



UNIVERSITÀ DEGLI STUDI
DI NAPOLI FEDERICO II

SonarQube

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Software Engineering

Software Quality Measurement

- *It is a process of quantifying and assessing various aspects of software to ensure that it meets specified requirements and conforms to predefined standards.*
- **GOAL:** evaluate and improve the quality of the software throughout its development life cycle.
- To implement software quality measurement effectively, **Static and Dynamic analysis** approaches are required.

Dynamic Analysis

- Dynamic analysis is a larger term that encompasses various techniques and methods used to **analyze and evaluate software during its execution.**
- Here are some key aspects of dynamic software analysis:
 - **Debugging**
 - **Profiling**
 - **Software Testing**
 - **Etc...**

Static Analysis

- Static code analysis is done **without executing any of the code**.
- Here are key aspects of static software analysis:
 - **Source code analysis**, involves examining source code to find issues such as code smells, potential bugs and security violations.
 - **Code metrics**, generate metrics related to code complexity, code duplications, and other quality indicators.
 - **Dependency analysis**.
 - **Etc...**

Static vs Dynamic Analysis

- | | |
|---------------------------------------|------------------------------------|
| 1. Performs at non-runtime. | 1. Performs at runtime |
| 2. Works on source code | 2. Works on executed code |
| 3. White Box | 3. White and Black Box |
| 4. Large amount of time and resources | 4. Less compare to |
| 5. A preventive action | 5. A corrective action |
| 6. Provides more defects | 6. Lesser defects as compare |
| 7. Performed before Dynamic analysis | 7. Performed after Static analysis |

Static Analysis Challenges

- **Performance Impact:** Analyzing large codebases or complex algorithms can be time-consuming and resource-intensive.
- **Complexity Handling:** Complex codebases with intricate structures and numerous dependencies might be challenges to accurately comprehend.
- **DOING IT MANUALLY IS IMPOSSIBLE!**



What is SonarQube?

- Self-managed **automatic code review tool**.
- Provides a dashboard where you can monitor:
 - Quality of your code.
 - Track changes over time
 - Identify potential issues
- It easily integrates into existing workflow (CI pipeline and DevOps platform).

Issues

- During code inspection sonarQube detects three types of issues:
- **BUG:** a coding mistake that can lead to an error or unexpected behavior at runtime. (*Reliability*)
- **VULNERABILITY:** a point in your code that's open to attack (*Security*)
- **CODE SMELL:** a maintainability issue that makes your code confusing and difficult to maintain (*Maintainability*).

Bug Example

A "NullPointerException" could be thrown; "datainizio" is nullable here.

[Get permalink](#)

Null pointers should not be dereferenced [java:S2259](#)

1 month ago ▾ L61

Bug ▾ Major ▾ Open ▾ Not assigned ▾ 10min effort 0 comments

cert, cwe ▾

Where is the issue?

Why is this an issue?

OOBD_2223_S_17 src/main/java/project/controller/ModificaConferenzaController.java [See all issues in this file](#)

```
55      1 String datainizio = null;
56      String datafine = null;
57      if (DataInizio.getValue() != null && DataFine.getValue() != null) {
58          datainizio = DataInizio.getValue().toString();
59          datafine = DataFine.getValue().toString();
60      }
61      if (nomeconferenza.equals("") || costototale.equals("") || 2 datainizio.equals("") || datafine.equals("")
        || descrizione.equals("") || ente.equals("") || codice.equals("")) {
```

Vulnerability Example

Revoke and change this password, as it is compromised.

[Get permalink](#)

Credentials should not be hard-coded [java:S6437](#)

2 months ago ▾ L13

Vulnerability ▾ Blocker ▾ Open ▾ Not assigned ▾ 1h effort 0 comments

cwe, owasp-a2 ▾

Where is the issue?

Why is this an issue?

OOBD_2122_38 src/main/java/project/DAO/ConnectionPostgres.java [See all issues in this file](#)

```
private static ConnectionPostgres instance;  
10  
11 private ConnectionPostgres() {  
12     try {  
13         conn = DriverManager.getConnection("jdbc:postgresql://localhost:5432/OOBD", "postgres", "[REDACTED]");
```

Revoke and change this password, as it is compromised.

Code Smell Example

Remove this useless assignment to local variable "codConfInfo".

[Get permalink](#)

Unused assignments should be removed [java:S1854](#)




1 month ago ▾ L169

 Code Smell ▾  Major ▾  Open ▾ Not assigned ▾ 15min effort 0 comments

 cert, cwe, unused ▾


Where is the issue?

Why is this an issue?

