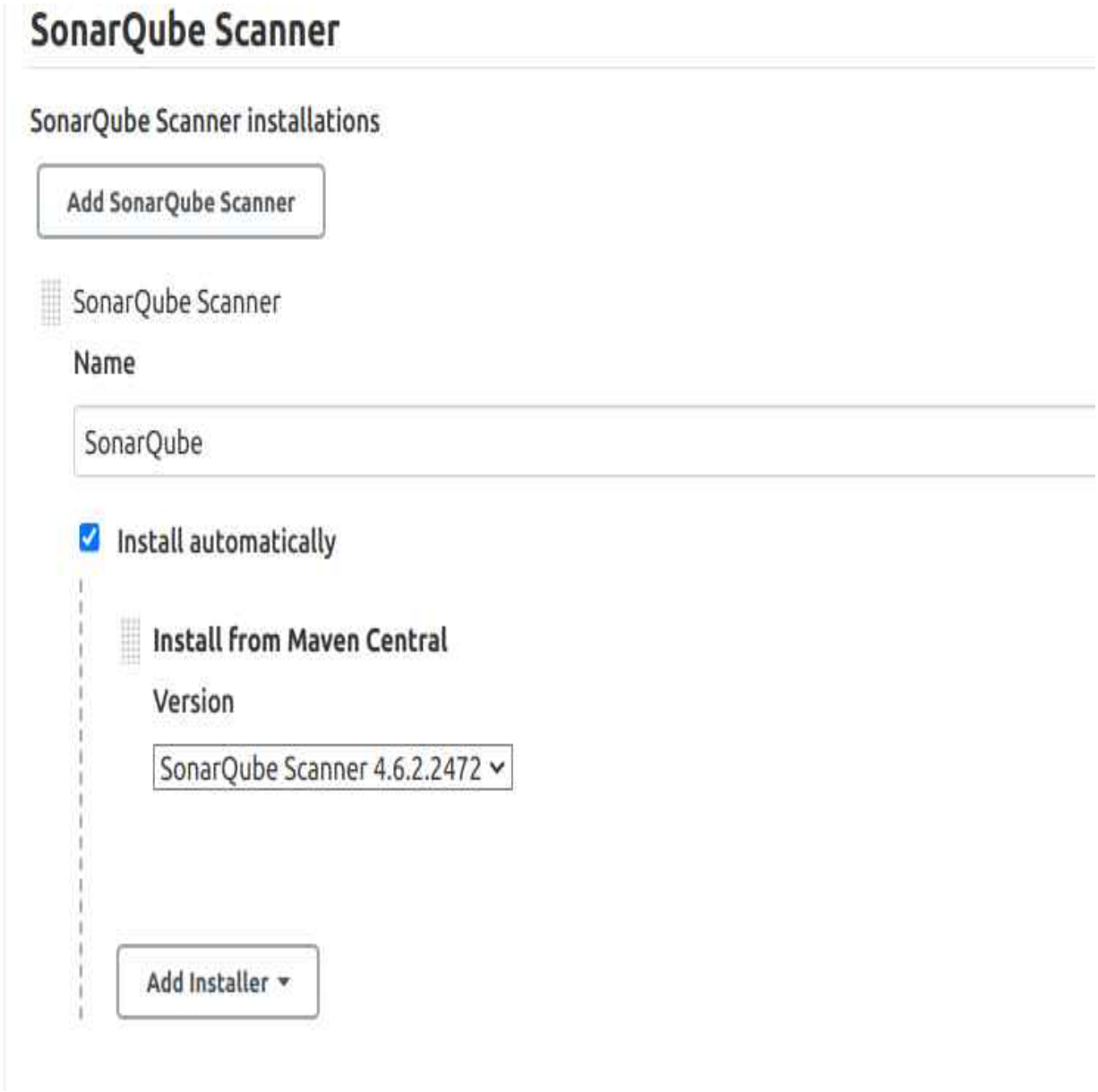


Tool Configuration SonarQube Scanner

Now, we need to configure the Jenkins plugin for SonarQube Scanner to make a connection with the SonarQube Instance. For that, got to **Manage Jenkins > Configure System > SonarQube Server.** Then, Add SonarQube. In this, give the Installation Name, Server URL then Add the Authentication token in the Jenkins Credential Manager and select the same in the configuration.

