UNIVAQ

Alphabet Tiles
Supplementary Specification

Version <1.0>

Revision History

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Supplementary Specification

1. Introduction

This Supplementary Specification complements the "Alphabet Tiles" project's use-case model by detailing system requirements not readily captured in use cases. It encompasses legal and regulatory requirements, quality attributes like usability and reliability, and other vital factors such as compatibility and design constraints. This document aims to provide a thorough overview of these aspects, ensuring a comprehensive understanding of all requirements essential for the successful development and operation of the "Alphabet Tiles" system.

1.1 Purpose

The purpose of this Supplementary Specification is to outline and detail the system requirements for the "Alphabet Tiles" project that are not explicitly addressed in the use-case model. This includes specifying quality attributes like usability and performance, legal and regulatory compliance, and various technical and operational constraints. The document ensures that all these essential aspects are clearly defined and considered in the development process, contributing to the creation of a comprehensive, functional, and compliant system.

1.2 Scope

The scope of this Supplementary Specification is dedicated to the "Alphabet Tiles" project. It covers all system requirements not captured in the use-case model, including legal and regulatory standards, quality attributes like reliability and usability, and other technical specifications. This document influences the project's design, development, and operational strategies, ensuring a comprehensive approach to meeting the project's diverse needs and requirements.

1.3 Definitions, Acronyms, and Abbreviations

All definitions, acronyms, and abbreviations used in this Supplementary Specification are provided in the Business Glossary Document.

1.4 References

- Vision Document.
- Business Glossary Document.
- Use Cases Document.

1.5 Overview

This Supplementary Specification is structured to sequentially cover the non-functional requirements and constraints of the "Alphabet Tiles" project. It systematically details legal and regulatory standards, quality attributes such as usability and reliability, and various operational and technical considerations. The document is organized to provide clear guidance on these critical aspects, ensuring a comprehensive understanding for effective project development and implementation.

2. Functionality

This section of the Supplementary Specification outlines the functional requirements of the "Alphabet Tiles" system. These requirements are expressed in a natural language style to ensure clarity and comprehensibility. The organization of this section is primarily feature-based, with each functional requirement corresponding to a specific capability or aspect of the "Alphabet Tiles" game.

2.1 <Interactive Gameplay>

The system must provide an interactive gameplay experience where players form words using lettered tiles. This includes features like drag-and-drop tile placement, real-time word validation, and interactive feedback on word formation.

2.2 <User Progress Tracking>

The game must track user progress, including levels completed, words formed, and points scored. This tracking should be visible to the user and contribute to a personalized gaming experience.

2.3 <Multi-Level Difficulty>

"Alphabet Tiles" should offer multiple difficulty levels, catering to a range of user skill sets from beginner to advanced.

3. Usability

This section addresses the usability requirements for the "Alphabet Tiles" game, focusing on user accessibility and ease of use

3.1 <Task Efficiency>

The game interface and mechanics should be designed to enable users to perform common tasks, such as selecting tiles and forming words, quickly and efficiently. The average task completion time should be optimized to ensure a smooth and enjoyable gaming experience.

3.2 <Compliance with Usability Standards>

The design and interaction model of "Alphabet Tiles" should adhere to recognized usability standards, ensuring that the game is intuitive, accessible, and user-friendly. This includes consideration of consistent layout, color schemes, font sizes, readable text and clear navigation to accommodate a diverse user base.

3.3 <Help Instructions>

"Alphabet Tiles" should include concise and clear help instructions. These instructions will guide users on gameplay mechanics, controls, and objectives, allowing them to understand and navigate the game effectively.

4. Reliability

This section specifies the reliability requirements for the "Alphabet Tiles" system, ensuring consistent and dependable operation.

4.1 <High Availability>

"Alphabet Tiles" should be operational and accessible for users most of the time.

4.2 <Resilience to Failures>

The system should be designed to handle failures gracefully. In the event of a malfunction, it should be able to recover and be restored to full functionality quickly , allowing users to resume gameplay from where they left off without losing progress.

4.3 <System Accuracy>

Accuracy in gameplay and scoring is crucial. The system should reliably register and process user inputs to ensure a fair and enjoyable gaming experience.

5. Performance

This section outlines general performance requirements for the "Alphabet Tiles" system to ensure optimal operation.

