

**UNIVERSIDAD ESCUELA COLOMBIANA DE INGENIERÍA
JULIO GARAVITO**

CICLOS DE VIDA DEL DESARROLLO DEL SOFTWARE

LAB 03

CRISTIAN DAVID SILVA PERILLA

JUAN MIGUEL ROJAS CHAPARRO

OSCAR DAVID OSPINA RODRÍGUEZ

29/01/2025

CREAR PROYECTO CON MAVEN

Deben crear un proyecto maven con los siguientes parámetros:

- Grupo: edu.eci.cvds
- Artefacto: Library
- Paquete: edu.eci.cvds.tdd
- archetypeArtifactId: maven-archetype-quickstart

creamos el proyecto con el siguiente comando:

```
mvn archetype:generate -DgroupId=edu.eci.cvds -DartifactId=Library  
-Dpackage=edu.eci.cvds.tdd -DarchetypeArtifactId=maven-archetype-quickstart  
-DinteractiveMode=false
```

```
C:\Users\Digfa\Downloads>mvn archetype:generate -DgroupId=edu.eci.cvds -DartifactId=Library -Dpackage=edu.eci.cvds.tdd -DarchetypeArtifactId=maven-archetype-quickstart -DinteractiveMode=false  
[INFO] Scanning for projects...
```

Después de creado nuestro proyecto maven tenemos el siguiente arbol

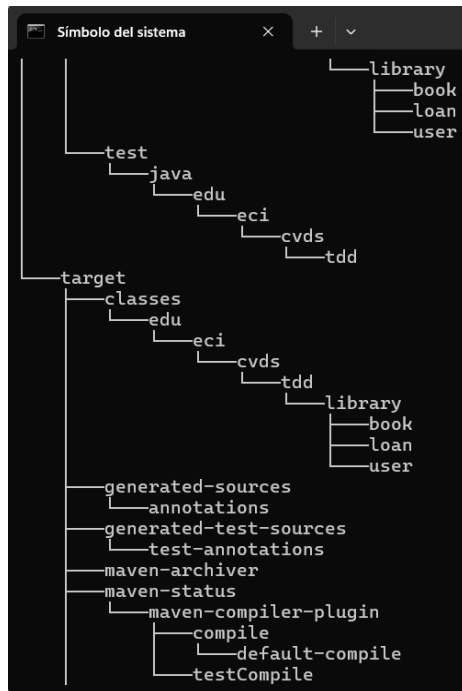
```
Símbolo del sistema  x  +  v  
C:\Users\miguel\OneDrive - ESCUELA COLOMBIANA DE INGENIERIA JULIO GARAVITO\Documents\CVDS\lab03\Library>tree  
Listado de rutas de carpetas  
El número de serie del volumen es B8DC-7B65  
C:.  
├── .idea  
├── src  
│   ├── main  
│   │   ├── java  
│   │   │   ├── edu  
│   │   │   │   ├── eci  
│   │   │   │   │   ├── cvds  
│   │   │   │   │   │   ├── tdd  
│   │   │   │   │   │   │   ├── library  
│   │   │   │   │   │   │   │   ├── book  
│   │   │   │   │   │   │   │   ├── loan  
│   │   │   │   │   │   │   │   └── user  
│   │   └── test  
│   │       ├── java  
│   │       │   ├── edu  
│   │       │   │   ├── eci  
│   │       │   │   │   ├── cvds  
│   │       │   │   │   │   ├── tdd  
│   └── target  
│       ├── classes  
│       │   ├── edu  
│       │   │   ├── eci  
│       │   │   │   ├── cvds  
│       │   │   │   │   ├── tdd  
│       │   │   │   │   │   ├── library  
│       │   │   │   │   │   │   └── book
```

