

Project Presentation

To Do List (TDL)

Simon White

## Introducing myself:

- Simon White – Belfast, 22 years old
- Background in coding through Business IT degree
- Year of professional experience as Software Engineer

## To-Do List Web Application (TDL)

- Developed a to do list for students attending school.
- CRUD functionality was added to the to do list to allow users to create, read, update and delete tasks for the list.

# Approach: AGILE

- Requirements: Project specification
- Analysis: JIRA
- Design: ERD, UML
- Coding: Java
- Testing: Maven
- Operations: Provide jar file to run the finalised application

# Analysis: Jira

Projects / TDL-PROJECT

## Backlog

SW

Epic ▾

Insights

Epic ×

Issues without epic

> Front end

> Back end

> Testing

> Project

+ Create Epic

### ▼ TDL Sprint 1 2 Aug – 6 Aug (13 issues)

174 0 0 [Start sprint](#) ⋮

To create an OOP-based web application, with utilisation of supporting tools, methodologies, and technologies, that encapsulates all fundamental and practical modules covered during training.

TDL-6 Test plans for front end user acceptance testing	TESTING	13	⬆	TO DO ▾	SW
TDL-8 README.md	PROJECT	2	⬆	TO DO ▾	SW
TDL-9 Risk Assessment	PROJECT	2	⬆	TO DO ▾	SW
TDL-11 UML	BACK END	8	⬆	TO DO ▾	SW
TDL-12 Presentation prep	PROJECT	2	⬆	TO DO ▾	SW
TDL-10 ERD	BACK END	5	⬆	TO DO ▾	SW
TDL-16 Delete functionality	FRONT END	21	⬆	TO DO ▾	SW
TDL-17 Database containing two entities	BACK END	8	⬆	TO DO ▾	SW
TDL-15 Update functionality	FRONT END	34	⬆	TO DO ▾	SW
TDL-13 Create functionality	FRONT END	21	⬆	TO DO ▾	SW

- Planning Poker used to get story points (estimations)
- Priority was given to all issues that are part of MVP (Minimal viable product). These were set at highest priority in order to achieve MVP.
- 4 epics for front-end, back-end, project documentation work and testing

Back end unit and integration testing

Reset Cards Flip Cards Previous Next Unpointed Story First Story

34 Simon White

Looking to reach a target audience of program and agile practitioners

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### Your Planning Poker® Game Summary

#### TDL-PROJECT

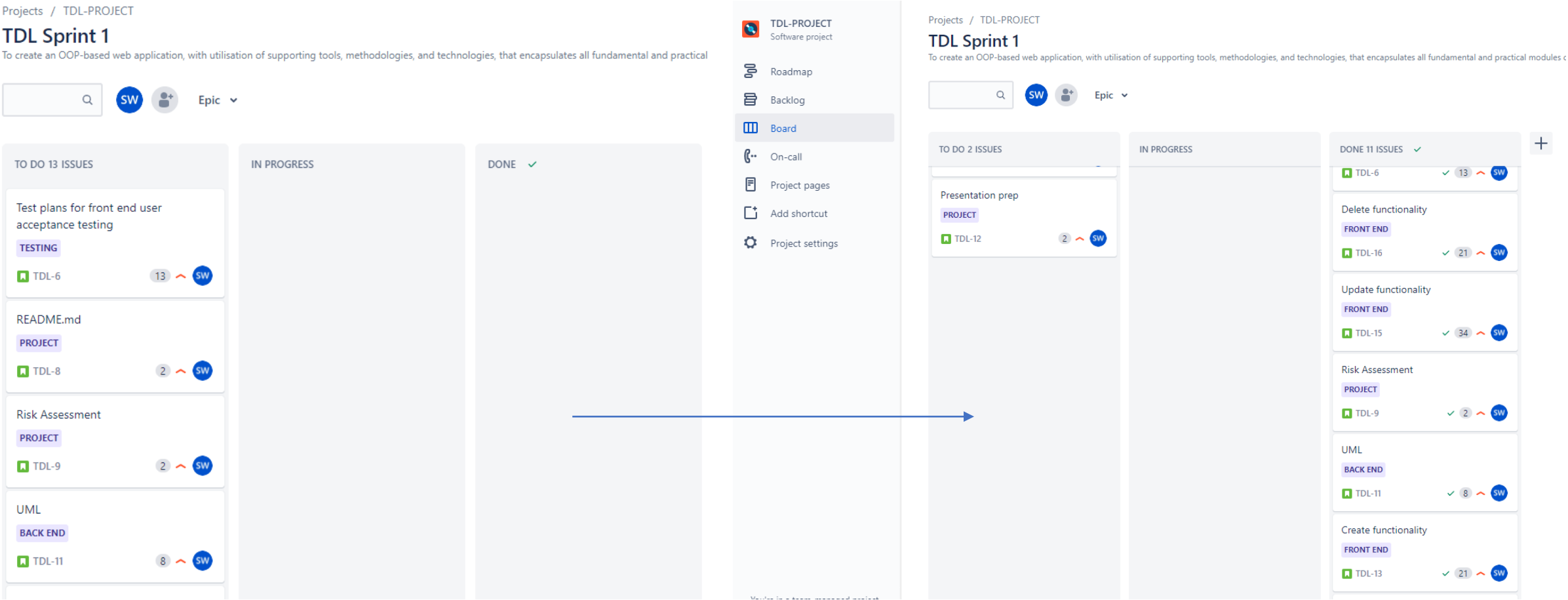
Story	Story Title	Score
1	Database creation	8
2	Delete functionality	21
3	Update functionality	34
4	Read functionality	21
5	Create functionality	21
6	Presentation prep	2
7	UML	8
8	ERD	5
9	Risk assessment	2
10	readME.md	2
11	Project management board	3
12	Test plans for front end user acceptance testing	13
13	Back end unit and integration testing	34