 OOB_2223_S_17  src/main/java/project/controller/InserisciConferenzaController.java 

[See all issues in this file](#) 

```
167         if (selectedItem != null) {  
168             String[] SedeSelezionata = selectedItem.split(", ");  
169             String codConfInfo = SedeSelezionata[0];
```

 Remove this useless assignment to local variable "codConfInfo".

```
170         return SedeSelezionata[0];
```

Issue Severity

Each issue has five different degrees of severity:

- **BLOCKER**
- **CRITICAL**
- **MAJOR**
- **MINOR**
- **INFO**



OLD SEVERITY	MAPPED to
Blocker, Critical	High
Major	Medium
Minor, Info	Low

The severity feature evolved in SonarQube 10.2. The following mapping was applied.

Blocker Issue

- This is a bug with a high probability of impacting application behavior in production.
- For example, a memory leak, JDBC connections not closed.
- **They need to be fixed immediately.**

The screenshot shows a SonarQube issue detail page. At the top, the issue description reads: "Use try-with-resources or close this 'Statement' in a 'finally' clause." Below this, it says "Resources should be closed" with a link to "java:S2095". On the right, there is a "Get permalink" link, the date "2 months ago", and the severity "L39". Below the description, there are filters for "Bug", "Blocker", "Open", "Not assigned", "5min effort", and "0 comments". There are also tags for "cert, cwe, denial-of-service, leak". Below the filters, there are two tabs: "Where is the issue?" and "Why is this an issue?". The "Where is the issue?" tab is selected, showing a code editor with the file path "src/main/java/project/DAO/DBConnectionManager.java". The code snippet shows a method "selectQuery" that creates a "Statement" object but does not close it. A red vertical bar highlights the line where the "Statement" is created. Below the code editor, there is a red box with the message: "Use try-with-resources or close this 'Statement' in a 'finally' clause."

Use try-with-resources or close this "Statement" in a "finally" clause.

Resources should be closed [java:S2095](#)

[Get permalink](#)

2 months ago ▾ L39

Bug ▾ Blocker ▾ Open ▾ Not assigned ▾ 5min effort 0 comments

cert, cwe, denial-of-service, leak ▾

Where is the issue? Why is this an issue?

INGSW_2023_F_07 src/main/java/project/DAO/DBConnectionManager.java [See all issues in this file](#)

```
34 ... //
35 public static ResultSet selectQuery(String query) throws ClassNotFoundException, SQLException {
36
37     Connection conn = getConnection();
38
39     Statement statment = conn.createStatement(); //tramite connessione ci andiamo a prendere lo statement
```

Use try-with-resources or close this "Statement" in a "finally" clause.

Critical Issue

- This is a bug with a low probability to impact the behavior of the application in production or an issue that represents a security flaw. For example an empty catch block or SQL injection.

Refactor this method to reduce its Cognitive Complexity from 19 to the 15 allowed.

[Get permalink](#)

Cognitive Complexity of methods should not be too high [java:S3776](#)

2 months ago ▾ L196

Code Smell ▾ Critical ▾ Open ▾ Not assigned ▾ 9min effort 0 comments

brain-overload ▾

Where is the issue? Why is this an issue?

INGSW_2023_F_07 src/main/java/project/DAO/IstitutoDAO.java See all issues in this file

```
annoCorrente == annoInput + 1) && ((Date.valueOf(dataCorrente).compareTo(data)>=0) && (giornoCorrente==giornoInput && meseCorrente==meseInput))) {  
    9 if ((meseInput >= 9 && meseInput <= 12) && meseInput == 1) {  
        10 return true;  
    }  
    11 }  
    12 // Secondo quadrimestre: febbraio - giugno  
    13 else if (meseCorrente >= 2 && meseCorrente <= 6 && annoCorrente == annoInput &&  
    14 ((Date.valueOf(dataCorrente).compareTo(data)>=0) && (giornoCorrente==giornoInput && meseCorrente==meseInput))) {  
        15 16 if (meseInput >= 2 && meseInput <= 6) {  
            17 return true;  
        }  
    }  
}
```

Major Issue

- A quality flaw that can highly impact the developer's productivity.
- For example duplicated code, unused parameters.

Method has 13 parameters, which is greater than 7 authorized. [Get permalink](#)

Methods should not have too many parameters [java:S107](#) 2 months ago L16

Code Smell Major Open Not assigned 20min effort 0 comments brain-overload

Where is the issue? Why is this an issue?

INGSW_2023_F_07 src/main/java/project/CONTROLLER/Controller.java [See all issues in this file](#)

Method has 13 parameters, which is greater than 7 authorized.

```
17         String comuneResidenza, String email,String numeroCellulare, String username,  
18         String password,ArrayList<Integer> materie, int figlio, int classe ){  
19     int ret=0;  
20  
21     EntityIstituto singleton = EntityIstituto.getInstance();  
22  
23     if(ruolo=="Docente") {
```

Minor Issue

- A quality flaw that can slightly impact the developer's productivity.
- For example too many lines of code, switch condition with less than two case instances.