AGREGAR DEPENDENCIA JUNIT5

Para esta parte se agregan las dependencias de JUNIT con los paquetes en las versiones adecuadas

```
1 <project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
2   xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/maven-v4_0_0.xsd">
3   <modelVersion>4.0.0</modelVersion>
4   <groupId>edu.eci.cvds</groupId>
5   <artifactId>Library</artifactId>
6   <packaging>jar</packaging>
7   <version>1.0-SNAPSHOT</version>
8   <name>Library</name>
9   <url>http://maven.apache.org</url>
10  <properties>
11    <maven.compiler.source>17</maven.compiler.source>
12    <maven.compiler.target>17</maven.compiler.target>
13  </properties>
14  <dependencies>
15    <dependency>
16      <groupId>org.junit.jupiter</groupId>
17      <artifactId>junit-jupiter</artifactId>
18      <version>5.9.1</version>
19      <scope>test</scope>
20    </dependency>
21    <dependency>
22      <groupId>org.junit.jupiter</groupId>
23      <artifactId>junit-jupiter</artifactId>
24      <version>RELEASE</version>
25      <scope>test</scope>
26    </dependency>
27  </dependencies>
28
29 </project>
```

AGREGAR LAS CLASES Y PAQUETES REQUERIDOS



PRUEBAS UNITARIA Y TDD

para esta parte de las pruebas unitarias es necesario crear nuestro repositorio donde sobre este se van a estar desarrollando 2 ramas en las cuales trabajaremos y verificaremos nuestros test mediante pull request

```
public boolean addBook(Book book) { 8 usages  ⤴ CRISTIANSILVAP
    //TODO Implement the logic to add a new book into the map.
    if (book != null) {
        books.put(book, books.getOrDefault(book, defaultValue: 0) + 1);
        return true;
    }
    return false;
}
```

```

public Loan loanABook(String userId, String isbn) { 9 usages ± CRISTIANSILVAP +1
    //TODO Implement the login of loan a book to a user based on the UserId and the isbn.
    if(userId!=null && isbn!=null &&verificateUser(userId) && verificateBook(isbn)) {
        if(!verificateLoans(userId, isbn)){
            return null;
        };
        Loan loan = new Loan();
        for(User user : users) {
            if (user.getId().equals(userId)) {
                loan.setUser(user);
            }
        }
        for (Book book : books.keySet()) {
            if (book.getIsbn().equals(isbn)) {
                loan.setBook(book);
                books.put(book, books.get(book) - 1);
            }
        }
        loan.setStatus(LoanStatus.ACTIVE);
        loan.setLoanDate(LocalDate.now());
        loans.add(loan);
        return loan;
    }
    return null;
}

```

métodos auxiliares para el método loanBook

```

private boolean verificateUser(String userId){ 1 usage ± CRISTIANSILVAP +1
    for(User user : users) {
        if (user.getId().equals(userId)) {
            return true;
        }
    }
    System.out.println("no hay usurio");
    return false;
}

private boolean verificateBook(String isbn){ 1 usage ± CRISTIANSILVAP
    for (Book book : books.keySet()) {
        if (book.getIsbn().equals(isbn) ) {
            return true;
        }
    }
    return false;
}

private boolean verificateLoans(String userId,String isbn){ 1 usage ± CRISTIANSILVAP +1
    for(User user : users) {
        if (user.getId().equals(userId)) {
            for(Loan loan : loans) {
                if (loan.getUser().equals(userId) && loan.getBook().equals(isbn) && loan.getStatus().equals(Loan
                    return false;
                }
            }
        }
    }

    return true;
}

```

```
public Loan returnLoan(Loan loan) { 4 usages Cristian Silva +1
    for (Loan l : loans) {
        if (l.equals(loan)){
            l.setStatus(LoanStatus.RETURNED);
            l.setReturnDate(LocalDate.now());
            Book book = l.getBook();
            books.put(book, books.get(book) + 1);
        }
    }
    return null;
}
```