34

0 1 2 3 5 8 13 21 55 89 ? Pass

Active Spectator

# IMS Sprint: Kanban board



# Design: ERD and Database Implementation

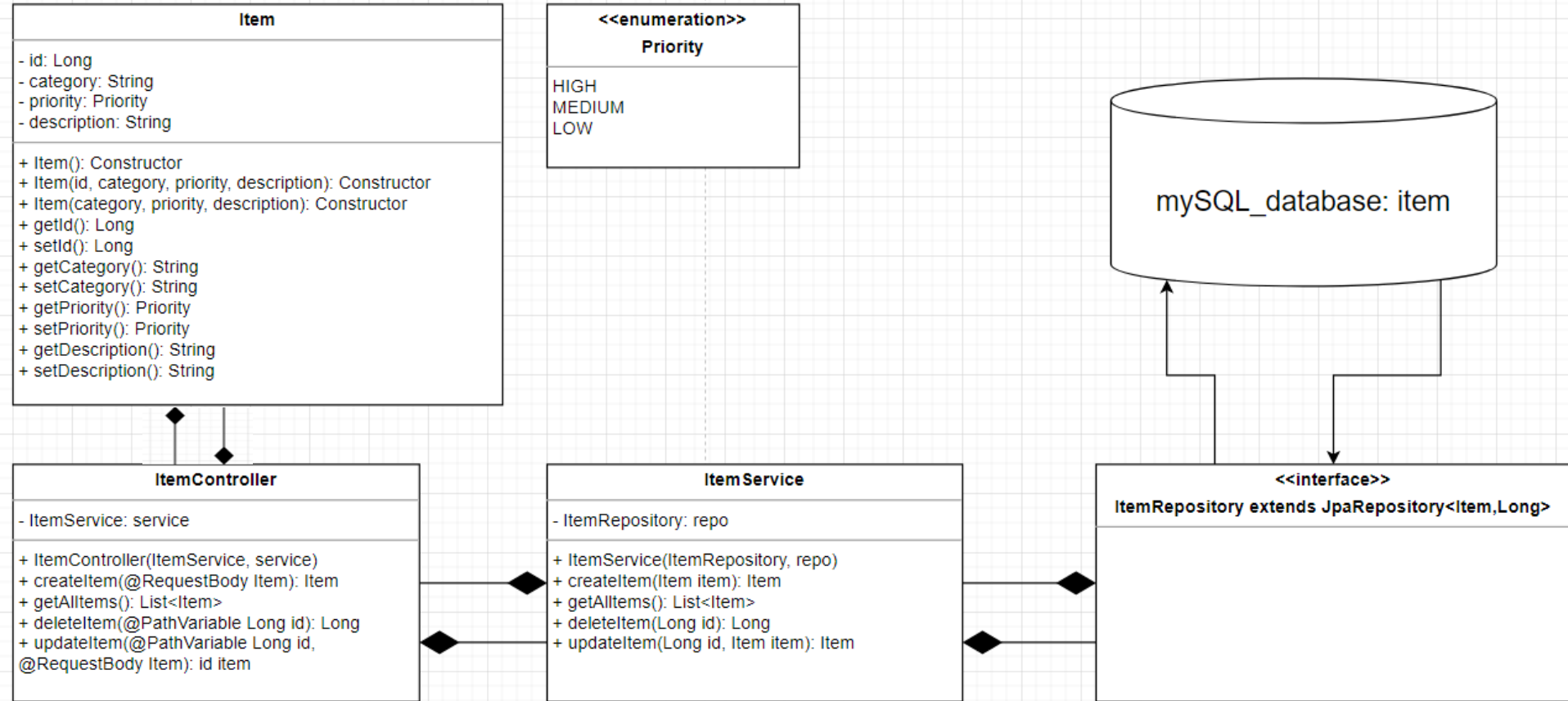
item
id BIGINT
category VARCHAR(255)
description VARCHAR(255)
priority VARCHAR(255)
Indexes

```
1 • SELECT * FROM item;
```

id	category	description	priority
15	ICT	ICT homework due on Tuesday.	MEDIUM
16	ICT	ICT exam coming up. Start revising!	HIGH
17	Maths	Try to go over Pythagoras theorem when you g...	LOW
18	English Lit	Read pages 48-90 of Macbeth are critically anal...	HIGH
20	Sport	Rugby training starts at 6:30 on Tuesday.	MEDIUM
21	Sport	Need to Athletics track shoes for summer.	HIGH
22	Mentor	Have mentoring sheet updated with mentee pro...	HIGH
25	Geography	The continents formation from Pangea.	MEDIUM

