System Requirement Specification

for

LMS QUIZ IMPORTER (EasyQ)

version 1.0

Prepared by:

Thun Anuntarat

Lalinthorn Pholnaruk

Latthaphol Laohapiboonrattana

Siriwat Songwattana

Suparida Silpasith

Atthapong Auewongchai

Department of Computer Engineering, Faculty of Engineering,

Chiang Mai University, 50200, Thailand

INDEX

1. Introduction

1.1 Purpose

This document provides a Specification of Software Requirements for the LMS Quiz importer product that will be called EasyQ as short. Since we are using the system called Mango that uses the service from the Canvas application as our LMS in Chiang Mai University, the instructors from 261111 course found some problems occur in the process of quizzes creation from the service. The problem is that it is complex and a waste of time to create quizzes on Mango, since almost everything has to be done manually. There are no tools as an assistant for creating quizzes, and that also lead to wrong content on the quizzes.

Therefore, EasyQ is the project that we are designing and developing to solve the problems as stated. The purpose of this document is to help clear understanding in the International Standard and to be a contribution on the production of the actual product on this project. The intended audience includes all the stakeholders which are the instructors from 261111 course, the instructor of 261361 course, and the students in Chiang Mai University who are interested. This document is the result of harmonization from the following sources:

- ISO/IEC/IEEE 29148:2011(E), Systems and software engineering — Life cycle processes — Requirements engineering
- IEEE 830-1998, IEEE Recommended Practice for Software Requirements Specifications

1.2 Scope

The proposed software product is LMS Quiz importer (EasyQ). The application of the system of this product is interpreting and parsing the content in a document which contains information of quizzes that the course instructor needs to create on the LMS system.

The Scope of product's functionality can be clarified in the table below:

DO	NOT DO
Document file type: doc, txt	Document file type: Excels and others
Destination LMS: MANGO	Destination LMS: Elearning and others
Web- based application	Integrated service on Mango
Use in only Chiang Mai University	Use in other universities
Thai and English documents	Others language documents
For 261111 course professors	For all professors

The benefits of this product that it reduces time that it takes for the instructors of 261111 course in Chiang Mai University that use Mango as their learning management system to create their quizzes for the student and simplify the procedure that is done early in the Mango system by developing a web application that is a tool for importing a document of the quizzes and then automatically export and create online quizzes on the Mango system. In addition, it enhances the efficiency of course learning for students and course management for instructors.

The objective of this product is to be a quiz importing tool that 26111 course instructors in Chiang Mai University could really apply to create their quizzes instead of doing it manually on Mango.

1.3 Definitions, acronyms, and abbreviations

LMS - Learning Management System
EasyQ - Name of the LMS Quiz Importer product
Mango - A short name for the learning management system that is currently in used in Chiang Mai University
SRS - Software Requirement Specification
Web application - An application that runs on internet
IEEE - Institute of Electrical and Electronics Engineers
261111 course - Internet and Online community course, faculty of Computer Engineering, Chiang Mai University
261361 course - Software Engineering course, faculty of Computer Engineering, Chiang Mai University
SSO - An authentication method that enables users to securely authenticate with multiple applications and websites by using just one set of credentials
Transaction processing - The process of completing a task and/or user/program request either instantly or at runtime
State - The current processing steps in the computer
API - A software interface that allows two applications to interact with each other without any user intervention
Session - A period of time or a meeting arranged for a particular activity
MySQL - An open-source relational database management system
AWS - A subsidiary of Amazon that provides on-demand cloud computing platforms and APIs to individuals, companies, and governments, on a metered, pay-as-you-go basis
Amazon RDS - A web service that makes it easier to set up, operate, and scale a relational database in the Amazon Web Services Cloud
Logical database - A special type of ABAP (Advance Business Application and Programming) that is used to retrieve data from various tables and the data is interrelated to each other

Token - An authorization file that cannot be tampered with. It is generated by the server using a secret key, sent to and stored by the user in their local storage
HTTPS - Hypertext Transfer Protocol Secure

1.4 References

- How to Write a Software Requirements Specification (SRS) | Perforce https://www.perforce.com/blog/alm/how-write-software-requirements-specification-srs-document
- External Interface Requirements in SRS

  https://t4tutorials.com/external-interface-requirements-srs/?fbclid=IwAR0xhks0oDsZZ19PeM_jhztei_9EtpDwq-iDSN04a-0koGndl53eSXpp0A0
- This document use IEEE 830-1998 guidelines on writing SRS and templates

1.5 Overview

This Software Requirements Specification (SRS) is the requirements work product that formally specifies Learning Management Sysytem's Quiz Importer (EasyQ) after the team analysis and requirement interview from stakeholders. The objective of this document is to formally describe the system's specific requirements including functional requirements, non-functional requirements and product constraints. The detailed structure of this document is organized as follows:

The first section of this document is an introduction part which includes the product purpose, product scope, word definition, reference, and the overview of this document. By this information, the author could comprehend about the product. The second section provides an overall description that the proposed Learning Management Sysytem's Quiz Importer (EasyQ) will support, including the product perspective, product function, user characteristics, product constraints, and assumptions of the system. The final section represents the most important information which is the specific requirement. It clarifies the detailed requirements of the domain model, including external interfaces, functions, performance requirements, logical database requirements, design constraints, and software system attributes. After all, the appendix contains the description of the method that our team used to calculate our work contribution each by each person and our project plans due to the schedule of the project's course (Software Engineering Course).

2. Overall Description

2.1 Product perspective

This web application is the new method to create a quiz on LMS for Chiang Mai University professors by importing documents. Without the need to copy the text to create a new one and do not need to install additional programs besides web browsers.

2.1.1 System interfaces

The system runs in the latest version of Chrome or Edge browser on Window.

2.1.2 User interfaces

The system GUI offers menus, toolbars, buttons, and grids for simple keyboard and mouse control.

Chrome and Edge browser compatibility is required for the system GUI.

2.1.3 Hardware interfaces

The software was created for Windows 10 (32- and 64-bit versions), Android, and iOS. And in order to execute the application, all necessary hardware must be connected to the internet.

2.1.4 Software interfaces

The system shall support the import of an MS Word document with quiz results in a particular format.

The system reports the quiz API in graph format to make it easy to summarize.

2.1.5 Communications interfaces

To use the system, the browser is needed and the network protocol is HTTPS.

2.1.6 Memory

The system requires a minimum 512 MB of primary memory and 345 MB for secondary memory for browser installation.

2.1.7 Operations

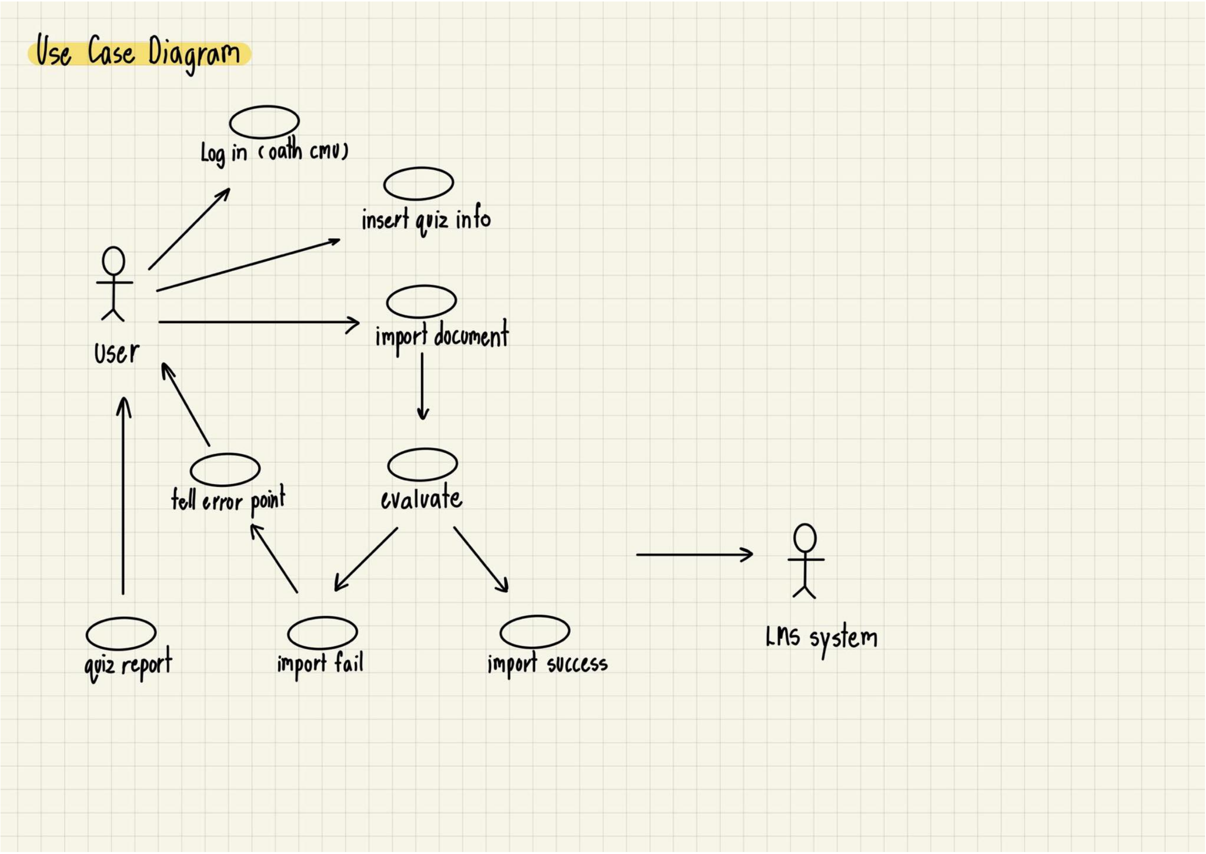
2.1.8 Site adaptation requirements

2.2 Product functions

Workspace:

- **Login:** authenticate to system
- **Import quiz:** upload document to system
- **Report quiz:** Show document summary

This product should support this use case:



2.3 User characteristic

Users are professors at Chiang Mai University who have experience creating quizzes on LMS system

2.4 Constrains

This system is a web-based application, so that users must install browsers. Moreover, the file extension must be .txt or .doc and the data in files must be Thai or English to use the system.

2.5 Assumptions and dependencies

Email, Username, password, or role in the system is previously determined for all the users of the university and the document is complete before importing.

3. Specific requirements

3.1 External interfaces

The system takes input from the user by “import” button. The application generates the graph that summarizes the input.

3.2 Functions

Login

Precondition: CMU account

The system shall give a session to the user.

Importation/remove

Precondition: Authenticated session

User can directly import or remove quiz documents by clicking the upload button or remove button and submit button

Summarization

Precondition: Users have imported the quiz once.

The system will show the number of questions for each variation

3.3 Performance requirements

Response Time

The system shall show the summary in 1 minutes after submit the document

Capacity

The system must support at least 10 people at the time.

3.4 Logical database requirements

The system must keep the history of submitted quizzes and the owner.

3.5 Design constraints

Database

The system shall use Amazon RDS for MySQL - AWS which is open source and free plan.

Document

The document must be a .doc or .txt extension to upload to the system.

Operating System

The development environment shall be Window 10 or Window 11.

Web-Based

The system shall be a Web-based application.

3.6 Software system attributes

Reliability

- **Check button** to verify that the document meets the format
- **Transaction processing system** to prevent unexpected events that cause the user's documents to be lost or damaged

Available

- **State** to recovery or resume checkpoint

Security

- **Token expiration and revocation** for user protection and ease of use

Maintainability

- **Limit the number of items** to reduce the workload
- **Limit the types of choices** for easy calculation of results

Portability

- **Single sign on(SSO)** for easy use of the program on all devices

4. Appendixes

4.1 Team Contribution

Our group calculated each person's percentage on this contribution by people in charge of front-end work responsible for the group's website to show the report and prepare demo for next step. Other people divide work responsible of report according to each topic as follows.

- demo website for next step 5%
- Introduction 20%
    - Purpose 5%
    - Scope 5%
    - Definition, acronyms, and abbreviations 5%
    - Overview 5%
- Overall description 20%
    - Product perspective 10%
    - Product functions 4%
    - User characteristics 2%
    - Constraints 2%
    - Assumptions and dependencies 2%
- Specific requirements 35%
    - External interfaces 2%
    - Functions 10%
    - Performance requirements 5%
    - Logical database requirements 2%
    - Design constraints 6%
    - Software system attributes 10%
- Appendix 10%
    - Team Contribution 5%
    - project plan 5%
- check and manage report layout 10%

1. **Thun Anuntarat**
   Contribution: project plan, website
   Percentage: 10

2. **Lalinthorn Pholnaruk**
   Contribution: check report, manage layout, Appendixes
   Percentage: 10

3. **Latthaphol Laohapiboonrattana**
   Contribution: Overall description,Specific requirement
   Percentage: 45

4. **Siriwat Songwattana**
   Contribution: Software system attributes, check report
   Percentage 10

5. **Suparida Silpasith**
   Contribution: Introduction, Cover and index
   Percentage 15

6. **Atthapong Auewongchai**
   Contribution: Software system attributes, Definitions
   Percentage: 10

Project Plan

1) Complete demo 1
   web demo , what function that we have.
   (before 16 Jan, about 3 days)

2) plan to do backend
   tokenizer , passer quiz.
   (16 Jan, about 1 days)

3) backend in process
   do what we have planned to do on the backend , complete A3.
   (start 17-31 Jan, about 14 days)

4) Prepare for project presentation (sprint 1)
   test and debug system.
   (before presentation day , about 7 days)

Project Presentation Sprint 1 (6-9 Feb)

5) Test document
   adjust according to the professors' suggestion, test document.
   (9-16 Feb , about 7 days)

6) Full working on project
   frontend and backend , system document.
   (before presentation day , about 7 days)

Final Project Presentation (13-16 Mar)