[CRISTIANSILVAP](#) invited you to collaborate on
CRISTIANSILVAP/lab03-CVDS


Accept invitation



Decline invitation


🔒 Owners of lab03-CVDS will be able to see:

- Your public profile information
- [Certain activity](#) within this repository
- Country of request origin
- Your access level for this repository
- Your IP address


Is this user sending spam or malicious content?
[Block CRISTIANSILVAP](#)

 lab03-CVDS Public

 Pin  Unwatch 1

 loanABook had recent pushes 58 seconds ago Compare & pull request

main 3 Branches 0 Tags Add file <> Code


 **juanmiguelrojas** Update README.md d9c44cd · 3 hours ago 6 Commits

Library	Add files via upload	19 hours ago
imagenes	CommitIMG1	3 hours ago
README.md	Update README.md	3 hours ago


Test y metodos #1


Open juanmiguelrojas wants to merge 1 commit into main from returnLoan

Conversation 0 Commits 1 Checks 0 Files changed 5

 **juanmiguelrojas** commented now Collaborator


No description provided.

 Test y metodos ed5b349

 ✓ **This branch has no conflicts with the base branch**
Merging can be performed automatically.

Merge pull request You can also [open this in GitHub Desktop](#) or view [command line instructions](#).

Test y metodos #1

Merged CRISTIANSILVAP merged 1 commit into `main` from `returnLoan`  now

 Conversation **0**  Commits **1**  Checks **0**  Files changed **5**




juanmiguelrojas commented 1 minute ago

Collaborator ...

No description provided.



 Test y metodos

ed5b349



CRISTIANSILVAP merged commit `89d366f` into `main` now

Revert




Pull request successfully merged and closed

You're all set—the `returnLoan` branch can be safely deleted.

Delete branch

commit Casifinal #2

Merged CRISTIANSILVAP merged 1 commit into `main` from `loanABook`  now

 Conversation **0**  Commits **1**  Checks **0**  Files changed **65**




CRISTIANSILVAP commented now

Owner ...

No description provided.



 commit Casifinal

cf1f4b5



CRISTIANSILVAP merged commit `0ad6fc9` into `main` now

Revert



Pull request successfully merged and closed

You're all set — the `loanABook` branch can be safely deleted.

Delete branch

Preview Switch back to the classic merge experience · Give feedback

CREAR LA CLASE DE PRUEBA

```
package edu.eci.cvds.tdd;

import ...

public class LibraryTest {  Cristian Silva +1

    private Library library; 19 usages
    private Book ConstruyeTuDestino; 7 usages
    private User user1; 9 usages
    private Library l; 13 usages

    @BeforeEach Cristian Silva +1
    public void setUp() {
        library = new Library();
        ConstruyeTuDestino = new Book( title: "Construye tu destino", author: "Dr. Dayer", isbn: "001");
        library.addBook(ConstruyeTuDestino);
        user1 = new User();
        l = new Library();
    }
}
```

```
Simbolo del sistema x + v
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory C:\Users\miguel\OneDrive - ESCUELA COLOMBIANA DE INGENIERIA JULIO GARAVITO\Documents\CVDS\lab03\Library\src\test\resources
[INFO] --- compiler:3.13.0:testCompile (default-testCompile) @ Library ---
[INFO] Nothing to compile - all classes are up to date.
[INFO] --- surefire:3.2.5:test (default-test) @ Library ---
[INFO] Using auto detected provider org.apache.maven.surefire.junitplatform.JUnitPlatformProvider
[INFO]
[INFO] T E S T S
[INFO]
[INFO] Running edu.eci.cvds.tdd.AppTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.049 s -- in edu.eci.cvds.tdd.AppTest
[INFO] Running edu.eci.cvds.tdd.LibraryTest
[INFO] Tests run: 5, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.020 s -- in edu.eci.cvds.tdd.LibraryTest
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 6, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 1.734 s
[INFO] Finished at: 2025-02-12T18:19:07-05:00
[INFO]
C:\Users\miguel\OneDrive - ESCUELA COLOMBIANA DE INGENIERIA JULIO GARAVITO\Documents\CVDS\lab03\Library>
```

```
[INFO] Tests run: 14, Failures: 0, Errors: 0, Skipped: 0
```

