Lab Assignment 6

AIM: To perform static analysis on Python programs using SonarQube SAST process.

LO4: To identify and remediate application vulnerabilities earlier and help integrate security in the development process using SAST Techniques.

THEORY:

SonarQube:

Overview: SonarQube is an open-source platform for continuous inspection of code quality. It is used to analyze and measure code quality and security issues in a codebase.

Features:

Static Code Analysis: SonarQube scans source code to identify bugs, code smells, and security vulnerabilities.

Continuous Integration: It integrates seamlessly with CI/CD pipelines, providing automated code analysis during the development process.

Security Analysis: While it primarily focuses on code quality, it also has some security rules to catch common security issues.

Maintainability Metrics: SonarQube provides maintainability metrics and helps teams understand code complexity and maintainability.

Dashboard and Reporting: It offers dashboards and reports for tracking code quality and issues over time.

Use Case: SonarQube is used for improving code quality, maintainability, and to catch some common code security issues. It's more about general code quality and development best practices.

SAST (Static Application Security Testing):

Overview: SAST is a security testing method that analyzes source code, bytecode, or binary code for vulnerabilities without executing the application. It is primarily focused on identifying security issues and vulnerabilities in the code.

Features:

Code Scanning: SAST tools examine the source code or compiled code to identify potential security vulnerabilities, such as SQL injection, cross-site scripting, and more.

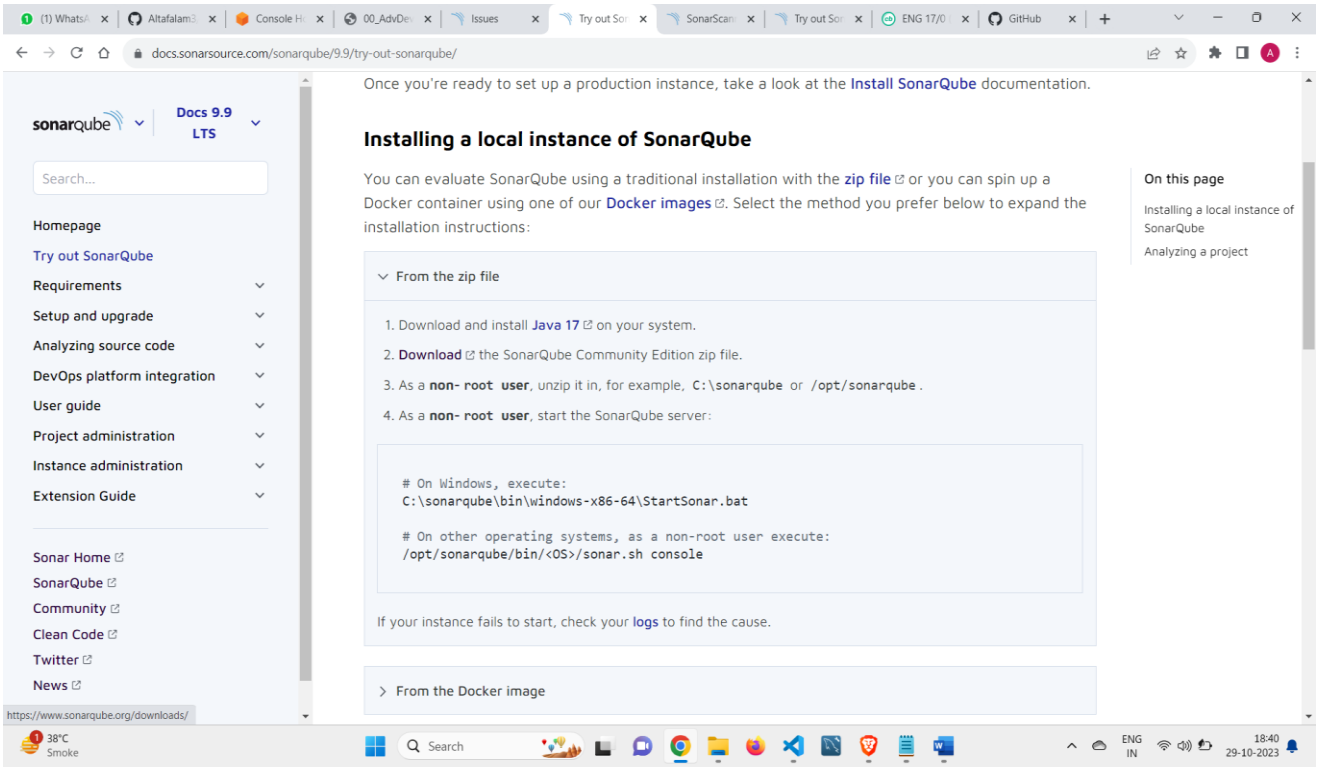
Early Detection: SAST is used early in the development process to find security issues before they can be exploited.

Language Support: SAST tools support various programming languages and frameworks.

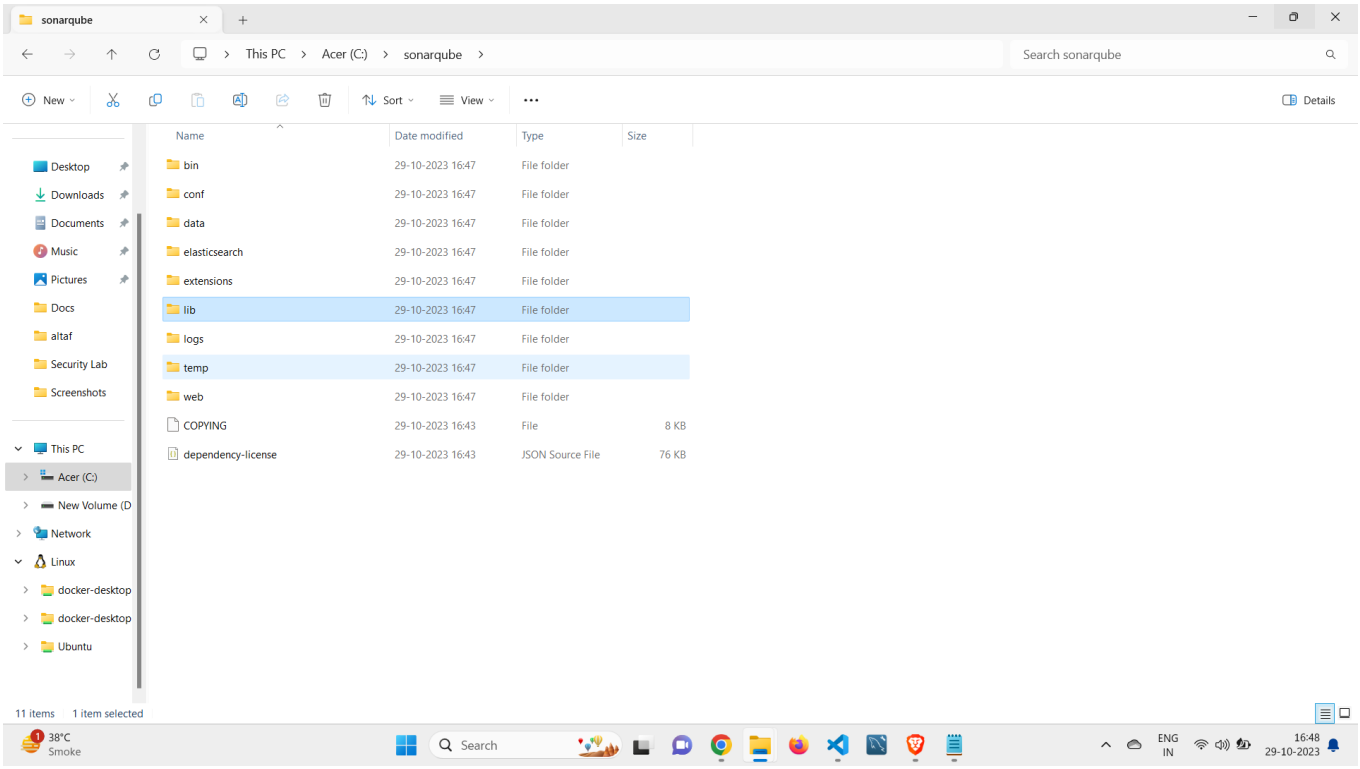
Integration: They can be integrated into CI/CD pipelines to automatically scan code before deployment.