5.1 <Quick Response Time>

The system should respond swiftly to user transactions, like word submissions or level changes, maintaining a smooth and responsive gameplay experience.

5.2 <Efficient Throughput>

"Alphabet Tiles" should handle a significant number of transactions efficiently to ensure consistent performance.

5.3 <Device Capacity Utilization>

The game should be optimized to use the device's resources effectively, maintaining performance without excessive memory or CPU usage.

5.4 <Resource Optimization>

Optimal use of local storage for game saves and progress, ensuring data integrity and quick access.

6. Supportability

This section addresses the requirements that enhance the supportability and maintainability of the "Alphabet Tiles" system, ensuring it remains functional and up-to-date over time.

6.1 <Cross-Platform Compatibility>

Due to its development in Java, a cross-platform programming language, "Alphabet Tiles" is designed to be compatible with any computer device, regardless of the operating system. This ensures that the game can be easily accessed and used across different platforms like Windows, macOS, and Linux without compatibility issues.

6.2 <Adherence to Coding Standards>

The development of "Alphabet Tiles" must follow established coding standards, such as clean code principles and well-documented code. This ensures easier maintenance and future updates.

6.3 <Naming Conventions and Documentation>

Consistent naming conventions should be used throughout the codebase, and comprehensive documentation should be maintained. This facilitates easier understanding and modification of the code by different developers.

6.4 <Use of Class Libraries>

Where applicable, the system should utilize standard class libraries to promote code reuse and reduce development time, contributing to easier long-term maintenance.

6.5 <Maintenance Utilities>

The system should include maintenance utilities or features that allow for efficient troubleshooting, updates, and performance monitoring.

7. Design Constraints

This section outlines specific design constraints for the "Alphabet Tiles" project, which dictate certain aspects of its development and design.

7.1 <Java as Primary Development Language>

"Alphabet Tiles" must be developed using Java. This decision mandates the use of Java's frameworks and libraries, influencing both the structure and capabilities of the game. The choice of Java inherently imposes certain architectural patterns and design approaches suitable for a Java-based environment.

7.2 <Architectural Constraints>

The game's architecture should support scalability and maintainability, adhering to well-established design patterns suitable for educational gaming software. This includes a modular design for easy updates and enhancements.

7.3 <Use of Prescribed Development Tools>

Development of "Alphabet Tiles" should utilize specific, predetermined tools and environments, such as certain Integrated Development Environments (IDEs) compatible with Java.

7.4 <Interface Design Standards>

The user interface design must conform to standard usability and accessibility guidelines, ensuring the game is user-friendly and accessible to a wide range of players.

8. Online User Documentation and Help System Requirements

The "Alphabet Tiles" project will have its business rules documentation readily available alongside the game. This includes in-game help options as well as online resources, ensuring that players can access guidance and support both within and outside of the game environment.

9. Interfaces

This section defines the various interfaces that the "Alphabet Tiles" application supports, ensuring clarity for software development and interface compatibility.

9.1 User Interfaces

"Alphabet Tiles" will feature user-friendly interfaces with clear and engaging graphical elements. This includes easy-to-read fonts, interactive elements for game navigation, and straightforward access to game features like level selection and player progress. The design prioritizes simplicity and clarity to cater to a broad range of users, ensuring an enjoyable and accessible gaming experience.

9.2 Hardware Interfaces

"Alphabet Tiles" does not require specific hardware interfaces, as it's primarily designed for standard PC and laptop configurations. It should be compatible with general input devices such as keyboards, mice, and touchscreen interfaces.

9.3 Software Interfaces

The game interfaces with standard operating system components and may interact with common software libraries and Java runtime environments.

9.4 Communications Interfaces

For the offline version of "Alphabet Tiles," communication interfaces with external systems or devices are not required. For potential future online functionalities, standard internet protocols and data exchange formats will be utilized.

10. Licensing Requirements

The project will employ a simple licensing approach, likely utilizing open-source or educational licenses. This aligns with the game's educational focus and avoids the complexity of commercial software licensing mechanisms. The software will be equipped to ensure compliance with these licensing terms.

11. Applicable Standards

The "Alphabet Tiles" project will adhere to relevant legal, quality, and regulatory standards applicable to educational software. This includes industry standards for usability, interoperability, internationalization, and compliance with operating system requirements, ensuring the software meets established norms and best practices in these areas.