COBERTURA

- Agregar la dependencia de jacoco, utilizar la última versión disponible en maven central.
- Para usar Jacoco es necesario agregar la siguiente sección en el pom.xml

```

1  <project xmlns="http://maven.apache.org/POM/4.0.0"
30  <build>
31  <plugins>
32  <!-- Plugin de JaCoCo para la cobertura de código -->
33  <plugin>
34  <groupId>org.jacoco</groupId>
35  <artifactId>jacoco-maven-plugin</artifactId>
36  <version>0.8.12</version>
37  <executions>
38  <!-- Instrumentación del código antes de ejecutar las pruebas -->
39  <execution>
40  <goals>
41  <goal>prepare-agent</goal>
42  </goals>
43  </execution>
44
45  <!-- Generación del reporte de cobertura -->
46  <execution>
47  <id>report</id>
48  <phase>test</phase>
49  <goals>
50  <goal>report</goal>
51  </goals>
52  </execution>
53
54  <!-- Verificación de cobertura mínima para aprobar la build -->
55  <execution>
56  <id>jacoco-check</id>
57  <goals>
58  <goal>check</goal>
59  </goals>
60  <configuration>

```

Library

Element	Missed Instructions	Cov.	Missed Branches	Cov.	Missed	Cxty	Missed	Lines	Missed	Methods	Missed	Classes
edu.eci.cvds.tdd.library	<div><div></div></div>	90 %	<div><div></div></div>	65 %	12	31	4	55	0	9	0	1
edu.eci.cvds.tdd.library.book	<div><div></div></div>	53 %	<div><div></div></div>	n/a	3	5	3	9	3	5	0	1
edu.eci.cvds.tdd	<div><div></div></div>	0 %	<div><div></div></div>	n/a	2	2	3	3	2	2	1	1
edu.eci.cvds.tdd.library loan	<div><div></div></div>	88 %	<div><div></div></div>	n/a	2	12	2	18	2	12	0	2
edu.eci.cvds.tdd.library.user	<div><div></div></div>	82 %	<div><div></div></div>	n/a	1	5	1	7	1	5	0	1
Total	54 of 381	85 %	15 of 44	65 %	20	55	13	92	8	33	1	6

Como se puede observar jacoco nos dice que nuestras prueba tienen más de un 80 por ciento en cobertura teniendo un 90 por ciento para la clase solicitada

SONARQUBE

Ahora es necesario hacer el análisis estático del código usando SonarQube, para lo cual necesitamos tener Docker.

Para lo cual se debe descargar la imagen de docker con el siguiente comando `docker pull sonarqube`

Ahora se debe arrancar el servicio de SonarQube con el siguiente comando `docker run -d --name sonarqube -e SONAR_ES_BOOTSTRAP_CHECKS_DISABLE=true -p 9000:9000 sonarqube:latest`

Validar funcionamiento `docker ps -a`

Iniciar sesión en sonar `localhost:9000` cambiar la clave por defecto usuario y contraseña es admin.

Entrar a las opciones de la cuenta.

Account -> settings -> generate token.

Una vez sonar este corriendo deben generar un token

Instale sonarLint en el IDE que esté manejando.


