Software Requirements Specification for English Learning Website
(Word List Management System)

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Table of Contents

Revision History

Name	Date	Reason For Changes	Version
Communication and Requirements Gathering	11-24-24	Initial Version	0.1

1. Introduction

1.1 Purpose

The purpose of this SRS document is to describe the requirements specification for Word List Management System (WLMS), a component of the English Learning Website. This system is intended to facilitate efficient vocabulary learning by allowing users to manage, review and analyze their learning progress interactively. It focuses on the Leitner Box for systematic reviews and the Tick 8 List for quick word organization.

1.2 Product Scope

The system provides tools for effective vocabulary management and progress tracking, offering a personalized learning experience. The main functions include:

- Log in securely to their accounts.

- Review and monitor their vocabulary learning progress.

- Categorizing and prioritizing words for efficient review.

- Editing and deleting added words.

This system ensures user accessibility across devices (desktop, tablet, mobile) and provides a responsive, user-friendly interface.

1.3 Glossary

Term	Definition
Leitner Box	A tool for systematic vocabulary review based on spaced repetition and learning intervals.
Tick 8 List	A simplified method for organizing and prioritizing vocabulary items.
User Interface	The part of the system that users interact with, designed to be intuitive and responsive.
Progress Analytics	A feature displaying learning progress through reports and charts.

2. General Description

The Word List Management System (WLMS) is designed to be an interactive and user-friendly platform aimed at enhancing the vocabulary learning experience for users. This system provides tools for language learners to organize and review words effieciently. Its main application is focused on vocabulary management and progress tracking, making it ideal for language learners at any level.

2.1 Product Perspective

The WLMS is a self-contained web-based application designed to be accessible to all users via any standard web browser. There is no need for users to install additional software, as the system runs on any modern browser such as Google Chrome, Mozilla Firefox or Safari. This ensures compatibility across a range of devices, including desktops, tablets and smartphones.

2.2 Problem Statement

Language learners often face the following challenges:

- **Large Volume of Vocabulary:** Memorizing and retaining a large number of words without a structured system is difficult.

- **Irregular Review:** Words are often forgotten quickly due to inconsistent review schedules.

- **Lack of Effective Tools:** Many vocabulary management tools lack features for tracking progress and providing personalized learning experiences.

The WLMS solves these issues by:

- Providing a structured method for reviewing vocabulary.

- Offering a user-friendly interface for managing vocabulary lists.

- Providing feedback and progress tracking to help learners stay motivated.

2.3 System Goals

The goals of the WLMS are to:

- **Improve Vocabulary Management:** Users can easily edit, delete and organize their vocabulary.

- **Enhance Review Efficiency:** Using the Leitner Box method for spaced repetition ensures users can review words effectively.

- **Track Learning Progress:** The system provides feedback through analytics, helping learners stay on track with their goals.

2.4 Operational Requirements

The operational features of the system include:

- **Word Management:**
Users can edit and delete existing words from their vocabulary list.

- **Word Review:**
The Leitner Box system includes 5 compartments, where words are moved between compartments based on their review schedules.
A Tick 8 system is provided to quickly prioritize new words for focused learning.

- **Progress Analytics:**
The system generates reports showing the number of words learned at each stage.
The status of each word within the Leitner Box compartments is displayed for user reference.

- **User Interface and Interactions:**
The system includes a simple and intuitive user interface designed specifically for language learners.

These features ensure that the system is efficient, user-friendly and tailored to the needs of learners, providing a seamless vocabulary management and learning experience.

2.5 Hardware Requirements

- **Web Browsers:** The system should work across all major web browsers (Chrome, Firefox, Safari).

- **Server:** The system must support a database to store user data and vocabulary lists.

3. Collection of Information and Case Study

To better identify the requirements for the project, three websites were analyzed. The findings from each site are presented below.

3.1 Test Helper Website

- **Login Process:**

Users can log in using their mobile phone numbers, which is the only available method. However, this method in not ideal. It would be better to assign users a username and password after their first login to avoid needing verification codes every time they log in. Additionally, the user interface has some design flaws, such as inconsistent fonts and misaligned elements when the page is resized.

- **Vocabulary Review:**

    The vocabulary review section includes Leitner Box, Tick 8 Box and a word list. Both Leitner Box and Tick 8 have similar structures, but the Leitner Box has 5 compartments while Tick 8 has 8 compartments. Each box includes a compartment for learned words. Both systems allow users to review words with higher priority by starting from the lowest-numbered box to the highest.

