Sonar Qube

What is Code Quality?

- Code quality is an extremely important parameter for software quality deliverables and affects the overall success of a software organization.
- Code quality is an indicator about how quickly developers can add business value to software system.
- In order to evaluate software, it is necessary to select relevant quality characteristics. ISO/IEC 9126 defines a quality model which is applicable to every kind of software. It defines six product quality characteristics.

Good Quality Code

- Does what it should
- Follows a consistent style
- Is easy to understand
- Has been well-documented
- Can be tested

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Key Aspects to Measure

- **Reliability -** Reliability measures the system's probability to run without failure over a specific period of operation.
- **Maintainability -** Maintainability measures how easy is the system maintenance
- **Testability -** Testability measures how well the software can be tested.
- **Portability -** Portability measures how usable or portable the same software is across different environments.
- **Reusability -** Reusability measures whether existing code can be used again or not.

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How to Improve Code Quality

- **Coding Standards -** using a static code analyzer helps
- **Code Analysis before Code Reviews -** Quality should be a priority from the very start of development and that's why it's important to analyze code before code reviews begin.
- **Code Review Best Practices -** Good code reviews help improve overall software quality. We will discuss Code reviews in detail shortly
- **Refactor Legacy Code -** One way to improve the quality of an existing codebase is through refactoring.

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Key concepts in Static Code Analysis

- **Code Smell -** It is basically an indicator of something fishy in the code – "a hint that something has gone wrong somewhere in your code.
- **Technical Debt -** It describes the estimated effort to fix to fix all the maintainability Issues / code smells. It is a programming concept that reflects the extra development work.
- **Code coverage -** It is a measure which describes the degree of which the source code of the program has been tested.
- **Test coverage -** It is a Software Testing metric used to measure the amount of testing performed by a particular set of tests
- **Vulnerabilities -** It is a cyber-security term that refers to a flaw or loophole in the system that makes it vulnerable to attack.

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What is Static Code Analysis?

- Static source code analysis refers to the operation performed by a source code analysis tool, which is the analysis of a set of code against a set (or multiple sets) of coding rules.
- Provides developers with an understanding of their code base and helps ensure that it is compliant, safe, and secure.
- Static code analysis is performed early in development, before software testing begins.

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Benefits of Using the Best Source Code Analyzers

- It takes time for developers to do manual code reviews. Automated tools are much faster.
- Testing can't cover every possible code execution path. But a static code analyzer can.
- Manual source code reviews are prone to human error. Automated tools are not.

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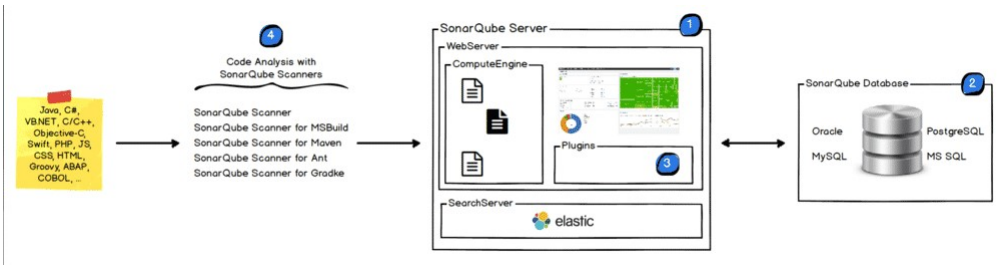
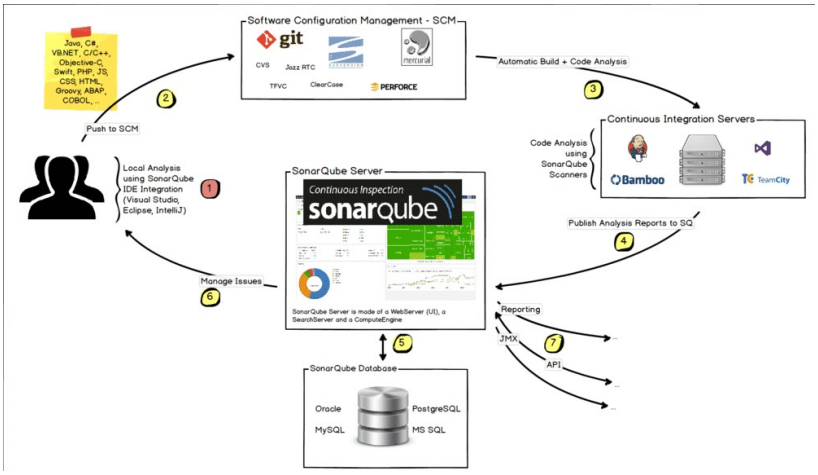
What is SonarQube?

- Sonar is an open-source software quality platform.
- SonarQube saves the calculated measures in a database and showcases them in a rich web-based dashboard.
- Provides trends and leading indicators.

SonarQube Structure





Installing SonarQube

- https://www.sonarsource.com/products/sonarqube/downloads/
- D:\trainings\..\sonarqube-10.5.1.90531\bin\windows-x86-64\StartSonar.bat
- http://localhost:9000 → admin/admin → change to admin123
- Create a new project on Sonar Qube
- Create a new maven project (Demo)

mvn clean verify sonar:sonar -Dsonar.projectKey=Demo -Dsonar.projectName='Demo'
- Dsonar.host.url=http://localhost:9000
-Dsonar.token=sqp_26085b3fbaea721d7533d9d9bf281b97fb96bfb5