# Design: UML

- Composition
- Two classes highly dependent on each other





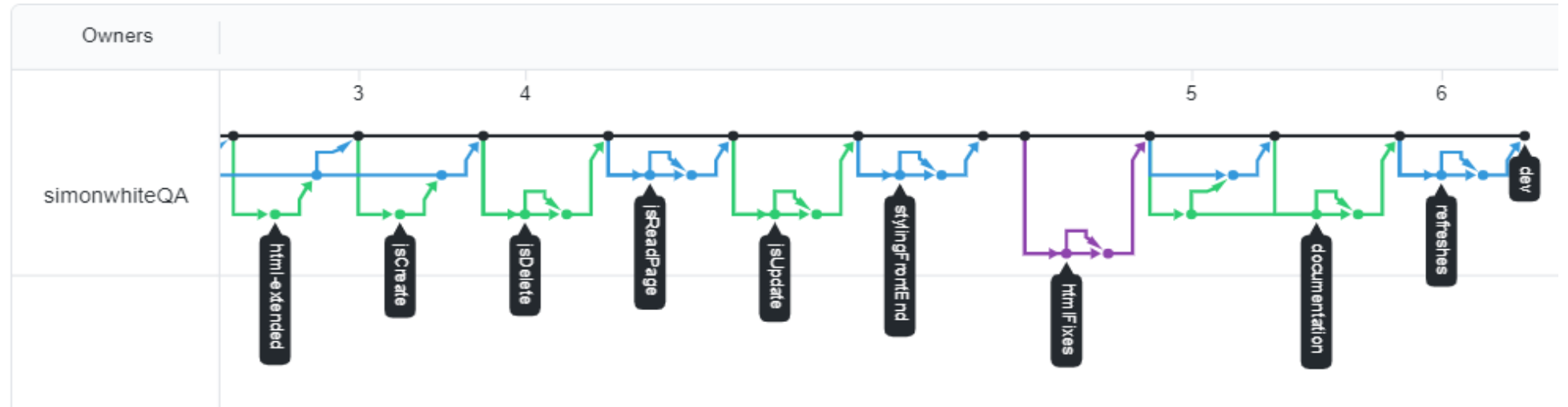
# Consultant Journey: Technologies

- **Version Control System:** Git
- **Source Code Management:** GitHub
- **Kanban Board:** Jira/Planning Poker
- **Database Management System:** MySQL Server
- **Back-End Programming Language:** Java
- **API Development Platform:** Spring
- **Front-End Web Technologies:** HTML, CSS, JavaScript
- **Build Tool:** Maven
- **Static Analysis:** SonarQube
- **Unit & Integration Testing:** JUnit, Mockito
- **User-Acceptance Testing:** Selenium

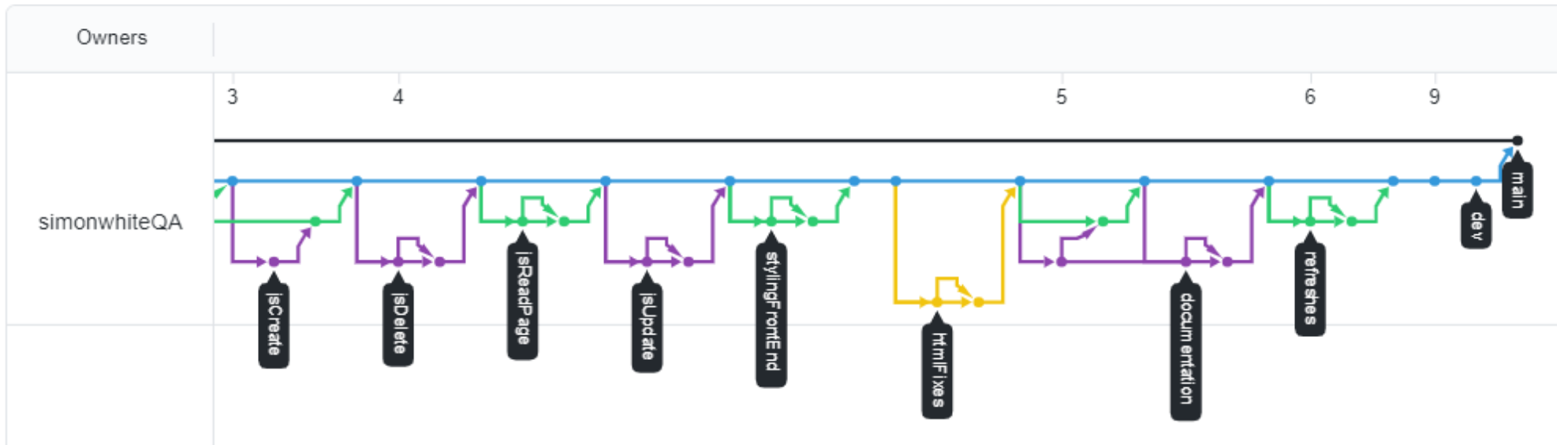
# Continuous Integration

- Feature branch model (GIT)