- **Word Details and Management:**

    After adding a new words to either Leitner Box or Tick 8, the words are displayed in a table format. However, additional details such as meanings and categoriztion are not visible in the table. While adding a new word, users can assign tags and notes to it, but these details can only be viewed or edited during the review process. To enhance usability, it would be better if these details were visible and editable when viewing the word in the box.

- **Word List Section:**

    All words added to the user's dictionary are displayed in this section, along with details such as their box (Leitner or Tick 8) and their last review date. Users can sor and filter words based on column values, delete words or mark them. Options to delete all words in a specific category are available, but the ability to delete multiple selected words should also be added. Moreover, it would be useful to include a column for tags so users can manage words bu spcific tags and filter their search results accordingly.

- **Word Selection and Addition:**

    When a word is selected from any section of the system, the user can add it to either their Leitner Box or Tick 8 Box for review.

3.2 Testino Website

- **Introduction and Login:**

    The homepage provides a general introduction to the platform, helping users understands its features. Users can register using their email addresses, followed by entering a verification code sent to their email. After this, users create a username and password for their account. Once registered, users can log in using their email and password. Users are divided into two categories: free and subscribed. Access to services differs based on the subscription type.

- **Vocabulary Section:**

    This section includes services such as Leitner Box, a word list, vocabulary exercises, word addition, word downloads and games. However, the platforms lacks a Tick 8 Box. Each service has an accompanying guide. The Leitner Box structure is similar to that of Test Helper. The word list includes vocabulary from three popular learning books, divided into lessons. Users can select a lesson, view its words and add them to their Leitner Box if desired. Free users can only add words from the lessons to their Leitner Box and cannot manually add words. Access to the Leitner

Box requires a subscription.

- **Vocabulary Practice and Games:**

    Users can practice vocabulary related to specific tests and play word-quessing games. Both sections require a subscription to access.

3.3 Memrise Website

- **Login and Registration:**

    The homepage offers login and registration options. During registration, users are asked to specify their source and target languages.

- **Vocabulary Section:**

    The vocabulary section includes a simple table showing words the user has learned. Users can categorize words as either "Known" or "Very Difficult".

3.4 Conclusion

After analyzing these websites, it was concluded that the functionality of Test Helper is closest to what will be implemented in this project. However, as noted earlier, this platform has certain shortcomings that this project aims to address. Features such as the introductory guide on the homepage, login and registration processes and a better user interface found in Testino were more polished compared to Test Helper. This project intends to leverage the strengths of both platforms and combine them to create a more robust and user-friendly system.

4. User Scenarios

This section provides a detailed depiction of how typical users interact with the WLMS. These scenarios describe the step-by-step processes users follow to perform key tasks such as logging in, editing vocabulary entries, deleting words and reviewing their progress. They serve to illustrate the system's functionality from the user's perspective, ensuring alignment with the operational requirements and enhacing usability. Each scenario caputres the user's goals, actions and the system's response, highlighting both primary workflows and potential alternate flows.

Scenario 1: User Registering an Account

- Manely, a new user, visits the WLMS for the first time. She clicks on the register button on the homepage.

- The registration form prompts her to enter her email address, create a password and provide basic information like her name.

- After submitting the form, the system sends a verification code to her email. Manely enters the code to confirm her account.

- Once verified, the system creates her account and she is redirected to the login page and logs in using her new credentials.

Alternate Flow (Invalid Verification Code):

1. Manely enters an incorrect or expired verification code.

2. The system displays an error message and allows her to request a new code.

3. Manely receives a new verification code and successfully completes registration process.

Scenario 2: User Logging into the system

- Manely, a registered language learner, opens the WLMS on her browser. She enters her email and password on the login page.

- After submitting her credentials, the system verifies her details and logs her into her personalized dashboard.

- On the dashboard, she can view her vocabulary list, access the Leitner Box or Tick 8 Box, check progress analytics and manage her vocabulary list entries.

Alternate Flow (Invalid Credentials):

1. Manely enters an incorrect password.

2. The system displays an error message and prompts her to retry or reset her password.

3. Manely clicks on "Forgot Password", enters her email and receives a password reset link.

Scenario 3: User Editing a Vocabulary Entry

- Manely, a logged-in user, notices that the description of a word in her vocabulary list is incorrect. She selects the word from the list and clicks the "Edit" button.

- A form appears, allowing her to modify the description, add a new example sentence or update the assigned tag.

- Once satisfied with the changes, she clicks "Save" and the system updates the word in real-time.

Alternate Flow (Cancel Edit):

1. Manely decides not to proceed with the edit and clicks "Cancel".

2. The system discards the changes and returns her to the vocabulary list.

Scenario 4: User Deleting a Vocabulary Entry

- Manely, a logged-in user, finds a duplicate or undesirable word in her vocabulary list. She selects the duplicate entry and clicks the "Delete" button.