Añada el plugin de Sonar en el archivo pom del proyecto.


```
DiFga@DESKTOP-EU76KRN MINGW64 ~/Downloads/lab03-CVDS (loanABook)
$ docker pull sonarqube
Using default tag: latest
latest: Pulling from library/sonarqube
4f4fb700ef54: Pulling fs layer
f9f4ee04af87: Pulling fs layer
dbe46403441a: Pulling fs layer
e3da94a33fa1: Pulling fs layer
5a7813e071bf: Pulling fs layer
7926325aa21b: Pulling fs layer
78c140f0a6a2: Pulling fs layer
f03e4717322c: Pulling fs layer
f03e4717322c: Download complete
78c140f0a6a2: Download complete
4f4fb700ef54: Download complete
e3da94a33fa1: Download complete
dbe46403441a: Download complete
5a7813e071bf: Download complete
f9f4ee04af87: Download complete
7926325aa21b: Download complete
Digest: sha256:244903768102235d863d2d43ba82cd309c231358c8af4a6ae65db6b5f1537fde
Status: Downloaded newer image for sonarqube:latest
docker.io/library/sonarqube:latest
```

```
Difga@DESKTOP-EU76KRN MINGW64 ~/Downloads/lab03-CVDS (loanABook)
$ docker run -d --name sonarqube -e SONAR_ES_BOOTSTRAP_CHECKS_DISABLE=true -p 9000:9000 sonarqube:latest
cd0d270a2174643d1f72369c6ece1e92b414e3a1d3d874c361547335e2ead9a4
```

```
Difga@DESKTOP-EU76KRN MINGW64 ~/Downloads/lab03-CVDS (loanABook)
$ docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED
STATUS        PORTS         NAMES
cd0d270a2174   sonarqube:latest  "/opt/sonarqube/dock..."  About a minute ago
Up About a minute   0.0.0.0:9000->9000/tcp    sonarqube
```

inicio de sesion en sonar


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


 Embedded database should be used for evaluation purposes only. It doesn't support scaling, upgrading to a new SonarQube Server version, or migration to another database engine. [Learn more](#)


How do you want to create your project?


Do you want to benefit from all of SonarQube Community Build's features (like repository import and Pull Request decoration)?
Create your project from your favorite DevOps platform.


First, you need to set up a DevOps platform configuration.

 Import from Azure DevOps [Setup](#)

 Import from Bitbucket Cloud [Setup](#)


 Import from Bitbucket Server [Setup](#)

 Import from GitHub [Setup](#)


 Import from GitLab [Setup](#)