The return type of this method should be an interface such as "List" rather than the implementation "ArrayList". [Get permalink](#)

Declarations should use Java collection interfaces such as "List" rather than specific implementation classes such as "LinkedList" [java:S1319](#) 2 months ago L137

Code Smell Minor Open Not assigned 10min effort 0 comments bad-practice

Where is the issue? Why is this an issue?

INGSW_2023_F_07 src/main/java/project/CONTROLLER/Controller.java See all issues in this file

```
133  
134  
135  
136 //Funzione per ottenere la stringa di tutte le materie esistenti  
137 public static ArrayList<String> visualizzamaterie(){
```

The return type of this method should be an interface such as "List" rather than the implementation "ArrayList".

Info Issue

- This is neither a bug nor a quality flaw, but **just an observation**.

Complete the task associated to this TODO comment.

[Get permalink](#)

Track uses of "TODO" tags [java:S1135](#)

12 hours ago ▾ L45

Code Smell ▾ Info ▾ Open ▾ Not assigned ▾ 0min effort 0 comments

cwe ▾

Where is the issue?

Why is this an issue?

OOB2_2122_01 src/main/java/project/GUI/VisionareTavoliDisponibili.java [See all issues in this file](#)

```
40 ... contentPane.setBorder(new EmptyBorder(5, 5, 5, 5));
41     setContentPane(contentPane);
42     contentPane.setLayout(null);
43     try {
44     } catch (Exception e) {
45         // TODO Auto-generated catch block
```

Complete the task associated to this TODO comment.

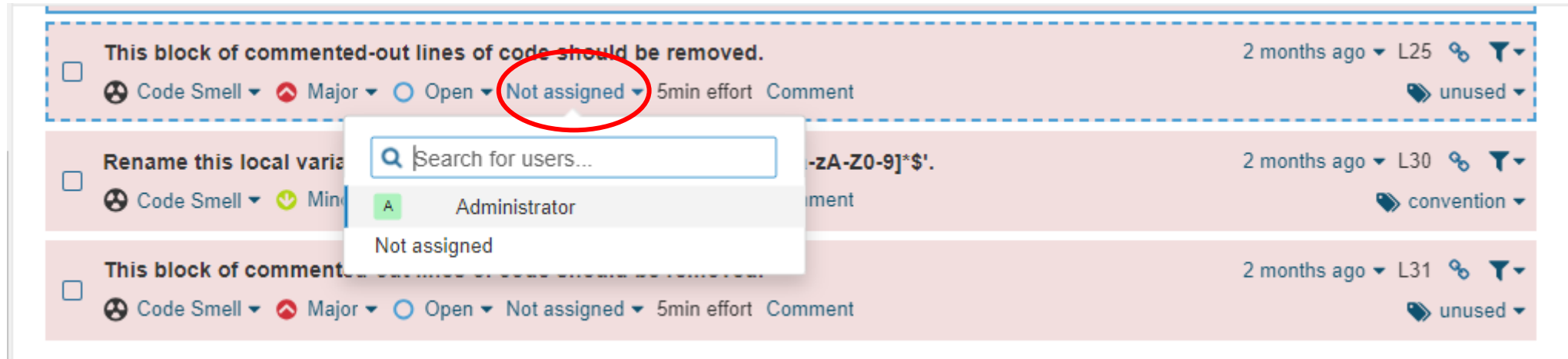
Issue Lifecycle

- After creation, issues flow through a lifecycle, taking one of the following statuses:
 - **Open:** set by SonarQube on new issues.
 - **Confirmed:** set manually to indicate that the issues is valid.
 - **Resolved:** set manually to indicate that the next analysis should close the issue.
 - **Reopened:** set automatically by SonarQube when a resolved issues hasn't actually been corrected.
 - **Closed:** set automatically by SonarQube for automatically created issues.

Issue Lifecycle

<input type="checkbox"/>	This block of commented-out lines of code should be removed.	2 months ago ▾ L25 🔗 🔍 ▾
🚫 Code Smell ▾	🔴 Major ▾ Open ▾ Not assigned ▾ 5min effort Comment	💡 unused ▾
<input type="checkbox"/>	Rename this local variable to match its expression <code>^[a-z][a-zA-Z0-9]*\$</code>.	2 months ago ▾ L30 🔗 🔍 ▾
🚫 Code Smell ▾	🟢 Minor ▾ Not assigned ▾ 2min effort Comment	💡 convention ▾
<input type="checkbox"/>	This block of commented-out code should be removed.	2 months ago ▾ L31 🔗 🔍 ▾
🚫 Code Smell ▾	🔴 Major ▾ Open ▾ Not assigned ▾ 5min effort Comment	💡 unused ▾

Issue Assignment



- The issues are automatically assigned during analysis to the last committer on the issues line.
- **Only if the committer can be correlated to a SonarQube user.**
- Otherwise, it can be assigned manually.