- The system asks for confirmation before proceeding with the deletion. Manely confirms and the system removes the word from her list.

- She verifies that the word no longer appears in her vocabulary list.

Alternate Flow (Cancel Deletion):

1. When prompted for confirmation, Manely clicks "Cancel".

2. The system aborts the deletion and keeps the word in the list.

Scenario 5: User Reviewing Words Using Leitner Box

- Manely, a logged-in user, opens the Leitner Box section to review her vocabulary using a spaced repetition system. The system displays five compartments, each containing words based on her previous review results.

- Manely begins her session. Words from the first compartment are presented first (highest priority).

- For each word, Manely is prompted with a definition or sentence and must recall the word. She then marks the word as either "I know", "I don't know" or "Ask me later".

    "I know" Response: The system prompts her to enter the correct spelling of the word. If the spelling is correct, the word moves to the next compartment for less frequent reviews. Words moved to the last compartment will no longer be asked.

    "I don't know" Response: The word returns to the first compartment to be reviewed more frequently.

    "Ask me later" Response: The system skips the word and keeps it in the current compartment to be reviewed in the next session.

- At the end of the session, Manely receives a summary showing the number of words reviewed, correct responses and her overall progress.

Alternate Flow (Wrong Dictation):

1. Manely selects the "I know" option while reviewing a word and enters an incorrect spelling of the word.

2. The system prompts her to try again.

3. Eventually she enters the correct spelling. The word moves to the next compartment for less frequent reviews.

Scenario 6: User Reviewing Words Using Tick 8 Box

- Manely, a logged-in user, opens the Tick 8 Box section to review her organized and prioritized vocabulary list. The system displays eight compartments, each containing a different priority level.

- Manely begins her session. Words from the first compartment (highest priority) are presented first.

- For each word, Manely is prompted with a definition or sentence and must recall the word. She then marks the word as either "I know", "I don't know" or "Ask me later".

  "I know" Response: The system prompts her to enter the correct spelling of the word. If the spelling is correct, the word moves to the next compartment for less frequent reviews. Words moved to the last compartment will no longer be asked.

  "I don't know" Response: The word returns to the first compartment to be reviewed more frequently.

  "Ask me later" Response: The system skips the word and keeps it in the current compartment to be reviewed in the next session.

- During the session, Manely can manually adjust a word's priority. This allows her to reprioritize based on her learning preferences.

- At the end of the session, Manely receives a summary showing the number of words reviewed, correct responses and her overall progress.

Alternate Flow (Wrong Dictation):

1. Manely selects the "I know" option while reviewing a word and enters an incorrect spelling of the word.

2. The system prompts her to try again.

3. Eventually, she enters the correct spelling. The word moves to the next compartment for less frequent reviews.

Scenario 7: User Managing Words in Word List

- Manely, a logged-in user, opens the Word List section to manages her complete vocabulary using the Word List feature. She accesses The Word List section, which displays her all words in a tabular format with details such as the assigned box (Leitner or Tick 8) and the last review date.

- She searches for specific words using the search bar and filters by tags or review dates.

- Manely notices an incorrect tag or description and edits the word directly from the list.

- She deletes a few outdated words using the bulk delete feature, selecting multiple entries at once.

- The system provides options for sorting the table by review date, compartment or alphabetical order.

4.1 Relation Between Scenarios and Requirements

Scenario 1: User Registering an Account

Associated Requirements:

- **Authentication:** The user must be able to register and verify their account using an email address, with a password for future logins.

- **Security:** The system must ensure secure handling of the user's registration data and password through proper encryption methods.

- **User Interface:** The registration interface must be intuitive, displaying clear instructions and guiding the user through the process.

Scenario 2: User Logging into the system

Associated Requirements:

- **Authentication:** Once registered, the user must be able to log in using their credentials (email and password).

- **User Interface:** The login interface must be simple and clear, offering users easy access to their account.

- **Security:** Secure password handling and authentication are required to prevent unauthorized access.

Scenario 3: User Editing a Vocabulary Entry

Associated Requirements:

- **Word Management:** Users should be able to edit previously added words, including their description and associated tags.

- **User Interface:** The interface must allow for easy editing of words without requiring complicated steps or menus.

- **Data Storage:** Any changes made to the vocabulary list should be saved and reflected immediately across the system.

Scenario 4: User Deleting a Vocabulary Entry

Associated Requirements:

- **Word Management:** Users should be able to delete previously added words from their vocabulary list, with confirmation steps to prevent accidental deletions.