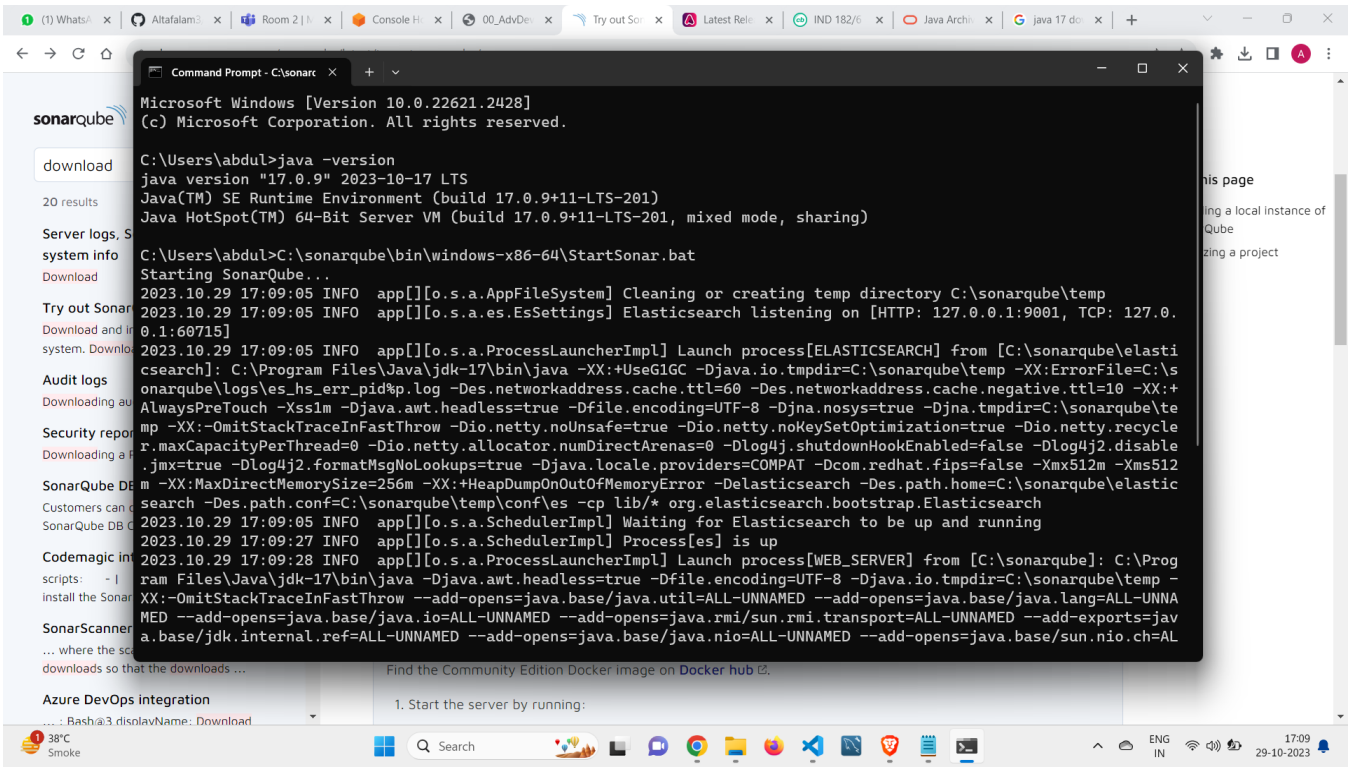
Use Case: SAST is used for finding and fixing security vulnerabilities in code. It helps secure applications by identifying potential security threats early in the development lifecycle.

1. INSTALL sonarqube and sonarscanner zip file from https://docs.sonarsource.com/sonarqube/latest/analyzingsourcecode/scanners/sonarscanner/ and set up config file as given in docs.