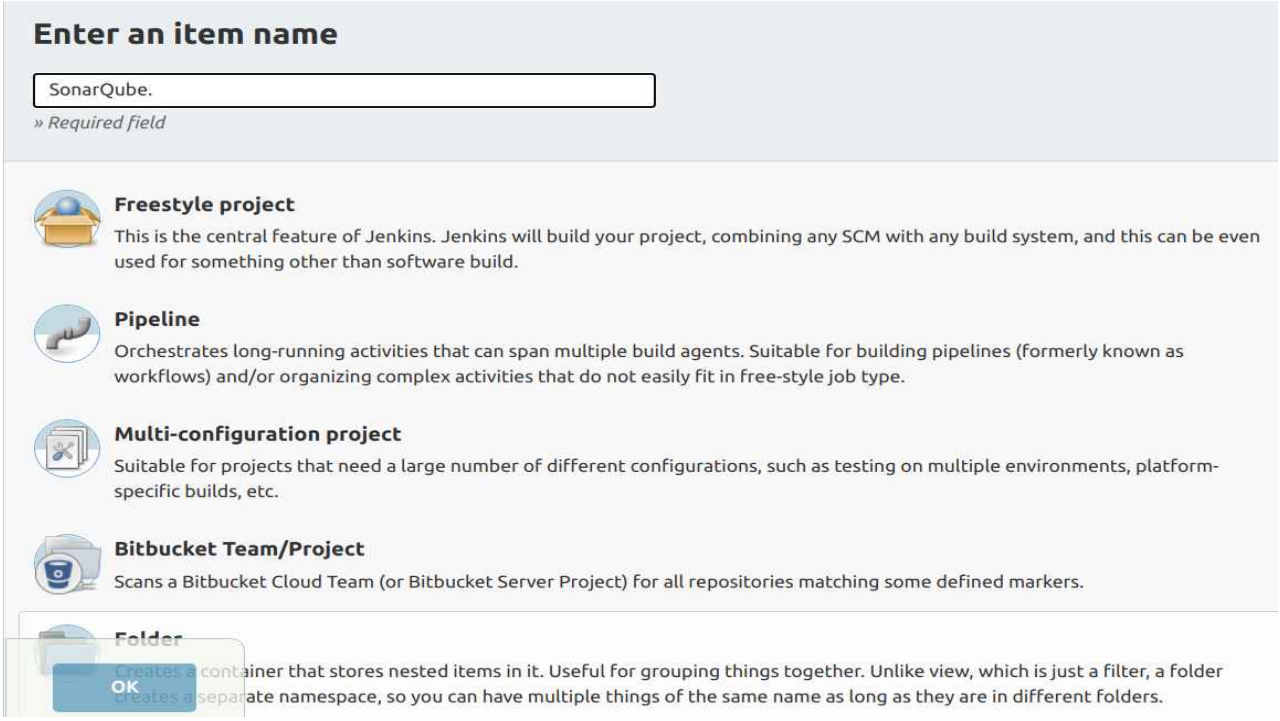


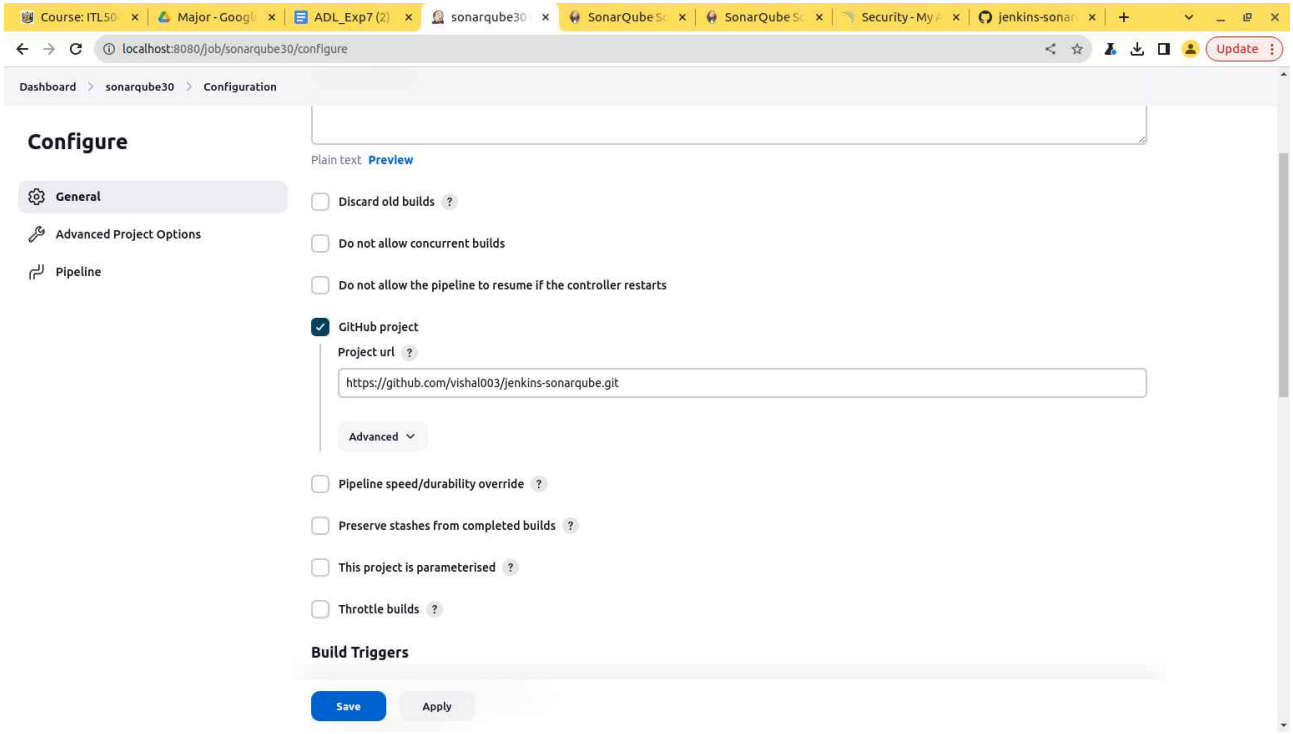
Then, we need to set-up the SonarQube Scanner to scan the source code in the various stage. For the same, go to **Manage Jenkins > Global Tool Configuration > SonarQube Scanner**. Then, Click **Add SonarQube Scanner Button**. From there, give some name of the scanner type and **Add Installer** of your choice. In this case, I have selected SonarQube Scanner from Maven Central.