BEFORE

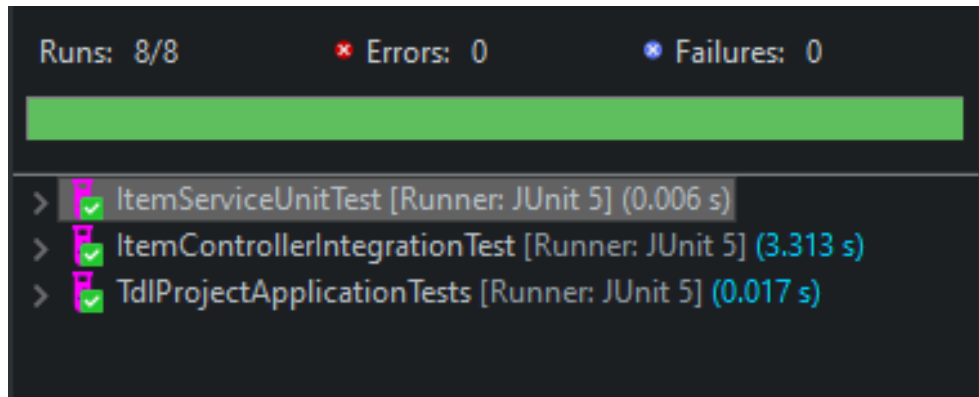


AFTER



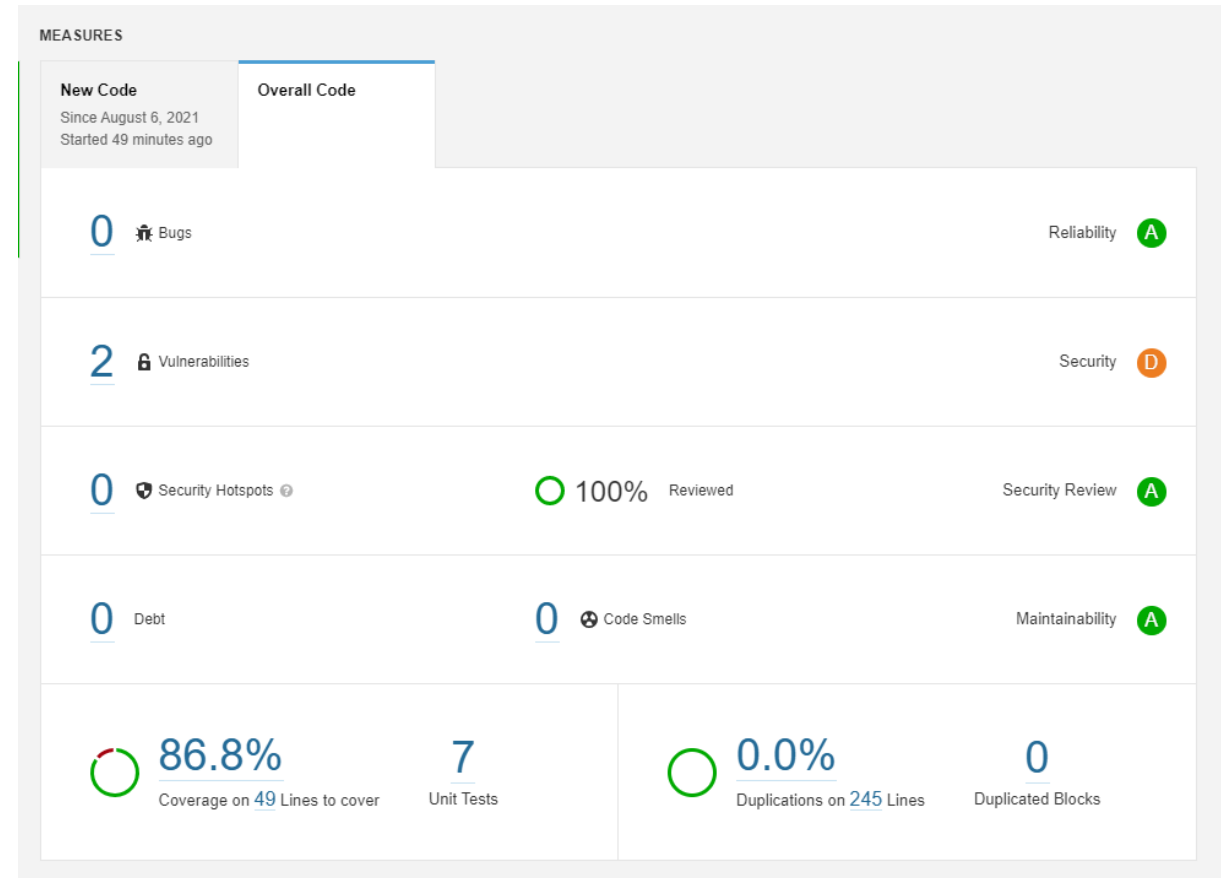
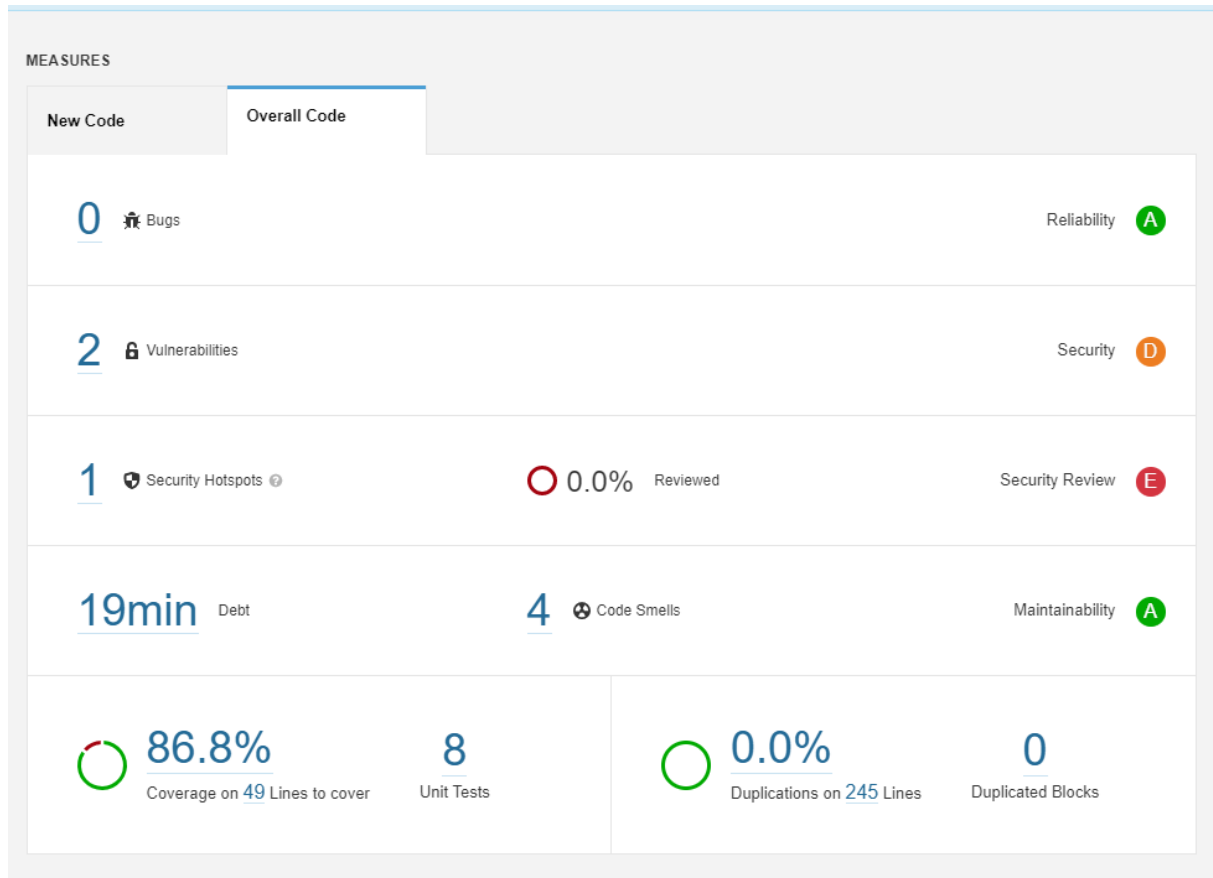
# Testing