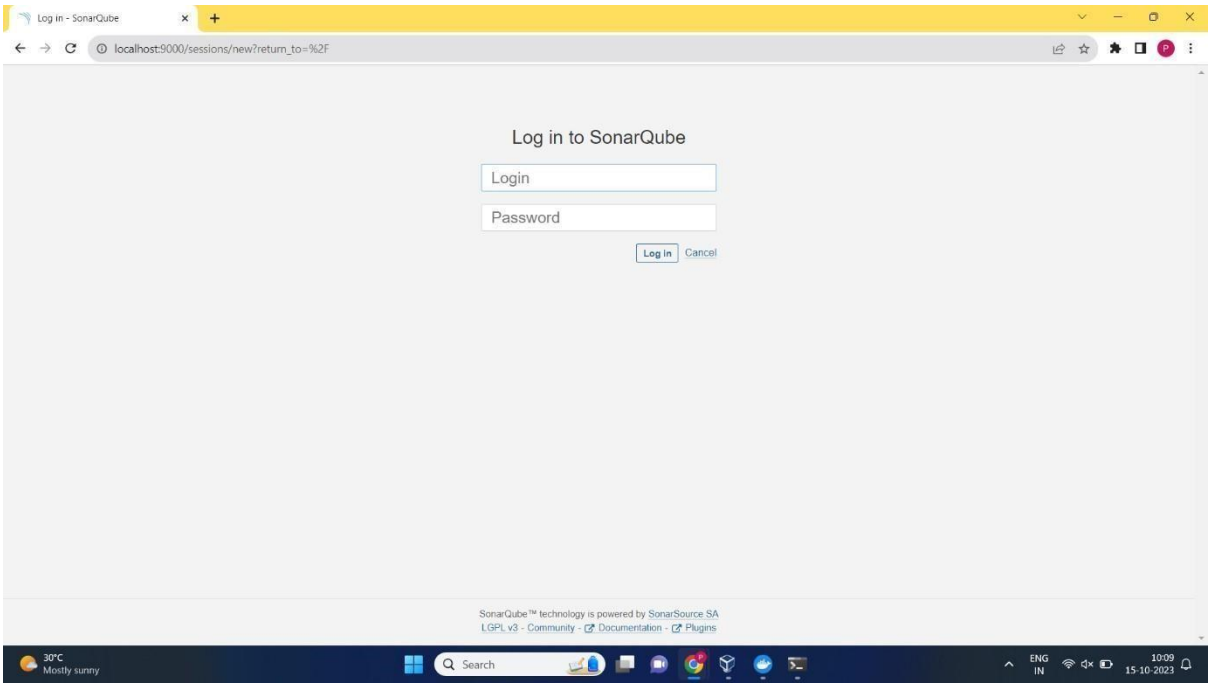


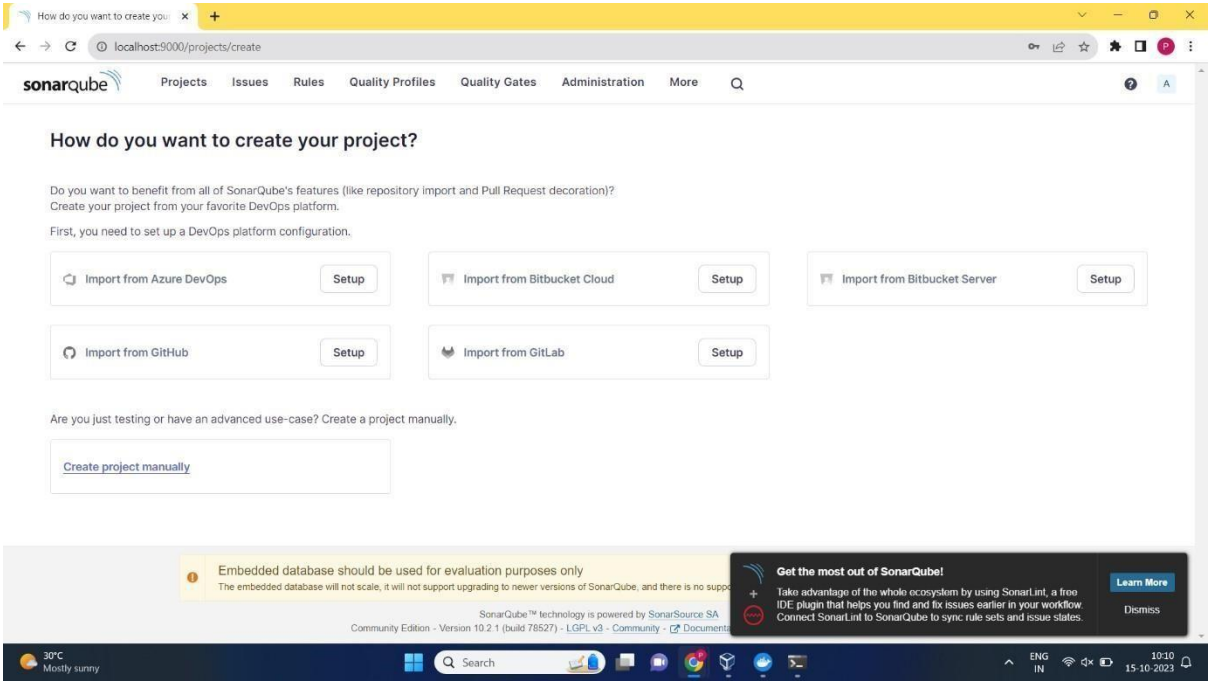
Unzip and save in C:/sonarqube



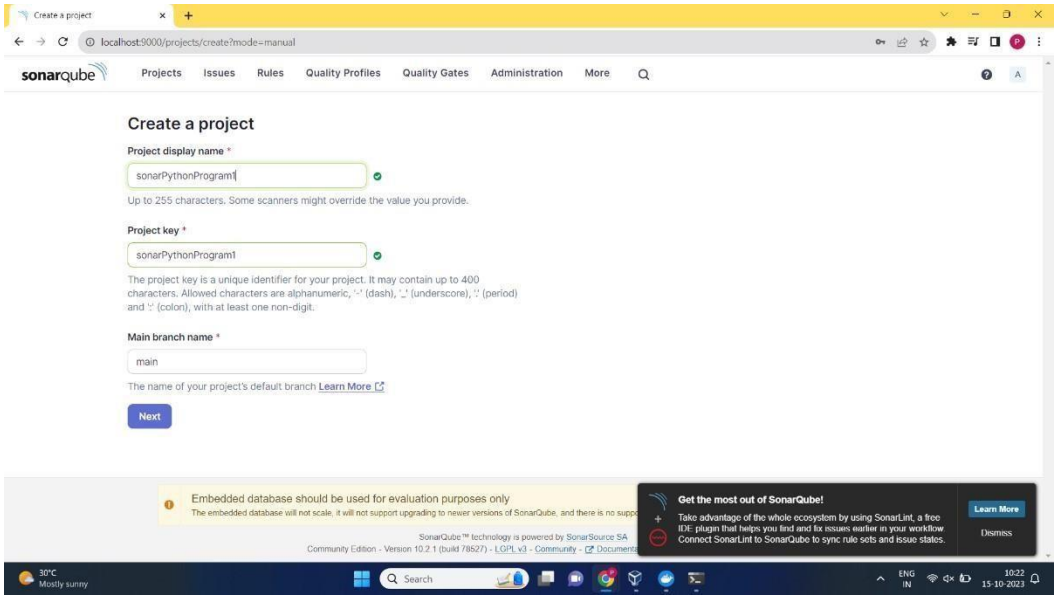


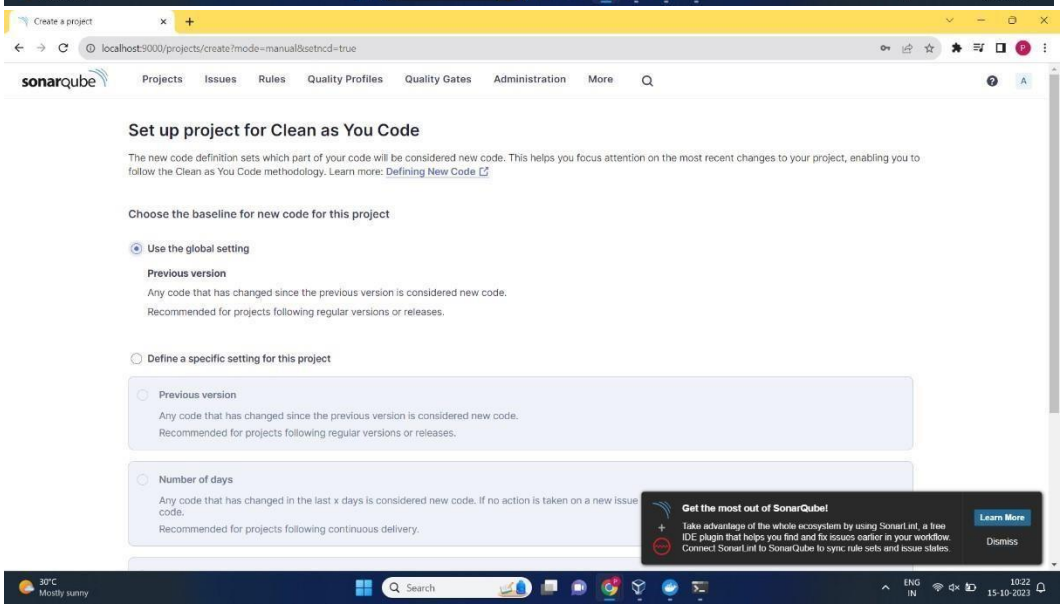
2. Open http://localhost:9000 on the browser. Enter login and password both as “admin” and then set up new password.





