Workgroup C1.067

WIS TESTING REPORT

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Executive Summary:

This report presents the testing strategies employed during the development of the "Escape from Elba," a strategic interactive game developed using Java Spring Boot for the backend and React JavaScript for the frontend. Our team, formed as part of the course DISEÑO Y PRUEBAS I , applied the principles of quality assurance to ensure a robust and engaging user experience.

To validate the functionality of the application, we implemented comprehensive testing methodologies, including unit testing, integration testing, and frontend testing. Utilizing JUnit and Mockito for the backend and Jest for the frontend, we achieved a test coverage exceeding 80%. While we successfully covered most of the code, we identified some areas for improvement, particularly in the implementation of hash codes and equals methods.

Our incremental approach to testing involved gradually integrating tests into the development process across different sprints. This collaborative effort allowed team members to focus on their respective components while also reviewing each other’s work to ensure comprehensive coverage and quality.

Revision Table

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# INTRODUCTION

Our journey as a team in developing Web Information Systems (WIS) began with the course **DISEÑO Y PRUEBAS I**, where we gained essential skills in quality assurance and testing methodologies. This foundation proved invaluable as we embarked on the "Escape from Elba" project.

In this project, we aimed to create an immersive gaming experience while applying the testing principles learned in class.

# CONTENTS

## 1. Types of Testing Conducted

To ensure the reliability and functionality of the application, we conducted various types of testing:

* **Unit Testing.** We performed unit tests on all components and modules of the application, focusing on entities, services, and controllers. We utilized JUnit and Mockito as our primary testing frameworks. This encompassed testing individual methods and verifying that the expected results were produced.
* **Integration Testing**. Our integration tests aimed to validate interactions between different components, ensuring that they worked together as intended. This included testing the communication between controllers and services, as well as data persistence through repositories.
* **Frontend Testing**. On the frontend, we concentrated on validating user interactions and component renderings. We used Jest to test React components, particularly focusing on features that involved listing functionalities such as displaying game pieces and user information.

## 2. Test Coverage & Findings

Our testing efforts achieved an impressive test coverage of over 80%. However, we identified certain areas for improvement:

* Not all hashCode and equals methods were implemented, leading to some components having lower coverage.
* During testing, we discovered major modeling issues, including an excess of squares in our game model compared to expectations.
* We uncovered unnecessary code, such as several endpoints that served no functional purpose, along with exceptions that were never triggered. This indicated areas for potential code cleanup and optimization.

## 3. Incremental Testing Approach

Testing was gradually implemented throughout our development process:

* In the first delivery, we did not focus on testing.
* We began to implement tests in the second and third deliverables, with a primary emphasis on ensuring coverage of critical components.
* By the end of the fourth sprint, we focused primarily on refactoring and enhancing our testing suite to support the finalized game.

## 4. Team Collaboration

Testing became a collaborative effort among team members. Each member took responsibility for testing their specific entities and controllers while also reviewing tests written by other team members. This allowed for collective ownership of the testing process and enabled us to catch potential oversights.

# CONCLUSIONS

In conclusion, the testing process for "Escape from Elba" highlighted the importance of rigorous quality assurance in software development. Our team effectively applied various testing methodologies, achieving over 80% code coverage and uncovering critical issues that led to significant improvements in the application. The collaborative nature of our testing efforts allowed us to enhance our understanding of best practices while ensuring the functionality and reliability of the game.

# BIBLIOGRAPHY

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