Rules

- SonarQube identifies these issues through the use of a specific **rule sets**.
- **What is a rule?** A coding standard or practice which should be followed.
- In case the analyzed source code violates a coding rule, SonarQube generates an issue.

<code>".equals()" should not be used to test the values of "Atomic" classes</code>	Java  Bug  multi-threading 
<code>"=+" should not be used instead of "+="</code>	Java  Bug 
<code>"==" and "!=" should not be used when "equals" is overridden</code>	Java  Code Smell  cert, cwe, suspicious 

Multi-Language Support



TypeScript



COBOL

Apex



Multi-Language Support

The screenshot displays the SonarQube interface with the 'Rules' tab selected. A red box highlights the 'Language' filter on the left sidebar, which lists various programming languages and their associated rule counts. The main content area shows a list of rules, each with a description, language, and severity. The rules are filtered by the selected language.

Language	Count
Java	628
C#	405
JavaScript	312
TypeScript	307
PHP	257
Python	230
VB.NET	179
Kotlin	114
Flex	82
HTML	65
Terraform	50
Ruby	48
Scala	47
Go	44
XML	36

Rule Description	Language	Severity
"!important" should not be used on "keyframes"	CSS	Bug
"\$this" should not be used in a static context	PHP	Bug
"&&" and " " should be used	PHP	Code Smell, suspicious
".equals()" should not be used to test the values of "Atomic" classes	Java	Bug, multi-threading
"<!DOCTYPE>" declarations should appear before "<html>" tags	HTML	Bug, user-experience
"<>" should not be used to test inequality	Python	Code Smell, obsolete
"<?php" and "<?=" tags should be used	PHP	Code Smell, convention, psr1
"<fieldset>" tags should contain a "<legend>"	HTML	Bug, accessibility
"<frames>" should have a "title" attribute	HTML	Bug, accessibility
"<html>" element should have a language attribute	HTML	Bug, accessibility, wc...

Rules Details

sonarqube

Projects

Issues

Rules

Quality Profiles

Quality Gates

Administration

More

?

Search for projects...

A

Filters

Clear All Filters

Search for rules...

Language **JAVA** Clear

Search for languages...

Java	628
C#	405
JavaScript	312
TypeScript	307
PHP	257
Python	230
VB.NET	179
Kotlin	114
Flex	82
HTML	65
Terraform	50
Ruby	48
Scala	47
Go	44
XML	36

Return to list

3 / 628 rules

"==" and "!=" should not be used when "equals" is overridden

java:S1698 🔗 ⚙️

Code Smell

Minor

cert, cwe, suspicious

Available Since May 07, 2023

SonarQube (Java)

Constant/issue: 2min

It is equivalent to use the equality `==` operator and the `equals` method to compare two objects if the `equals` method inherited from `Object` has not been overridden. In this case both checks compare the object references.

But as soon as `equals` is overridden, two objects not having the same reference but having the same value can be equal. This rule spots suspicious uses of `==` and `!=` operators on objects whose `equals` methods are overridden.

Noncompliant Code Example

```
String firstName = getFirstName(); // String overrides equals
String lastName = getLastName();

if (firstName == lastName) { ... }; // Non-compliant; false even if the strings have the same value
```




Compliant Solution

```
String firstName = getFirstName();
String lastName = getLastName();

if (firstName != null && firstName.equals(lastName)) { ... };
```


Quality Profiles

- They defines the set of **rules** to be applied during code analysis.
- Every project has a quality profile for each supported language.

sonarqube 					
Projects Issues Rules Quality Profiles Quality Gates Administration More ▾					
C#, 1 profile(s)		Projects ?	Rules	Updated	Used
Sonar way BUILT-IN		DEFAULT	260	6 months ago	Never 
CSS, 1 profile(s)		Projects ?	Rules	Updated	Used
Sonar way BUILT-IN		DEFAULT	23	6 months ago	Never 

Quality Profiles

sonarqube

ProjectsIssuesRulesQuality ProfilesQuality GatesAdministrationMore

Search for projects...

A

OOBD_2122_38

main

Last analysis of this Branch had 1 warning

August 24, 2023 at 7:02 PM

Version 1.0-SNAPSHOT

OverviewIssuesSecurity HotspotsMeasuresCodeActivity

Project SettingsProject Information

Quality Profiles

Manage project Quality Profiles

Choose which profile is associated with this project on a language-by-language basis.

Language	Current Quality Profile	Active Rules	
Java	Instance default	479	Change profile
XML	Instance default	24	Change profile

Add a new language

Manually configure a specific profile for a new language before the next analysis.

+ Add language

Quality Gate

- **Is my project ready for release?**
- Quality gates is a set of condition to enforce a quality policy in your organization.
- For example:
 - No new blocker issues.
 - Code coverage on new code greater than 80%.