3. Create a project


Create a project
localhost:9000/projects/create?mode=manual
sonarqube
Projects
Issues
Rules
Quality Profiles
Quality Gates
Administration
More
Create a project
Project display name *
sonarPythonProgram1
Up to 255 characters. Some scanners might override the value you provide.
Project key *
sonarPythonProgram1
The project key is a unique identifier for your project. It may contain up to 400 characters. Allowed characters are alphanumeric, '-' (dash), '_' (underscore), '.' (period) and ':' (colon), with at least one non-digit.
Main branch name *
main
The name of your project's default branch Learn More
Next
Embedded database should be used for evaluation purposes only
Get the most out of SonarQube!
Take advantage of the whole ecosystem by using SonarLint, a free IDE plugin that helps you find and fix issues earlier in your workflow. Connect SonarLint to SonarQube to sync rule sets and issue states.
Learn More
Dismiss
SonarQube™ technology is powered by SonarSource SA
Community Edition - Version 10.2.1 (build 78527) - LGPL v3 - Community - Documenta
30°C
Mostly sunny
Search
ENG
IN
10:22
15-10-2023


Create a project
localhost:9000/projects/create?mode=manual&setncd=true
sonarqube
Projects
Issues
Rules
Quality Profiles
Quality Gates
Administration
More
Set up project for Clean as You Code