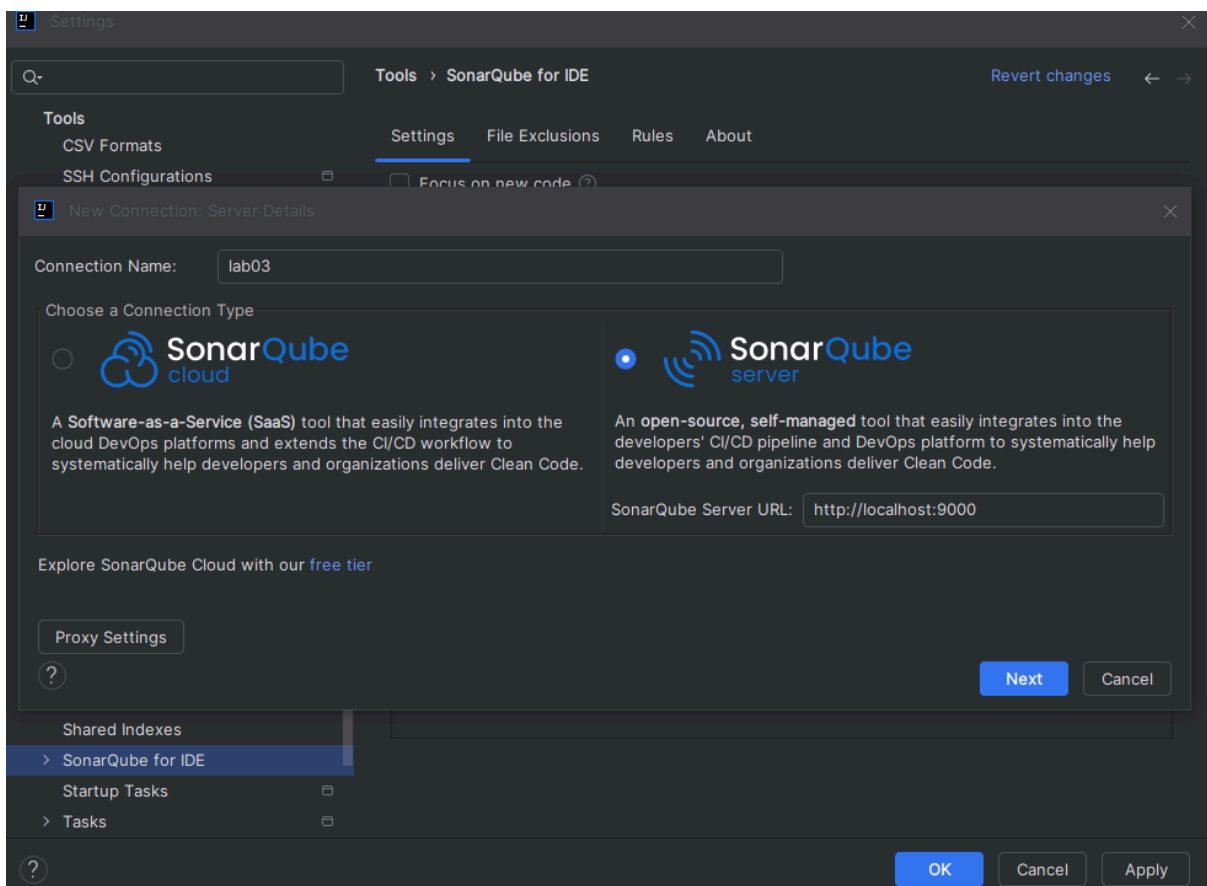
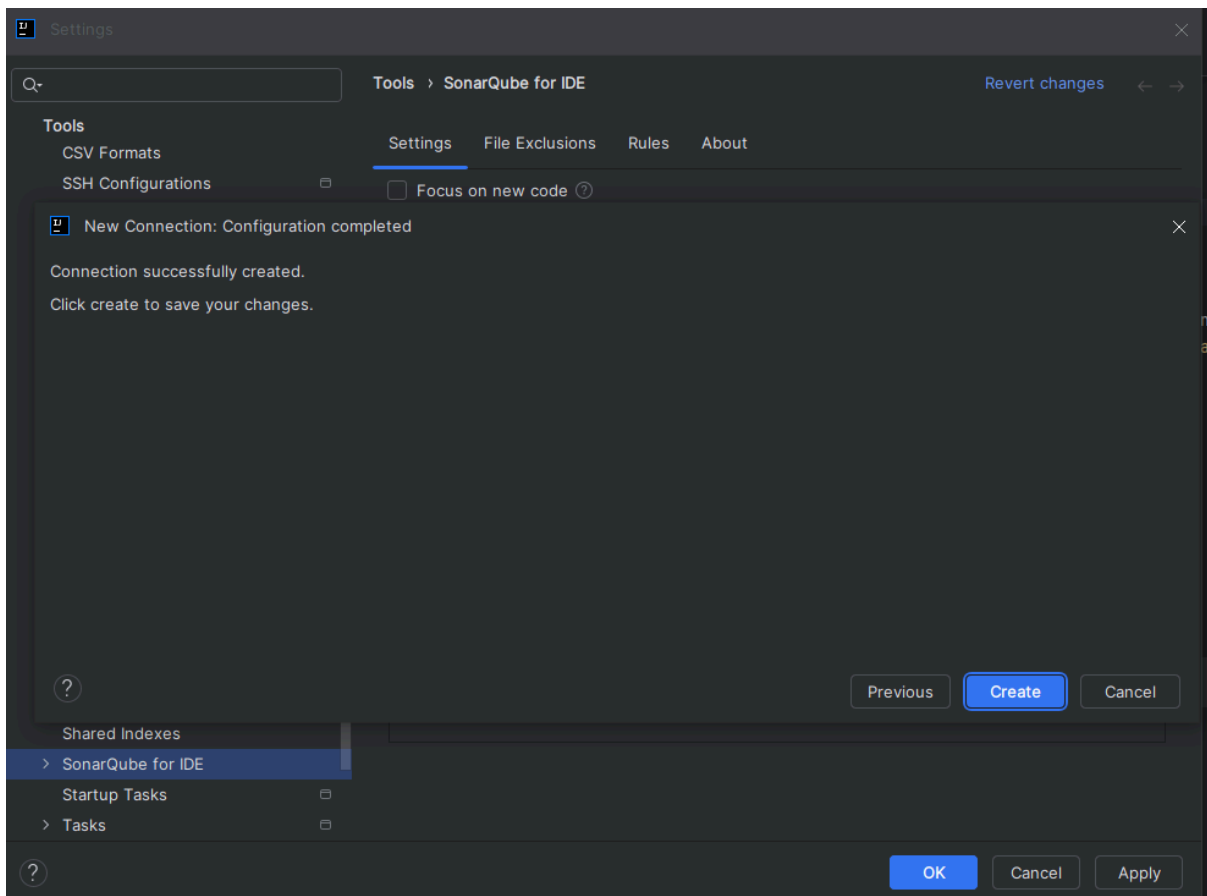
Are you just testing or have an advanced use-case? Create a local project.