Defining Quality Gate (1)

- Each quality gate condition is a combination of:
 - a measure.
 - a comparison operator.
 - an error value.
- For instance, a condition might be
 - measure: Blocker issue.
 - comparison operator: >
 - error value: 0

Default Quality Gate

Conditions ⓘ

Conditions on New Code

Metric	Operator	Value
Coverage	is less than	80.0%
Duplicated Lines (%)	is greater than	3.0%
Maintainability Rating	is worse than	A (Technical debt ratio is less than 5.0%)
Reliability Rating	is worse than	A (No bugs)
Security Hotspots Reviewed	is less than	100%
Security Rating	is worse than	A (No vulnerabilities)

Defining Quality Gate (2)

The screenshot shows the SonarQube Quality Gates configuration page. The 'Quality Gates' tab is active. On the left, a list of quality gates includes 'INGSWQualityGate' under the 'Default' section. A red arrow labeled '1' points to the 'Create' button in the top right of this list. In the center, a modal window titled 'Add Condition' is open. A red arrow labeled '3' points to the 'Add Condition' button at the bottom of this modal. The modal contains the following configuration: 'On Overall Code' is selected for 'Quality Gate fails when'; 'Cyclomatic Complexity' is selected in the dropdown; the 'Operator' is 'is greater than'; and the 'Value' is '10'. A red arrow labeled '2' points to the 'Add Condition' button in the top right of the main configuration area. The background shows a table of conditions for the 'INGSWQualityGate' with metrics like Coverage, Duplicated Lines, Maintainability Rating, Reliability Rating, Security Hotspots Reviewed, and Security Rating, each with a comparison operator and a target value.

Quality Gates 1 **Create**

Default **DEFAULT**

INGSWQualityGate

Sonar way **BUILT-IN**

Add Condition

☐ On New Code ☒ On Overall Code

Quality Gate fails when

Cyclomatic Complexity

Operator Value

is greater than 10

Add Condition **Cancel**

2 **Add Condition**

3

Metric	Operator	Value	
Coverage			
Duplicated Lines (%)			
Maintainability Rating			
Reliability Rating	is worse than	A (No bugs)	
Security Hotspots Reviewed	is less than	100%	
Security Rating	is worse than	A (No vulnerabilities)	

Projects

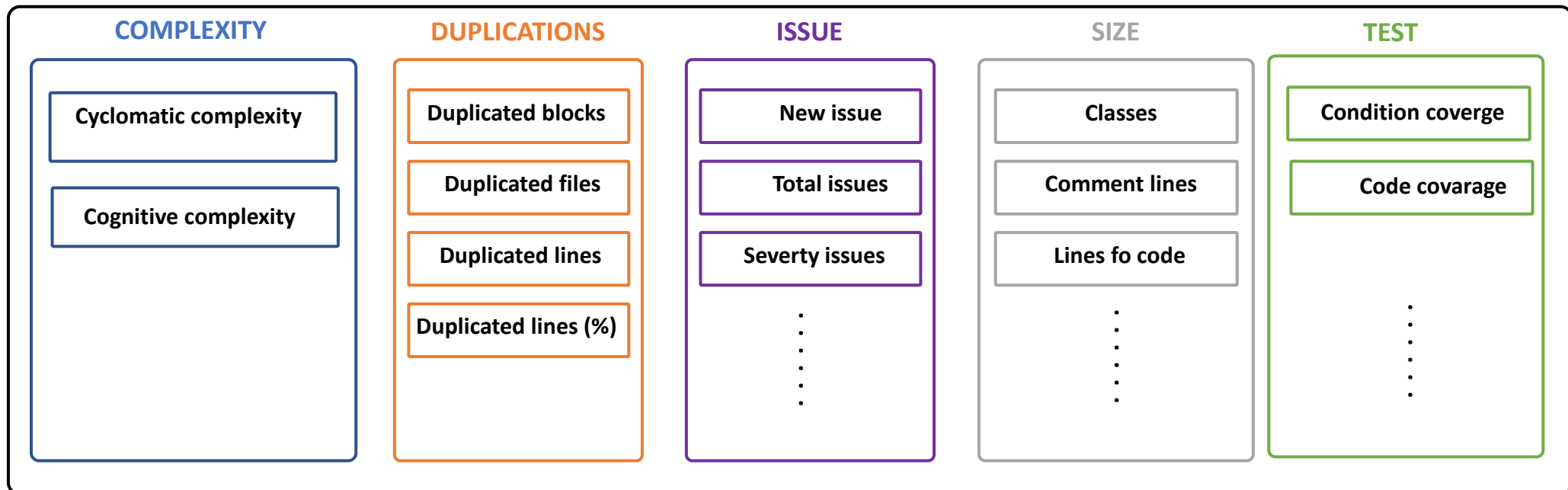
With **Without** **All** **Search**

Permissions

Users with the global "Administer Quality Gates" permission and those listed below can manage this Quality Gate.