The new code definition sets which part of your code will be considered new code. This helps you focus attention on the most recent changes to your project, enabling you to follow the Clean as You Code methodology. Learn more: Defining New Code
Choose the baseline for new code for this project
Use the global setting
Previous version
Any code that has changed since the previous version is considered new code.
Recommended for projects following regular versions or releases.
Define a specific setting for this project
Previous version
Any code that has changed since the previous version is considered new code.
Recommended for projects following regular versions or releases.
Number of days
Any code that has changed in the last x days is considered new code. If no action is taken on a new issue
code.
Recommended for projects following continuous delivery.
Get the most out of SonarQube!
Take advantage of the whole ecosystem by using SonarLint, a free IDE plugin that helps you find and fix issues earlier in your workflow. Connect SonarLint to SonarQube to sync rule sets and issue states.
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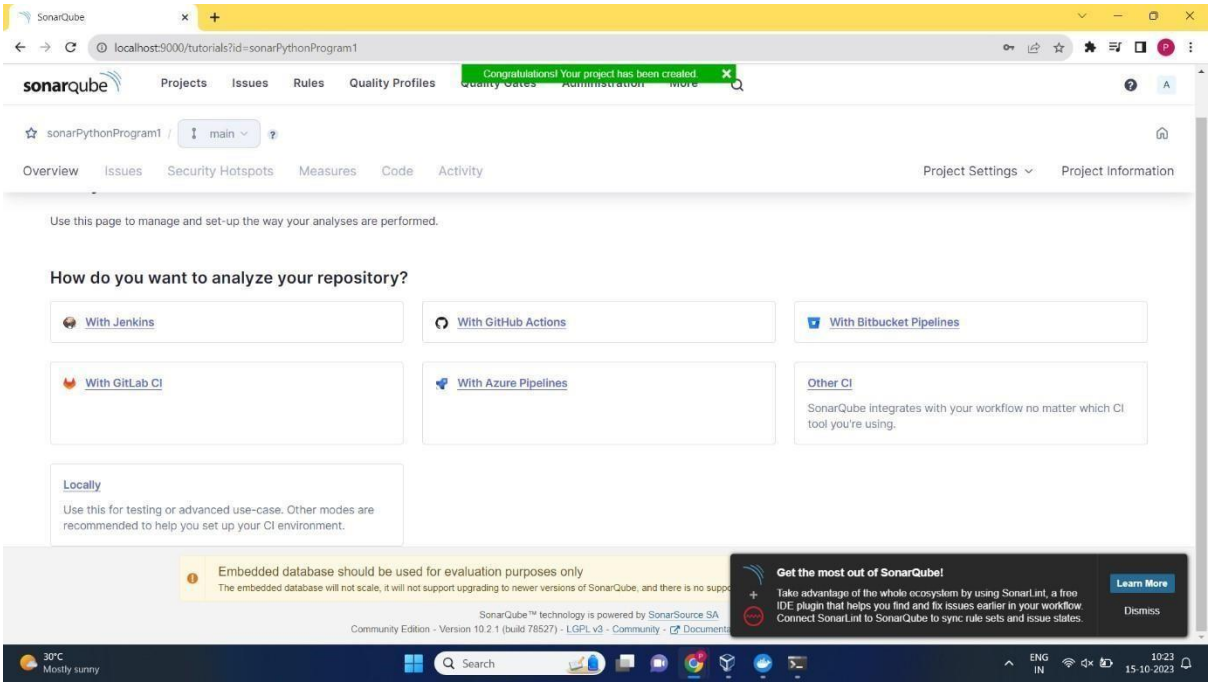
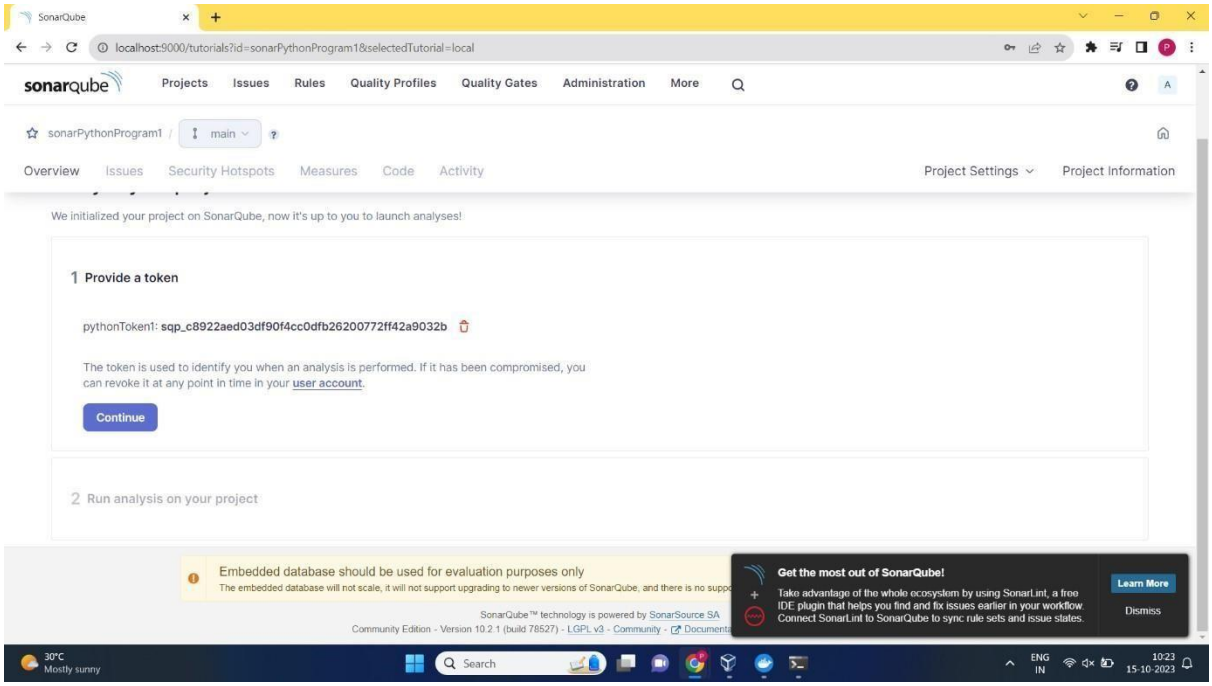
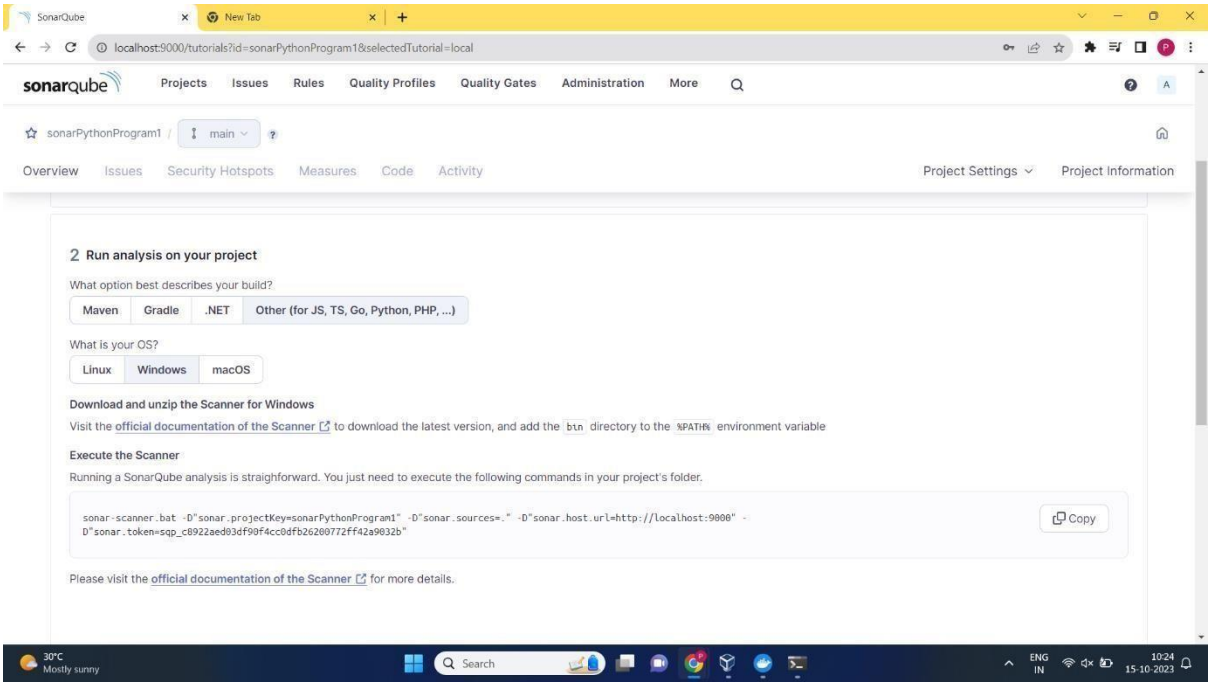
Mostly sunny
Search
ENG
IN
10:22
15-10-2023