- **User Interface:** The delete option should be clearly visible and allow for a multiselection feature for bulk deletion.

- **Data Storage:** The system must ensure that deleted words are completely removed and cannot be retrieved unless explicitly backed up.

Scenario 5: User Reviewing Words Using Leitner Box

Associated Requirements:

- **Review System:** The Leitner Box system must handle the compartmentalization of words and their movement between compartments based on the user's review performance.

- **User Interface:** The review interface must clearly display words in their respective compartments, ensuring a user-friendly review experience.

- **Data Storage:** The system must save and update the compartment status of words based on user responses, and adjust the frequency of reviews accordingly.

- **Progress Analytics:** The system should track the user's learning progress and provide feedback on reviewed words.

Scenario 6: User Reviewing Words Using Tick 8 Box

Associated Requirements:

- **Review System:** The Tick 8 Box system must allow users to organize words into eight compartments, with each word moving between compartments based on performance.

- **Manual Adjustments:** The system should allow users to manually adjust the prioritization of words for review.

- **User Interface:** A clear visual presentation of the eight compartments and word details is required, ensuring a user-friendly review experience.
- **Data Storage:** The system must save and update the compartment status of words based on user responses, and adjust the frequency of reviews accordingly.

- **Progress Analytics:** The system must track the user's review progress and generate feedback based on the compartment structure.

Scenario 7: User Managing Words in Word List

Associated Requirements:

- **Word Management:** The system must allow users to edit and delete words from their vocabulary list.

- **Search and Filtering:** The user should be able to search for words and filter the list based on various criteria, such as tags or last review date.

- **User Interface:** The word list interface must provide an easy-to-navigate table that displays words and their relevant details.

- **Data Integrity:** All changes to the vocabulary list must be immediately saved and reflected in the system.

4.2 Apportioning of Requirements

4.2.1 Functional Requirements

1) Word Management:

- Users must be able to edit and delete previously added words.

- The system should support adding tags and categories for each word.

- Scenario 7 (Managing Words) is directly related to this requirement.

2) Review System:

- The system should handle the structured review process, including prioritization and frequency adjustments based on user performance.

- Scenario 5 and Secenario 6 (Reviewing Words) correspond to this requiremet.

3) Authentication:

- The system must provide a login and registeration feature to allow users to securely access their accounts.

- Scenario 1 and Scenario 2 (Registration & Login) are linked to this requirement.

4) Progress Analytics:

- The system should provide feedback on the user's review progress after each session, including number of words reviewed, correct

responses, skipped words and difficult words based on user's performance.

- Scenario 5 and Scenario 6 (Reviewing Words) invlove progress tracking.

5) Search and Filter:

- Users must be able to search for and filter words based on different criteria (e.g., tags, review date).

- Scenario 7 (Managing Words) is related to this requirement.

4.2.2 Non-Functional Requirements

4.2.2.1 Product Requirements

These requirements pertain to the quality and operational characteristics of the system itself.

1) Performance:

- The system must respond to user actions (e.g., logging in, editing or reviewing words) within 2 seconds for most interactions.

- The system should handle up to 10,000 concurrent users without performance degradation.

2) Usability:

- The interface must be intuitive, allowing new users to navigate and utilize core features with minimal guidance.

- The system should be fully responsive, supporting devices of various screen sizes, including desktops, tablets and smartphones.

3) Reliability:

- The system must provide 99.9% uptime, with planned maintenance windows communicated to users in advance.

- User data must be automatically backed up daily to prevent loss.

4) Scalability:

- The system should allow easy addition of features (e.g., new review modes) and support increasing database sizes as more users and

words are added.

5) Security:

- All sensitive user data, including credentials and vocabulary lists, must be encrypted using AES-256 during storage and TLS during transmission.

- The system must include protections against brute-force attacks (e.g., rate limiting on login attempts).

4.2.2.2 Organizational Requirements

These requirements address the standards and processes followed by the development organization.

1) Compliance Standards:

- The system must comply with data protection regulations, such as GDPR.

- Logging mechanisms should adhere to ISO/IEC 27001 standards to ensure secure auditing processes.

2) Team Processes:

- Development must follow agile methodologies, ensuring regular iteration and feedback collection.

- Code reviews must be conducted for all critical features to maintain quality and minimize bugs.

3) Maintenance and Support:

- The organization must provide 24/7 support for critical issues and resolve non-critical bugs within 3 business days.

- Maintenance teams should monitor system health with some related tools.

4.2.2.3 External Requirements

These refer to dependencies on external systems, tools or regulations.

1) Third-Party Integration:

- The system must integrate with an SMTP email service for account verification, passwords resets and notifications.