Metrics

- SonarQube calculates a number of useful metrics.



- <https://docs.sonarsource.com/sonarqube/latest/user-guide/metric-definitions/>

Technical Debt

- A measure of **effort** to fix all issues.

Use try-with-resources or close this "PreparedStatement" in a "finally" clause. [Get permalink](#)

Resources should be closed [java:S2095](#) 2 months ago ▾ L201

Bug ▾ Blocker ▾ Open ▾ Not assigned ▾ 5min effort 0 comments cert, cwe, denial-of-service, leak ▾

Where is the issue? Why is this an issue?

OOBD_2122_38 src/main/java/project/DAO/DAOPostgres/ArticoloSuRivistaDAOPostgres.java [See all issues in this file](#)

```
194 ... }
195 }
196
197 public boolean identico(ArticoloSuRivista articoloSuRivista) {
198     try {
199         PreparedStatement ps = conn.prepareStatement("SELECT COUNT(*)"
200             + "FROM \"materiale\""
201             + "WHERE (\n\"titolo\" = ? AND \n\"issnrivista\" = ? AND \n\"titolo\" = ?)");
```

Use try-with-resources or close this "PreparedStatement" in a "finally" clause

SonarQube Installation (1)

- The easiest way is to use Docker images provided on the Docker Hub site.
- https://hub.docker.com/_/sonarqube/tags
- Pull the selected docker image

```
docker pull sonarqube:9.9.1-communit
```

SonarQube Installation (2)

- Creating the following volumes:

```
> docker volume create --name sonarqube_data  
> docker volume create --name sonarqube_logs  
> docker volume create --name sonarqube_extensions
```

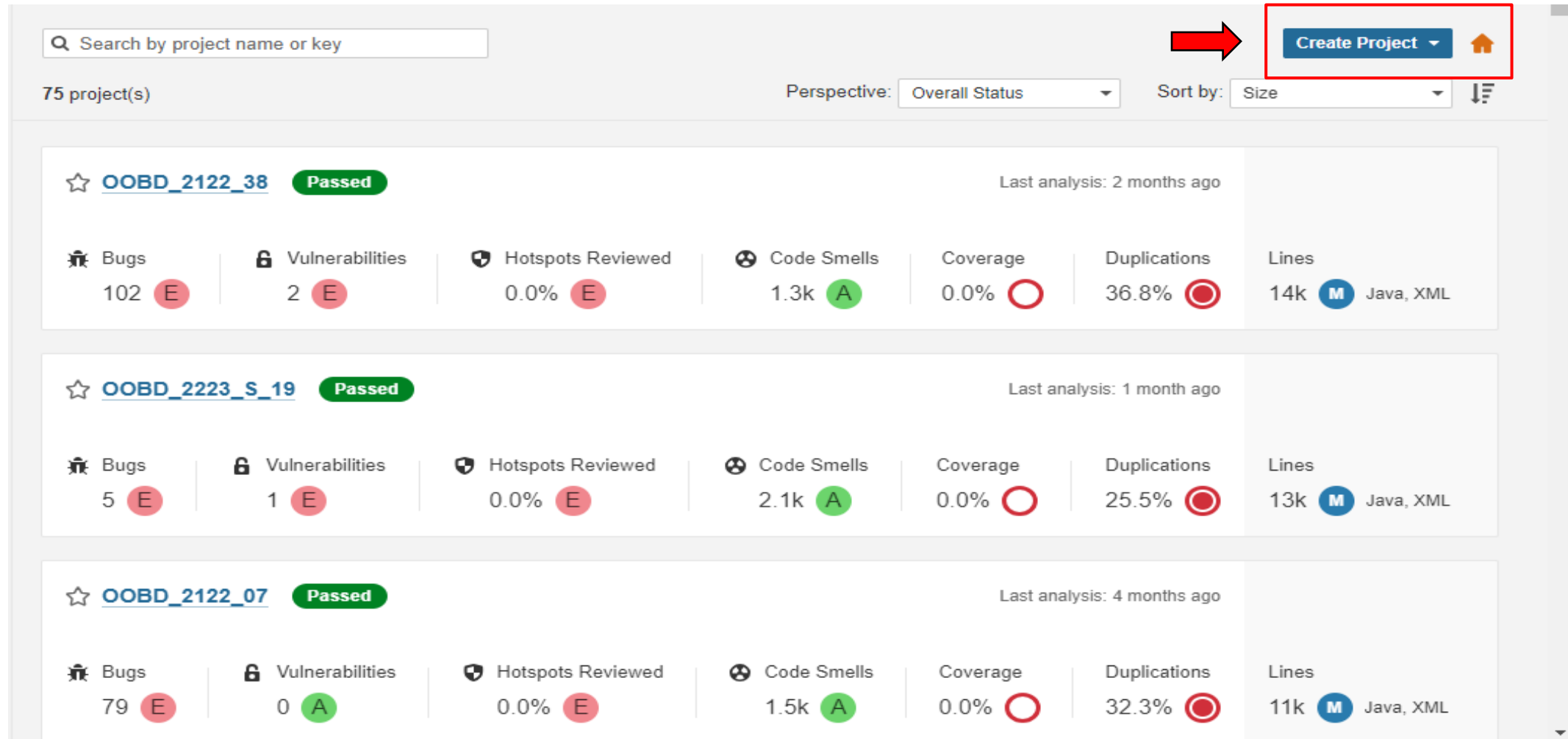
- Run the image:

```
docker run -d --name sonarqube -p 9000:9000  
-v sonarqube_data:/opt/sonarqube/data  
-v sonarqube_extensions:/opt/sonarqube/extensions  
-v sonarqube_logs:/opt/sonarqube/logs sonarqube:9.9.1-community
```