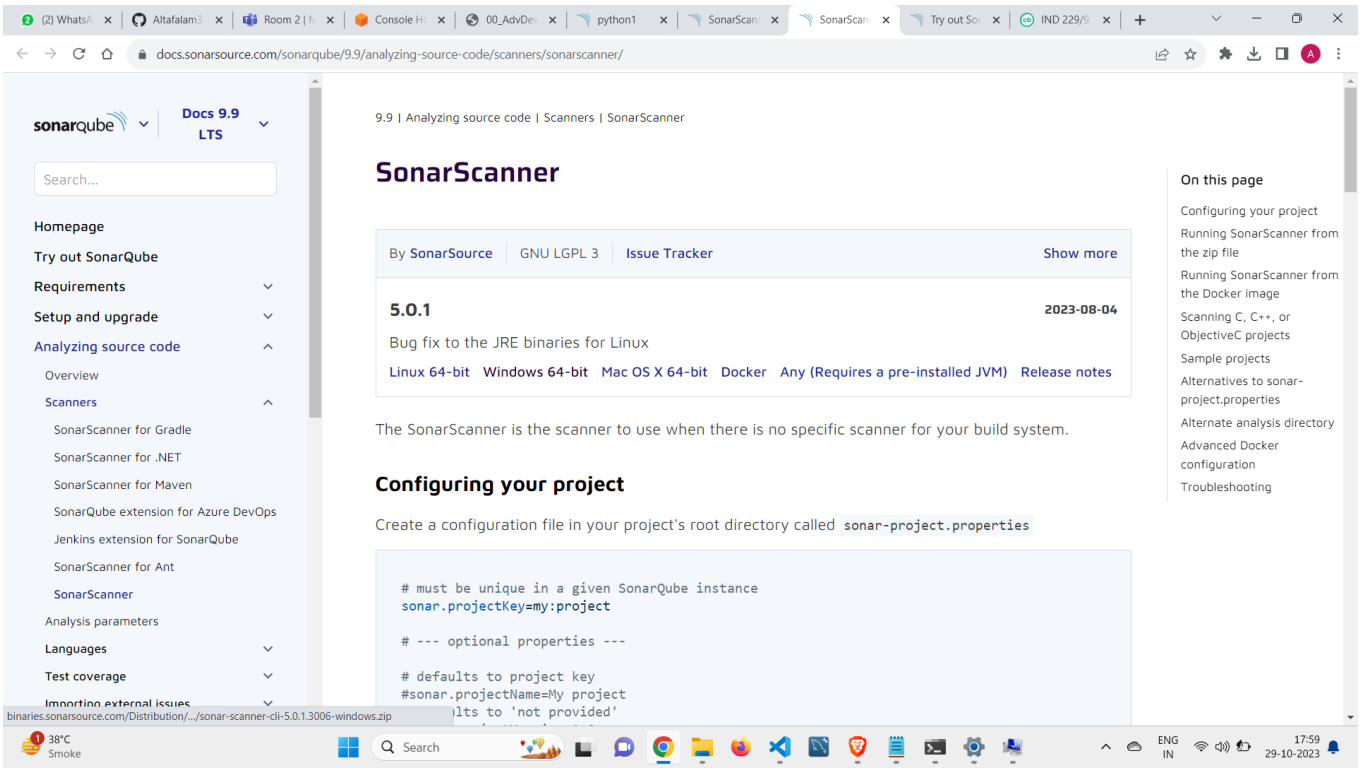


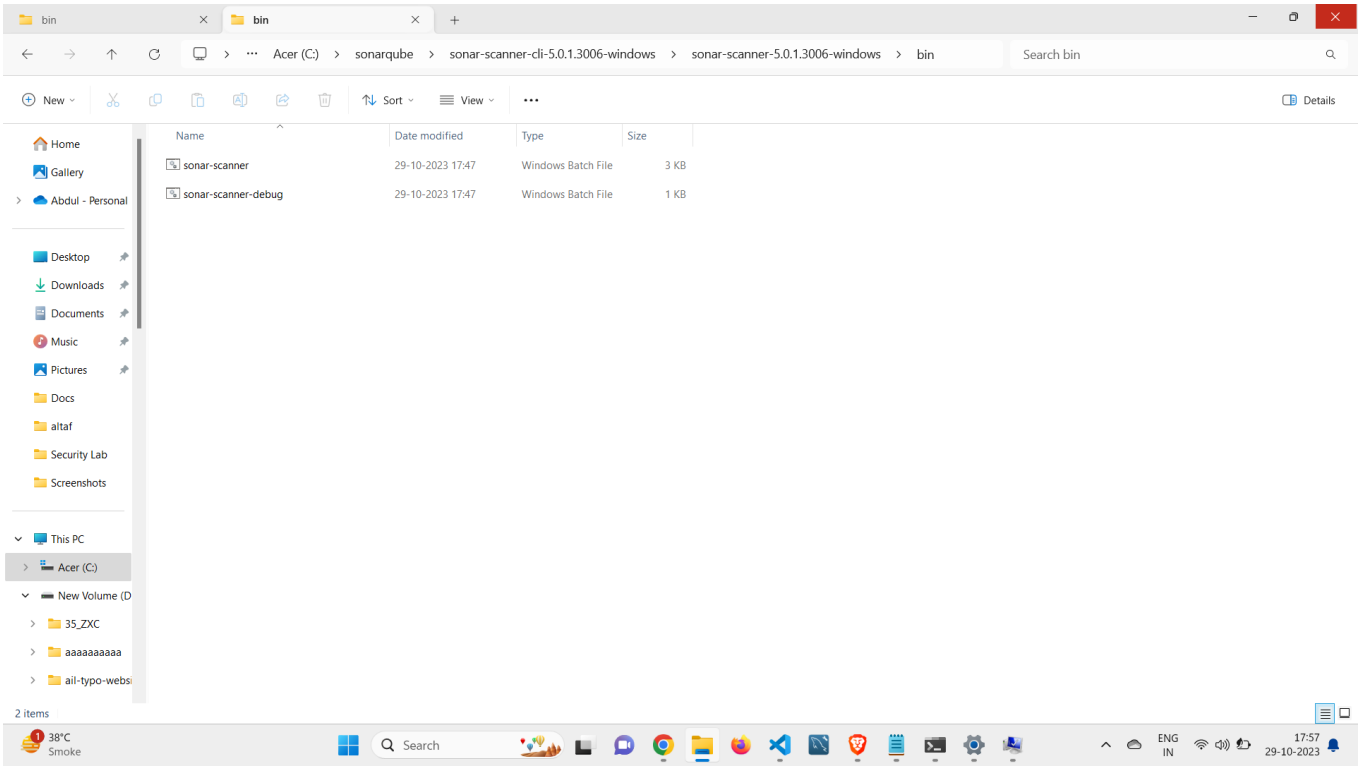
4. Provide token



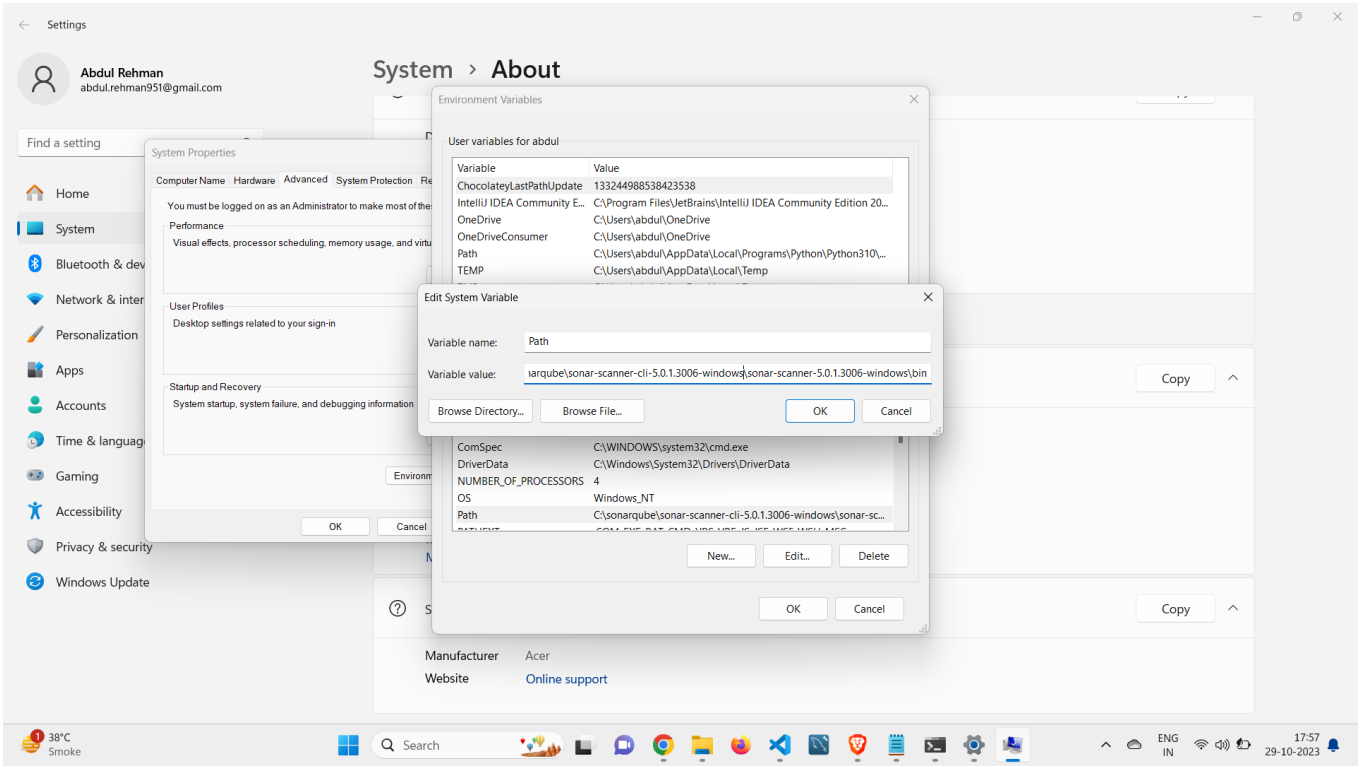


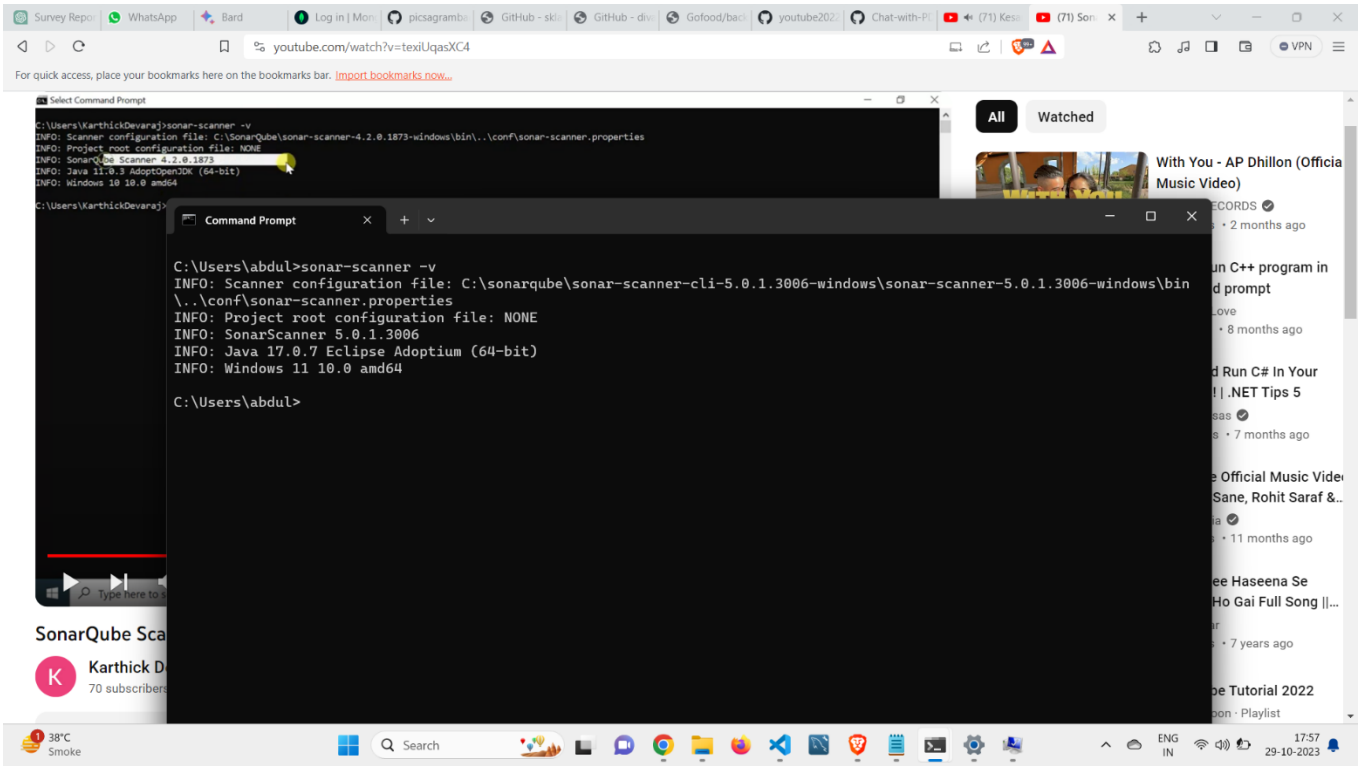
5. Install and setup sonar scanner cli