[Create a local project](#)

 New token "lab03" has been created. Copy it now, you won't be able to see it again!

sqa_9cad62b80728a68ce6eb55371a4ab3c0b5eb0304





```
PS C:\Users\Oifga\Downloads\lab03-CVDS\Library> mvn verify sonar:sonar -D sonar.token=[sqa_9cad62b80728a68ce6eb55371a4ab3c0b5eb0304]
```

```
PS C:\Users\Oifga\Downloads\lab03-CVDS\Library> mvn verify sonar:sonar -D sonar.token=[sqa_9cad62b80728a68ce6eb55371a4ab3c0b5eb0304]
[INFO] Scanning for projects...
[INFO] -----< edu.eci.cvds:Library >-----
[INFO] Building Library 1.0-SNAPSHOT
[INFO] from pom.xml
[INFO] -----[ jar ]-----
[INFO] --- jacoco:0.8.12:prepare-agent (default) @ Library ---
[INFO] argLine set to -javaagent:C:\Users\Oifga\.m2\repository\org\jacoco\org.jacoco.agent\0.8.12\org.jacoco.agent-0.8.12-runtime.jar=destfile=C:\Users\Oifga\Downloads\lab03-CVDS\Library\target\jacoco.exec
[INFO] --- resources:3.3.1:resources (default-resources) @ Library ---
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory C:\Users\Oifga\Downloads\lab03-CVDS\Library\src\main\resources
[INFO] --- compiler:3.13.0:compile (default-compile) @ Library ---
[INFO] Nothing to compile - all classes are up to date.
[INFO] --- resources:3.3.1:testResources (default-testResources) @ Library ---
[WARNING] Using platform encoding (Cp1252 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory C:\Users\Oifga\Downloads\lab03-CVDS\Library\src\test\resources
[INFO] --- compiler:3.13.0:testCompile (default-testCompile) @ Library ---
[INFO] Nothing to compile - all classes are up to date.
[INFO] --- surefire:3.2.5:test (default-test) @ Library ---
[INFO] Using auto detected provider org.apache.maven.surefire.junitplatform.JUnitPlatformProvider
[INFO] -----
[INFO] T E S T S
[INFO] -----
[INFO] Running edu.eci.cvds.tdd.AppTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.096 s -- in edu.eci.cvds.tdd.AppTest
[INFO] Running edu.eci.cvds.tdd.LibraryTest
```

SonarQube for IDE suggestions