- It should support modern web browsers (e.g., Chrome, Firefox, Safari) for full functionality without requiring additional software.

2) Hosting and Infrastructure:

- The application must be hosted on a reliable cloud platform (e.g., AWS, Azure or Google Cloud) that ensures scalability and data redundancy.

- The database (e.g., PostgreSQL or MySQL) must support high availability configurations.

3) Data Localization:

- User data must be stored in servers located in regions compliant with local data residency law.

5. W5H2 Analysis

The W5H2 Analysis method is used to comprehensively examine system requirements by addressing the core aspects of What, Why, Who, When, Where, How and How much for each identified need. This structured approach helps in understanding the purpose, implementation and resource requirements of a feature while ensuring alignment with project goals and user needs.

In this section, two critical functional requirements are analyzed:

- **User Registeration and Login:** A fundamental feature to ensure secure access and personalized user experiences.

- **Word Review Using Leitner Box:** A structured review mechanism for enhancing vocabulary retention through spaced repetition.

Each requirement is broken down systematically to capture its essence, justify its inclusion, outline implementation strategies and provide a realistic estimate of time, cost and resources needed for successful deployment.

5.1 Requirement 1: User Registeration and Login

The system must provide a secure and user-friendly registration and login mechanism to ensure only authorized users access their accounts.

W5H2 Analysis:

- **What?**

The system allows users to register with an email, password and optional profile details. It verifies accounts via email and enables secure login with stored credentials. A "Forgot Password" feature should help users recover account access.

- **Why?**

    To authenticate users securely and prevent unauthorized access to personal vocabulary data.

- **Who?**

    Language learners who want to manage and review their vocabulary in a personalized account.

- **When?**

    The system must ensure registration is a one-time process, while login occures every time a user accesses their account.

- **Where?**

    The registration and login forms will be accessible from the homepage of the web application.

- **How?**

    Registration includes email verification via an SMTP service. Login involves entering email and password, with backend validation and secure storage using encryption methods for hashing passwords. The "Forgot Password" feature sends a reset link to the user's registered email.

- **How Much?**

    Time: 1 weeks for implementation by a backend developer for authentication and integration with the databse, and a frontend developer for the UI.

    Cost: Approximately 800,000 to 1,000,000 Toman for implementation and deployment, considering simple integration and basic form designs.

    Resources:

    > **1 Developer:** For implementing authentication logic and integration with the database (backend and frontend).

5.2 Requirement 2: Word Review Using Leitner Box

The system must allow users to review vocabulary using the Leitner Box method, prioritizing words based on spaced repetition.

W5H2 Analysis:

- **What?**

  The Leitner Box system organizes words into 5 compartments. Words move between compartments based on user responses ("I know", "I don't know", "Ask me later").

- **Why?**

  To enhance vocabulary retention through an efficient review process based on spaced repetition principles.

- **Who?**

  Language learners who need structured review sessions to improve their vocabulary knowledge.

- **When?**

  Daily or weekly, based on the user's personalized review schedule.

- **Where?**

  Accessible from the "Review" option in the Leitner Box section.

- **How?**

  The system presents words for review starting from the lowest compartment. Users respond and the system adjusts the word's compartment based on the feedback. Words in the final compartment are considered "Learned" and are no longer included in review sessions.

- **How Much?**

  Time: Approximately 2 weeks for developing the review algorithm and integrating it with the UI.

  Cost: Estimated cost around 1,200,000 to 1,500,000 Toman for implementation of the login and UI.

Resources:

1 Backend Developer: For implementing the Leitner algorithm logic.

1 Frontend Developer: For designing and implementing the user interface.

6. Scheduling and Role Allocation

Activity and Role	Communication and Requirements Gathering	System Analysis and Design	Coding and Implementation	Testing and Quality Assurance	Project Delivery and Evaluation
Project Manager	2 weeks	1 week	1 week	1 week	1 week
System Analyst	2 weeks	2 weeks	-	-	-
System Designer	2 weeks	2 weeks	2 weeks	-	-
Developer	-	-	3 weeks	1 week	-

6.1 Role Descriptions

Project Manager:

- Responsible for overall coordination of the team, managing meetings and monitoring the progress of the project.

- Planning and allocating resources across all phases.

System Analyst:

- Gathers requirements from users or clients through methods such as observation, reviewing documents and documenting them throughly.

- Creates preliminary system models and presents them to the design team.

System Designer:

- Desings the overall structure of the system, including the Leitner Box and Tick 8 Box user interface.

- Creates system architecture diagrams (such as UML).

Developer:

- Write code and implement key features, including Word Management system, Leitner Box mechanism and User Progress Analytics.