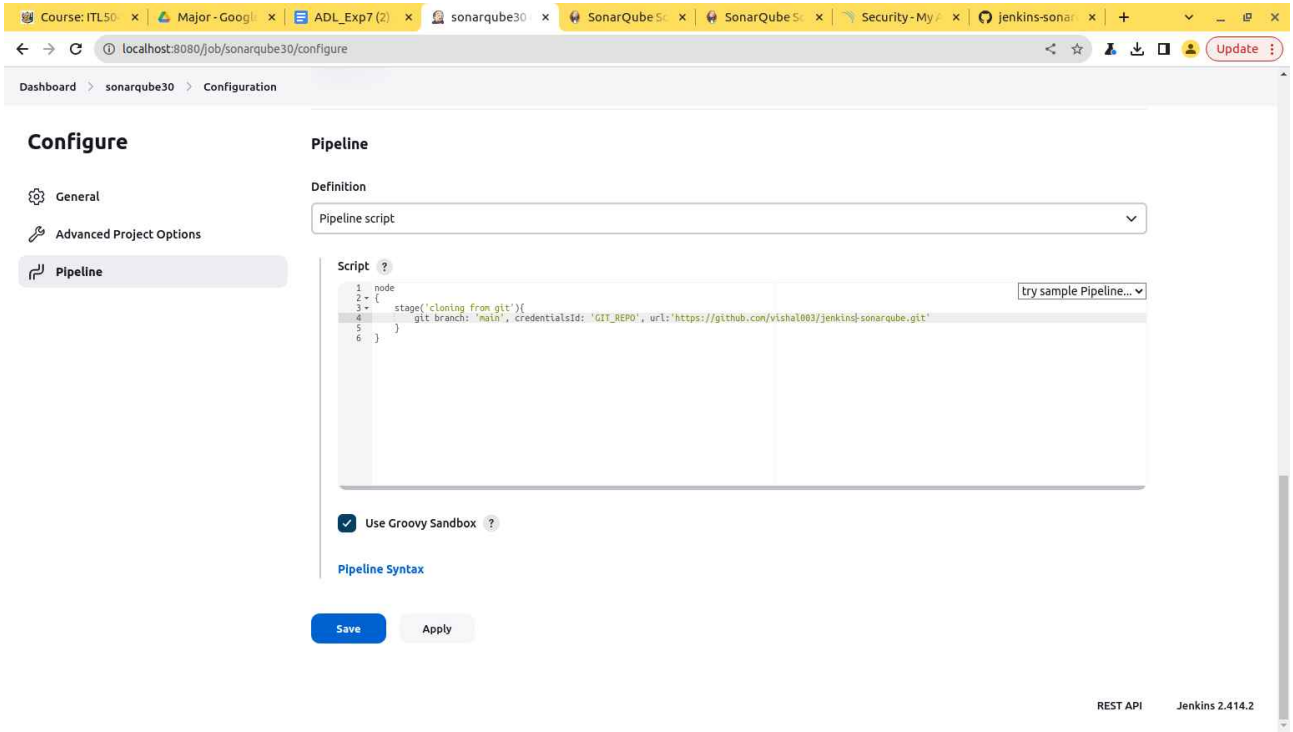
SonarQube Scanner in Jenkins Pipeline

Now, It's time to integrate the SonarQube Scanner in the Jenkins Pipeline. For the same, we are going to add one more stage in the Jenkinsfile called SonarQube and inside that, I am adding the following settings and code.