- **Unit testing:** Unit testing is a testing approach that targets the very fundamental building blocks of an application, the idea is to prove that each 'unit' of the application is functioning as expected.
- **Integration testing:** Integration testing is a testing approach that targets the very fundamental building blocks of an application, the idea is to prove that each 'integration' of the application is functioning as expected.
- Industry standard of 80% for testing coverage of src/main/java
- JUnit: The unit testing dependency for maven to test java application
- Using Maven: Maven is a build automation tool



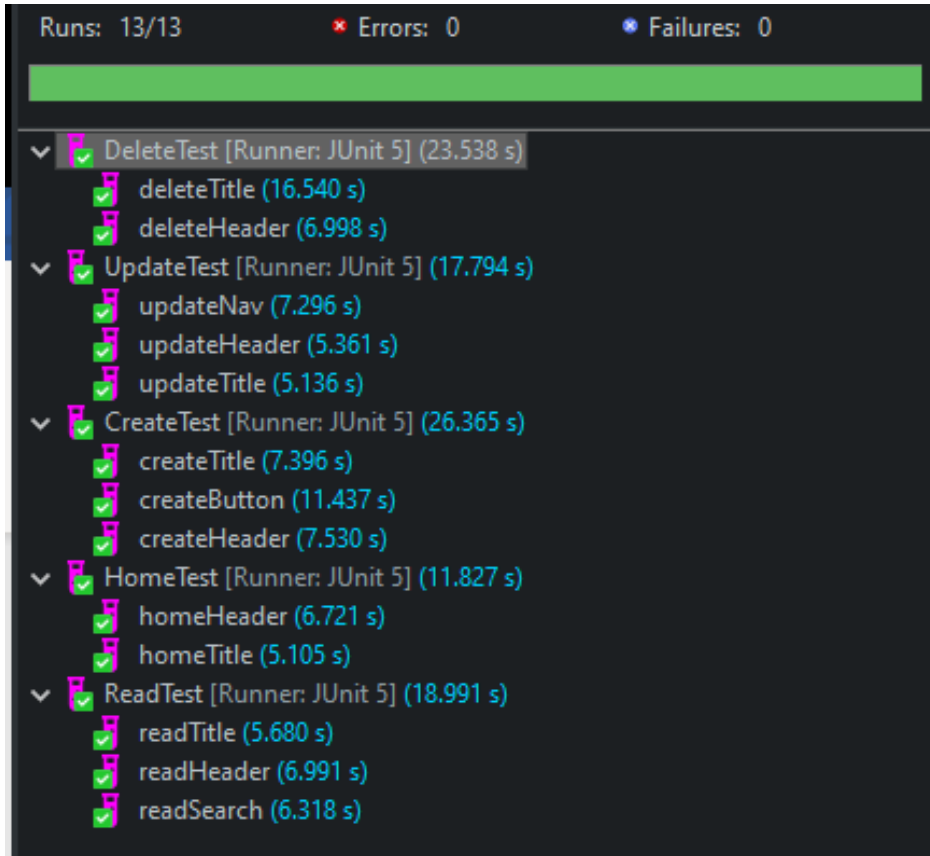
Element	Coverage
▼ TDL-Project	<div></div> 95.4 %
> src/main/java	<div></div> 89.2 %
> src/test/java	<div></div> 100.0 %