SonarScanner for Maven



Create a New SonarProject (1)



The screenshot shows the SonarQube dashboard interface. At the top, there is a search bar labeled "Search by project name or key". To the right of the search bar, a red arrow points to a blue button labeled "Create Project" with a dropdown arrow, which is enclosed in a red rectangular box. Next to the button is a home icon. Below the search bar, the text "75 project(s)" is displayed. To the right of this text, there are two dropdown menus: "Perspective: Overall Status" and "Sort by: Size". Below these elements, there are three project cards, each representing a different project. Each card shows the project name, its status (Passed), the last analysis date, and a table of metrics including Bugs, Vulnerabilities, Hotspots Reviewed, Code Smells, Coverage, Duplications, and Lines. The projects are OOB_2122_38, OOB_2223_S_19, and OOB_2122_07.

Search by project name or key

75 project(s)

Perspective: Overall Status

Sort by: Size

Create Project

☆ [OOB_2122_38](#) **Passed** Last analysis: 2 months ago

Bugs	Vulnerabilities	Hotspots Reviewed	Code Smells	Coverage	Duplications	Lines
102 E	2 E	0.0% E	1.3k A	0.0% E	36.8% E	14k M Java, XML

☆ [OOB_2223_S_19](#) **Passed** Last analysis: 1 month ago

Bugs	Vulnerabilities	Hotspots Reviewed	Code Smells	Coverage	Duplications	Lines
5 E	1 E	0.0% E	2.1k A	0.0% E	25.5% E	13k M Java, XML

☆ [OOB_2122_07](#) **Passed** Last analysis: 4 months ago

Bugs	Vulnerabilities	Hotspots Reviewed	Code Smells	Coverage	Duplications	Lines
79 E	0 A	0.0% E	1.5k A	0.0% E	32.3% E	11k M Java, XML

Create a New SonarProject (2)

Create a project

All fields marked with * are required

Project display name *

INGSW2324



Up to 255 characters. Some scanners might override the value you provide.

Project key *

INGSW2324



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](#)

Set Up

Create a New SonarProject (3)

 [Projects](#) [Issues](#) [Rules](#) [Quality Profiles](#) [Quality Gates](#) [Administration](#) [More](#)

?

Search for projects...

A


INGSW2324 ☆ [main](#)


[Overview](#) [Issues](#) [Security Hotspots](#) [Measures](#) [Code](#) [Activity](#)


[Project Settings](#) [Project Information](#)


How do you want to analyze your repository?


Do you want to integrate with your favorite CI? Choose one of the following tutorials.



With Jenkins


With GitHub Actions



With Bitbucket Pipelines


With GitLab CI


With Azure Pipelines


Other CI

Are you just testing or have an advanced use-case? Analyze your project locally.


Locally



Create a New SonarProject (4)

The screenshot shows the SonarQube web interface. At the top, there is a navigation bar with the SonarQube logo and links to Projects, Issues, Rules, Quality Profiles, Quality Gates, Administration, and More. A search bar is on the right. Below the navigation bar, the project name 'INGSW2324' is displayed with a star icon and a 'main' branch link. The main content area has tabs for Overview, Issues, Security Hotspots, Measures, Code, and Activity. The 'Overview' tab is active, showing a message: 'Analyze your project. We initialized your project on SonarQube, now it's up to you to launch analyses!'. A red box highlights the '1 Provide a token' section. Inside this section, the 'Generate a project token' radio button is selected. Below this, there are two labels: 'Token name' and 'Expires in'. The 'Token name' input field contains 'Analyze "INGSW2324"'. The 'Expires in' dropdown menu is set to 'No expira...'. A blue 'Generate' button is to the right of the dropdown, with a red arrow pointing to it. Below the 'Generate' button, there is a blue information box with a note: 'Please note that this token will only allow you to analyze the current project. If you want to use the same token to analyze multiple projects, you need to generate a global token in your user account. See the documentation for more information.' Below the information box, the 'Use existing token' radio button is unselected. At the bottom of the '1 Provide a token' section, there is a text block: 'The token is used to identify you when an analysis is performed. If it has been compromised, you can revoke it at any point in time in your user account.' Below the '1 Provide a token' section, the '2 Run analysis on your project' section is visible.

sonarqube Projects Issues Rules Quality Profiles Quality Gates Administration More

Search for projects... A

INGSW2324 ☆ main

Overview Issues Security Hotspots Measures Code Activity Project Settings Project Information

Analyze your project

We initialized your project on SonarQube, now it's up to you to launch analyses!