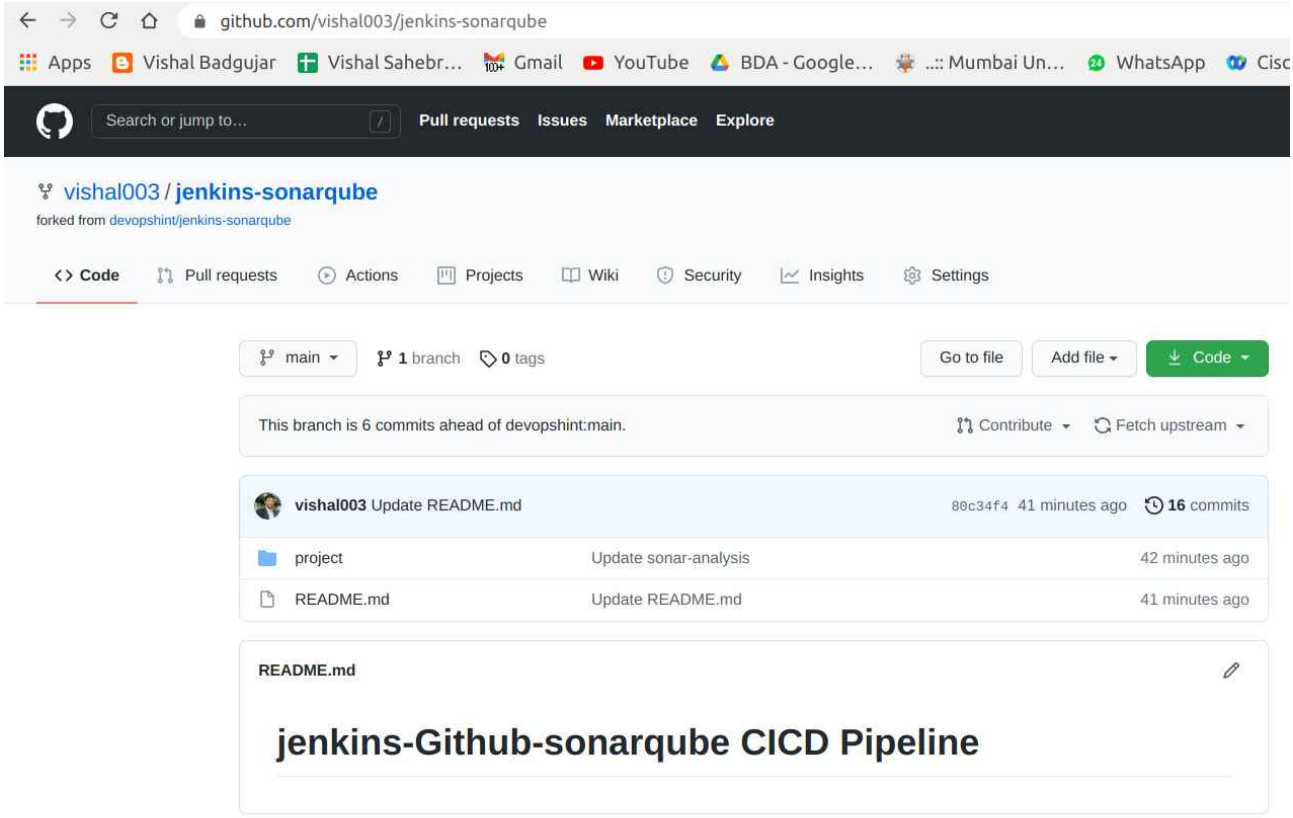




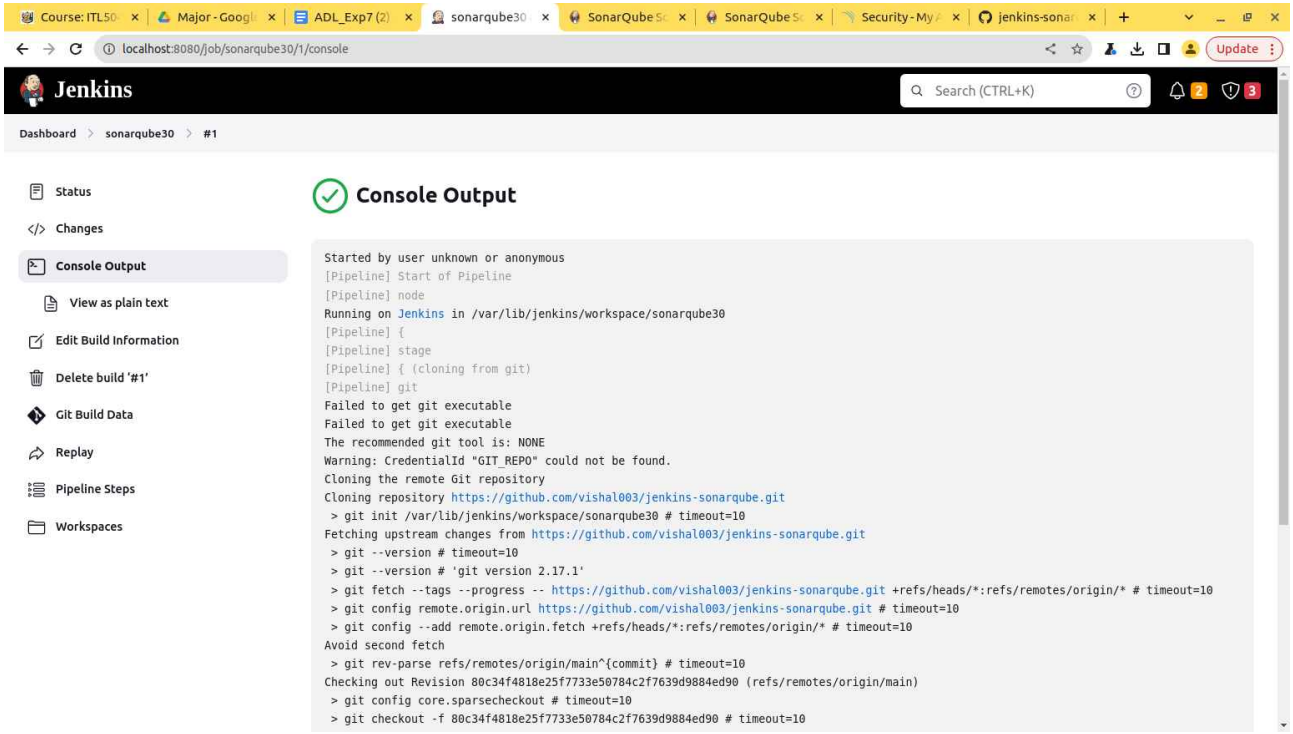
Github Configuration in Jenkins Pipeline



Git Clonning into Jenkins



Github Repository Contents



Successfully Build Github Repository in Jenkins

Pre-requiste required for Integration settings of Jenkins SAST with SonarQube we have done here successfully, now in order to Integrate of Jenkins CICD with SonarQube with the help of sample JAVA program we will implement in next experiment.

Conclusion: In this experiment we have succesfully installed jenkins and SonarQube and