# SonarQube: Static analysis (Refactoring)






# Selenium: Front-End


Each web page tested







Runs: 13/13      ✖ Errors: 0      ⚙ Failures: 0




▼  DeleteTest [Runner: JUnit 5] (23.538 s)


-  deleteTitle (16.540 s)
-  deleteHeader (6.998 s)



▼  UpdateTest [Runner: JUnit 5] (17.794 s)


-  updateNav (7.296 s)
-  updateHeader (5.361 s)
-  updateTitle (5.136 s)




▼  CreateTest [Runner: JUnit 5] (26.365 s)

-  createTitle (7.396 s)
-  createButton (11.437 s)
-  createHeader (7.530 s)

▼  HomeTest [Runner: JUnit 5] (11.827 s)

-  homeHeader (6.721 s)
-  homeTitle (5.105 s)

▼  ReadTest [Runner: JUnit 5] (18.991 s)

-  readTitle (5.680 s)
-  readHeader (6.991 s)
-  readSearch (6.318 s)

Create test example

```
@Test
public void createButton() throws InterruptedException {
    driver.get("http://127.0.0.1:5500/html/Create.html");
    String testCat = "test";
    String testDescription = "test";

    WebElement categoryInput = this.driver.findElement(By.id("category"));
    categoryInput.sendKeys(testCat);

    Select priority = new Select(driver.findElement(By.id("priority")));
    priority.selectByIndex(2);

    WebElement descInput = this.driver.findElement(By.id("description"));
    descInput.sendKeys(testDescription);

    WebElement createBtn = this.driver.findElement(By.id("submit"));
    createBtn.click();
}
```

# Demonstration

## Build jar file

```
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 3.265 s
[INFO] Finished at: 2021-08-09T11:58:44+01:00
[INFO] -----
```

## Run application

```

  :: Spring Boot ::                (v2.5.3)

2021-08-09 12:04:56.637 INFO 9624 --- [main] com.qa.spring.TdlProjectApplication : Starting TdlProjectApplication v0.0.1-SNAPSHOT using Java 14.0.1 on DESKTOP-E23IPUN with PID 9624 (C:\Users\Acer Swift 1\Documents\QA Consulting\TDL-JUNESDET\TDL-VS\TDL-PR
OBJECT\TDL-Project\target\TDL-Project-0.0.1-SNAPSHOT.jar started by Acer Swift 1 in C:\Users\Acer Swift 1\Documents\QA Consulting\TDL-JUNESDET\TDL-VS\TDL-PROJECT\TDL-Project\target)
2021-08-09 12:04:56.664 INFO 9624 --- [main] com.qa.spring.TdlProjectApplication : The following profiles are active: production
2021-08-09 12:05:05.192 INFO 9624 --- [main] .s.d.r.c.RepositoryConfigurationDelegate : Bootstrapping Spring Data JPA repositories in DEFAULT mode.
2021-08-09 12:05:05.871 INFO 9624 --- [main] .s.d.r.c.RepositoryConfigurationDelegate : Finished Spring Data repository scanning in 597 ms. Found 1 JPA repository interfaces.
2021-08-09 12:05:11.627 INFO 9624 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat initialized with port(s): 8080 (http)
2021-08-09 12:05:11.714 INFO 9624 --- [main] o.apache.catalina.core.StandardService : Starting service [Tomcat]
2021-08-09 12:05:11.716 INFO 9624 --- [main] org.apache.catalina.core.StandardEngine : Starting Servlet engine: [Apache Tomcat/9.0.50]
2021-08-09 12:05:12.272 INFO 9624 --- [main] o.a.c.c.C.[Tomcat].[localhost].[/] : Initializing Spring embedded WebApplicationContext
2021-08-09 12:05:12.272 INFO 9624 --- [main] w.s.c.ServletWebServerApplicationContext : Root WebApplicationContext: initialization completed in 15106 ms
2021-08-09 12:05:13.532 INFO 9624 --- [main] o.hibernate.jpa.internal.util.LogHelper : HHH000204: Processing PersistenceUnitInfo [name: default]
2021-08-09 12:05:14.056 INFO 9624 --- [main] org.hibernate.Version : HHH0000412: Hibernate ORM core version 5.4.32.Final
2021-08-09 12:05:15.229 INFO 9624 --- [main] o.hibernate.annotations.common.Version : HCANN000001: Hibernate Commons Annotations {5.1.2.Final}
2021-08-09 12:05:16.158 INFO 9624 --- [main] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Starting...
2021-08-09 12:05:18.280 INFO 9624 --- [main] com.zaxxer.hikari.HikariDataSource : HikariPool-1 - Start completed.
2021-08-09 12:05:18.551 INFO 9624 --- [main] org.hibernate.dialect.Dialect : HHH000400: Using dialect: org.hibernate.dialect.MySQL8Dialect
2021-08-09 12:05:23.321 INFO 9624 --- [main] o.h.e.t.j.p.i.JtaPlatformInitiator : HHH000490: Using JtaPlatform implementation: [org.hibernate.engine.transaction.jta.platform.internal.NoJtaPlatform]
2021-08-09 12:05:23.373 INFO 9624 --- [main] j.LocalContainerEntityManagerFactoryBean : Initialized JPA EntityManagerFactory for persistence unit 'default'
2021-08-09 12:05:25.515 WARN 9624 --- [main] JpaBaseConfiguration$JpaWebConfiguration : spring.jpa.open-in-view is enabled by default. Therefore, database queries may be performed during view rendering. Explicitly configure spring.jpa.open-in-view to disable
this warning
2021-08-09 12:05:29.133 INFO 9624 --- [main] o.s.b.w.embedded.tomcat.TomcatWebServer : Tomcat started on port(s): 8080 (http) with context path ''
2021-08-09 12:05:29.294 INFO 9624 --- [main] com.qa.spring.TdlProjectApplication : Started TdlProjectApplication in 37.309 seconds (JVM running for 44.268)