1 Provide a token

☒ Generate a project token

Token name Expires in

Analyze "INGSW2324" No expira... Generate


Please note that this token will only allow you to analyze the current project. If you want to use the same token to analyze multiple projects, you need to generate a global token in your user account. See the documentation for more information.

☐ Use existing token

The token is used to identify you when an analysis is performed. If it has been compromised, you can revoke it at any point in time in your user account.

2 Run analysis on your project

Create a New SonarProject (5)

 Projects Issues Rules Quality Profiles Quality Gates Administration More ▾

?

Q Search for projects...

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INGSW2324 ☆ ⓘ main +

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Overview Issues Security Hotspots Measures Code Activity

Project Settings ▾

Project Information

2 Run analysis on your project


When option best describes your build?


Maven Gradle .NET Other (for JS, TS, Go, Python, PHP, ...)

Execute the Scanner for Maven

Running a SonarQube analysis with Maven is straightforward. You just need to run the following command in your project's folder.

```
mvn clean verify sonar:sonar \
-Dsonar.projectKey=INGSW2324 \
-Dsonar.host.url=http://localhost:9000 \
-Dsonar.login=sqp_865aa092a0a79877027b5d12a915c962b68d55ac
```

 **STORES THIS INFORMATION!**

 Copy

Please visit the [official documentation of the Scanner for Maven](#) for more details.

Is my analysis done? If your analysis is successful, this page will automatically refresh in a few moments.

You can set up Pull Request Decoration under the project settings. To set up analysis with your favorite CI tool, see the tutorials.

Check these useful links while you wait: [Branch Analysis](#), [Pull Request Analysis](#).

Modify Maven POM (1)

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
3     xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/maven-v4_0_0.xsd">
4
5     <modelVersion>4.0.0</modelVersion>
6
7     <groupId>org.example</groupId>
8     <artifactId>00BD_2122_1</artifactId>
9     <packaging>jar</packaging>
10    <version>1.0-SNAPSHOT</version>
11
12    <name>00BD_2122_01</name>
```

Set the previously generated information as a property element within the POM.

- <https://docs.sonarsource.com/sonarqube/9.8/analyzing-source-code/analysis-parameters/>

```
14 <properties>
15     <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
16     <project.reporting.outputEncoding>UTF-8</project.reporting.outputEncoding>
17     <log4j2-version>2.19.0</log4j2-version>
18     <sonar.projectKey>INGSW_LECTURE_EXAMPLE</sonar.projectKey>
19     <sonar.login>sqp_a7672d91524e81baec9f017654b3649e94cfb98c</sonar.login>
20     <sonar.host>http://localhost:9000</sonar.host>
21 </properties>
```

Modify Maven POM (2)

```
84 <build>
85   <defaultGoal>install</defaultGoal>
86   <plugins>
87     <plugin>
88       <groupId>org.sonarsource.scanner.maven</groupId>
89       <artifactId>sonar-maven-plugin</artifactId>
90       <version>3.9.1.2184</version>
91     <executions>
92       <execution>
93         <goals>
94           <goal>sonar</goal>
95         </goals>
96         <phase>verify</phase>
97       </execution>
98     </executions>
99   </plugin>
```

Run SonarQube Analyzer

> mvn verify

Terminal: Local x + v

[INFO] CPD Executor CPD calculation finished (done) | time=71ms

[INFO] Analysis report generated in 160ms, dir size=682.8 kB

[INFO] Analysis report compressed in 1615ms, zip size=249.2 kB

[INFO] Analysis report uploaded in 40ms

➡ [INFO] ANALYSIS SUCCESSFUL, you can find the results at: http://localhost:9000/dashboard?id=INGSW_LECTURE_EXAMPLE

[INFO] Note that you will be able to access the updated dashboard once the server has processed the submitted analysis report

[INFO] More about the report processing at http://localhost:9000/api/ce/task?id=AYvP_kEsYreUmyP2z1Wj

[INFO] Analysis total time: 16.985 s

[INFO] -----

[INFO] BUILD SUCCESS

[INFO] -----

[INFO] Total time: 19.807 s

[INFO] Finished at: 2023-11-14T23:40:28+01:00

[INFO] -----