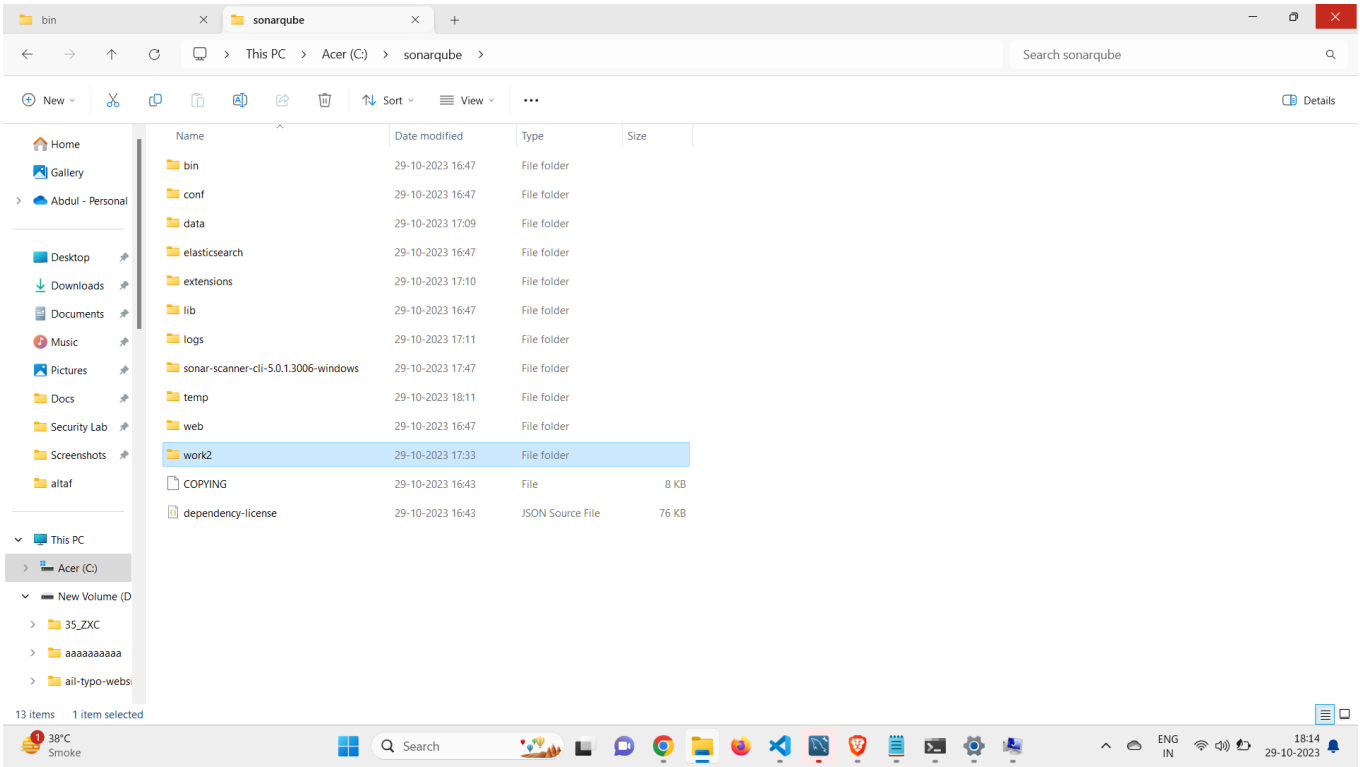


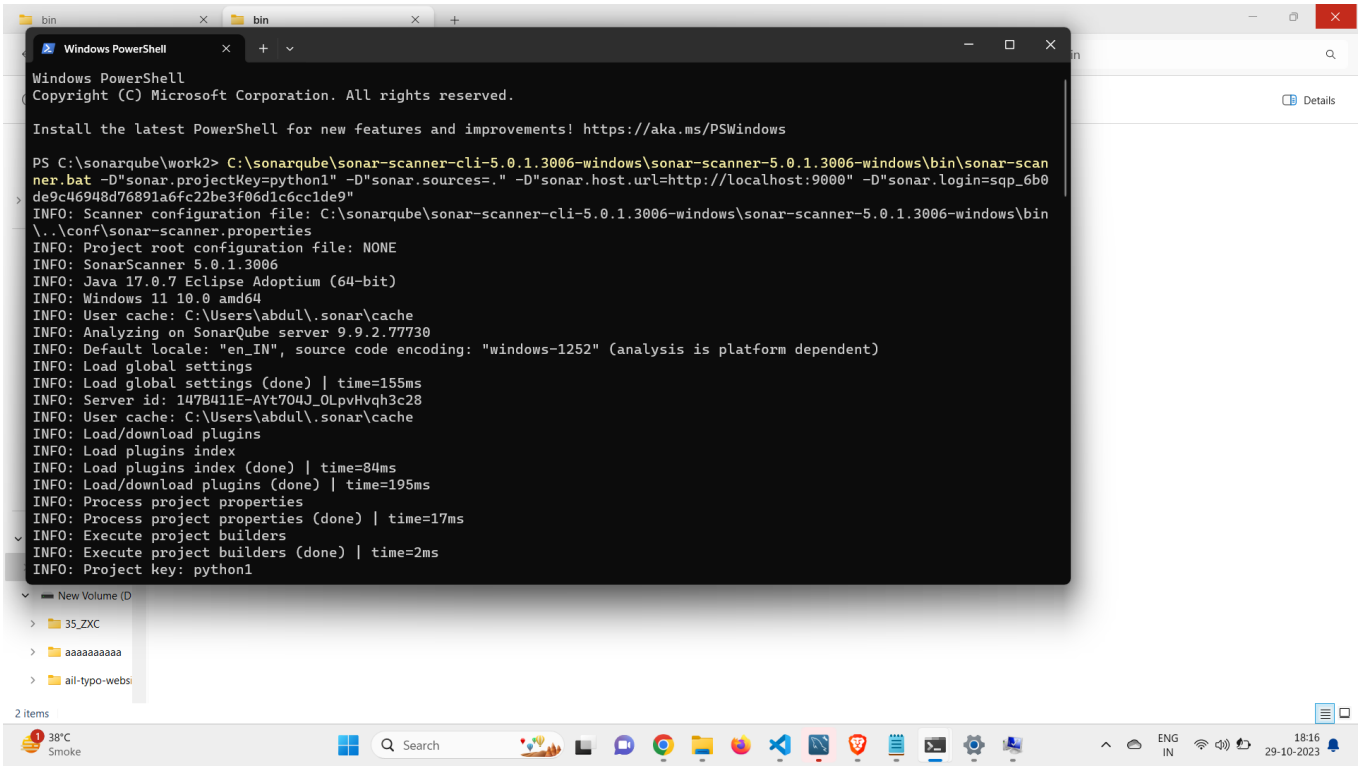
Unzip it in sonarqube folder and take this bin location and save in env variable system properties



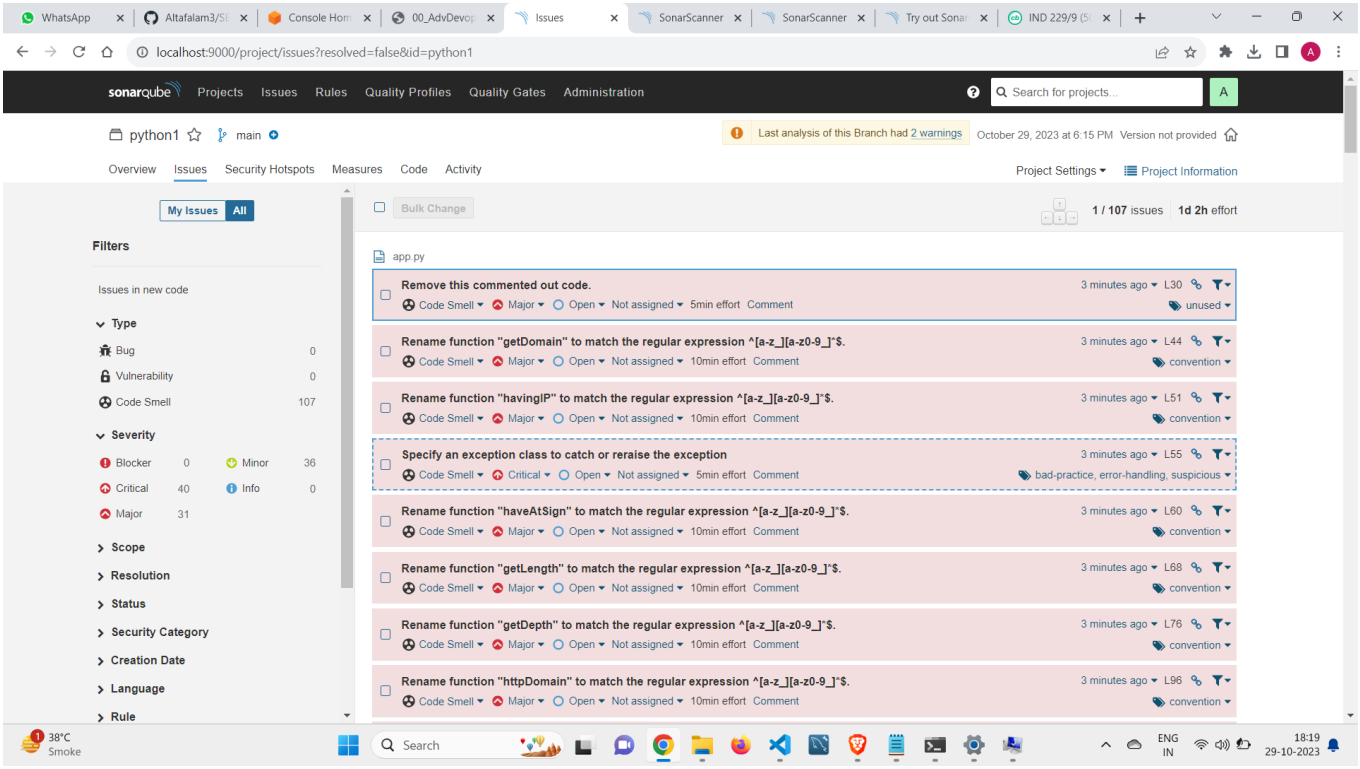


Bin location + the link of bat in snarqube project run in python directory where testing is needed





6. See the result of the test



CONCLUSION:

Here we have successfully performed static analysis of python programs.