```

# Create

To Do List   Create   Read   Update   Delete

## Create

Create an item for the to do list below

### Your 'To Do List'

Search by category...

#ID	Category	Priority	Description
15	ICT	MEDIUM	ICT homework due on Tuesday.
16	ICT	HIGH	ICT exam coming up. Start revising!
17	Maths	LOW	Try to go over Pythagoras theorem when you get the chance.
18	English Lit	HIGH	Read pages 48-90 of Macbeth and critically analyse the meaning of what happens.
20	Sport	MEDIUM	Rugby training starts at 6:30 on Tuesday.
21	Sport	HIGH	Need to buy Athletics track shoes for summer.
22	Mentor	HIGH	Have mentoring sheet updated with mentee progress.
25	Geography	MEDIUM	The continents formation from Pangea.

### Create an item for the to do list

Test

Medium

test

Create

# Create

To Do List

Create


Read

Update

Delete

Create 

Create an item for the to do list below

Your 'To Do List' 

Search by category...

#ID	Category	Priority	Description
15	ICT	MEDIUM	ICT homework due on Tuesday.
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22	Mentor	HIGH	Have mentoring sheet updated with mentee progress.
25	Geography	MEDIUM	The continents formation from Pangea.
36	Test	MEDIUM	test

Create an item for the to do list

Enter the category...

Set the priority...

Enter the description here...

Create



## Read all tasks

### Read

View all items currently in the do list

Search by category...

### Your 'To Do List'

#ID	Category	Priority	Description
15	ICT	MEDIUM	ICT homework due on Tuesday.
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20	Sport	MEDIUM	Rugby training starts at 6:30 on Tuesday.
21	Sport	HIGH	Need to Athletics track shoes for summer.

# Read all tasks by category

To Do List

CreateReadUpdateDelete

Read



View all items currently in the do list

Sport

## Your 'To Do List'



#ID	Category	Priority	Description
20	Sport	MEDIUM	Rugby training starts at 6:30 on Tuesday.
21	Sport	HIGH	Need to Athletics track shoes for summer.

# Update

## Update

Update an item currently in the do list

### Your 'To Do List'

Search by category...

#ID	Category	Priority	Description
15	ICT	MEDIUM	ICT homework due on Tuesday.
16	ICT	HIGH	ICT exam coming up. Start revising!
17	Maths	LOW	Try to go over Pythagoras theorem when you get the chance.
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20	Sport	MEDIUM	Rugby training starts at 6:30 on Tuesday.
21	Sport	HIGH	Need to buy Athletics track shoes for summer.
22	Mentor	HIGH	Have mentoring sheet updated with mentee progress.
25	Geography	MEDIUM	The continents formation from Pangea.
36	Test	MEDIUM	test

### Update an item for the to do list

36

test change

High

test change

Update

# Update

## Update

Update an item currently in the do list

### Your 'To Do List'

Search by category...

#ID	Category	Priority	Description
15	ICT	MEDIUM	ICT homework due on Tuesday.
16	ICT	HIGH	ICT exam coming up. Start revising!
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22	Mentor	HIGH	Have mentoring sheet updated with mentee progress.
25	Geography	MEDIUM	The continents formation from Pangea.
36	test change	HIGH	test change

### Update an item for the to do list

Item ID...

Enter the category...

Set the priority...

Enter the description here...

Update

# Delete

To Do List

Create

Read

Update

Delete

Delete



Delete an item from the to do list

Your 'To Do List'

Search by category...

#ID	Category	Priority	Description
15	ICT	MEDIUM	ICT homework due on Tuesday.
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25	Geography	MEDIUM	The continents formation from Pangea.
36	test change	HIGH	test change

Delete an item from the to do list

36

Delete

# Delete

To Do List   Create   Read   Update   Delete

## Delete

Delete an item from the to do list

### Your 'To Do List'

Search by category...

#ID	Category	Priority	Description
15	ICT	MEDIUM	ICT homework due on Tuesday.
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21	Sport	HIGH	Need to buy Athletics track shoes for summer.
22	Mentor	HIGH	Have mentoring sheet updated with mentee progress.
25	Geography	MEDIUM	The continents formation from Pangea.

### Delete an item from the to do list

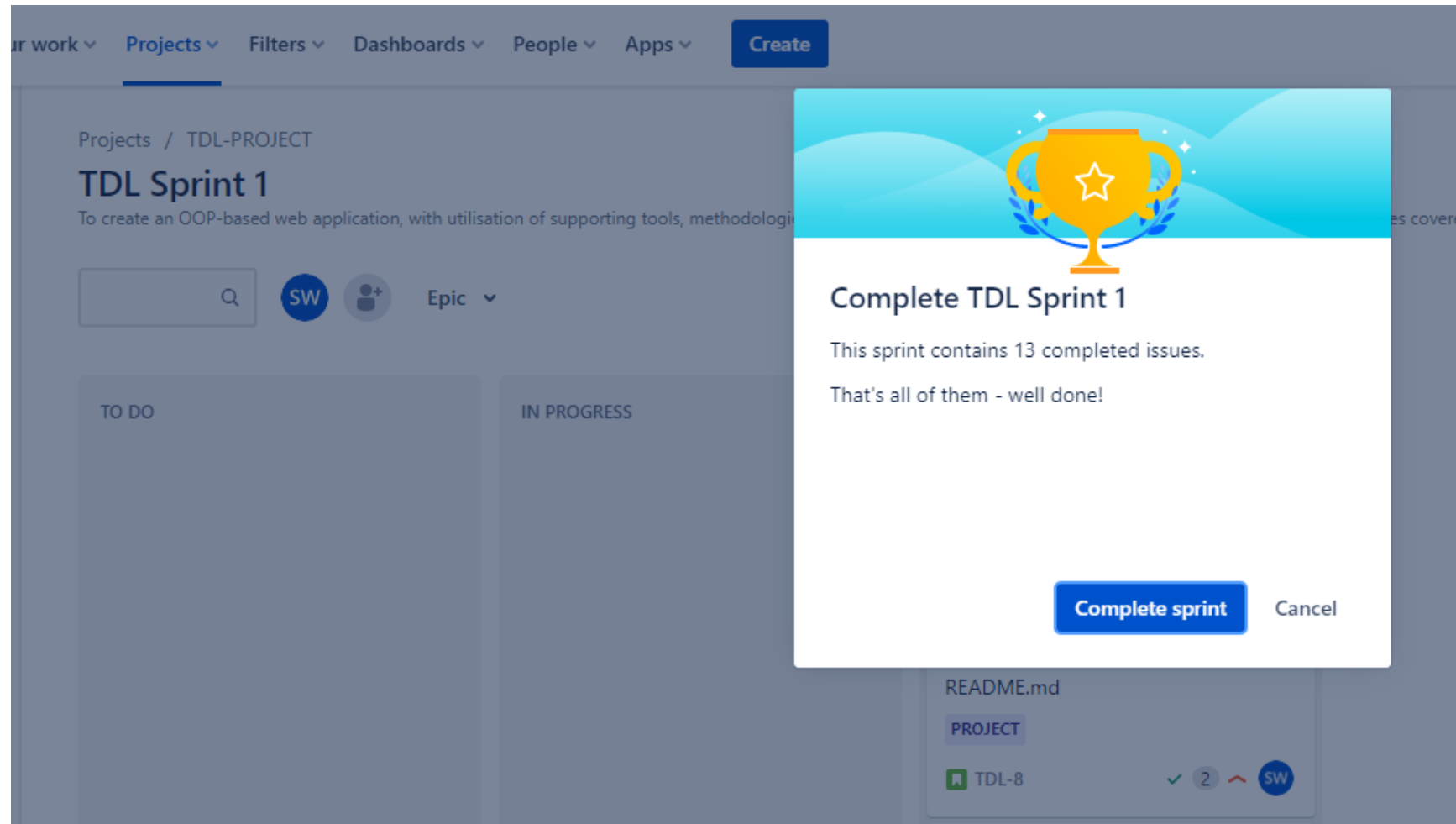
Enter the id to delete...

Delete

# Sprint review

## Completed (MVP)

- Front end: crud functionality works as expected
- Testing coverage meets 80% for back end
- One database entity was created to persist data for the project
- Documentation was complete
- Project management was used effectively
- Feature branch model used for continuous integration
- Front end test cases pass
- An executable jar file was produced



# Sprint retrospective

## Positives

- Improved understanding of the fundamentals of completing a project using an agile approach
- Improved understanding of Java and its corresponding principles for good practise
- Multi tier architecture understanding improved through development of full stack web application
- Testing of both back end and front end ran smoothly
- Front end design and functionality was one of the stronger parts of the project

## Negatives

- Although continuous integration was followed better than the last project. The naming convention of feature-<concept> was not followed
- More extensive front end testing may have been worthwhile. Better time management may have made this possible
- Static analysis showed that at the deadline there were still two vulnerabilities



# Conclusion

- All requirements of MVP were met
- CRUD functionality runs as expected
- Testing coverage meets industry standard and all tests pass
- Understanding of the development of a full stack web application has improved
- Mistakes that I have encountered during this project will be influential in how I approach projects in the future
- Refactoring is something I will be considering for future projects in order to keep code DRY and reduce the impact of code smells and vulnerabilities in SonarQube analysis.