Software Requirements Specification

for

EOS

Version 1.0 approved

Prepared by Group 4

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Revision History

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| **Name** | **Date** | **Reason For Changes** | **Version** |
|  |  |  | Version 1.0 |
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# Introduction

This Software Requirements Specification (SRS) document provides a detailed description of the FEA Client software. It includes information on how to use the software, its purpose, and the necessary system requirements to ensure optimal performance during online exams. The document is organized to help various stakeholders, such as developers, project managers, users, and testers, understand the functionalities and requirements of the FEA Client.

## Purpose

This document specifies the software requirements for the FEA Client, a software product designed for conducting online exams. The document is intended for:

Developers: To understand the technical requirements and implement the software accordingly.

Project Managers: To oversee the development process and ensure that the project meets its goals.

Marketing Staff: To promote the software and communicate its features to potential users.

Users: To provide guidance on how to install, configure, and use the software.

Testers: To validate the software's functionality and ensure it meets the specified requirements.

Documentation Writers: To create user manuals and other related documentation.

## Document Conventions

This document follows certain standards and typographical conventions to ensure clarity and consistency:

* **Bold Text**: Used for section headings and important terms.
* **Italic Text**: Used for emphasizing specific points or terms.
* **Monospaced Text**: Used for code snippets, file names, and paths.
* **Bulleted Lists**: Used for listing items without a specific order.
* **Numbered Lists**: Used for listing items in a specific sequence.

Unique requirement identifiers are labeled using the format "REQ-XXX", where "XXX" is a unique number assigned to each requirement.

## Project Scope

|  |  |  |  |
| --- | --- | --- | --- |
| **Feature** | **Release 1** | **Release 2** | **Release 3** |
| FE-01, Software Installation and Login | Provide download link and instructions for installation. Users login using EOS Client credentials. |  |  |
| FE-02, System Requirements and Recommendations | Provide system requirements: Windows 10 Pro 64-bit, .NET Framework 3.5 and 4.0, 2GB RAM free, CPU Core i3 or higher, default Windows firewall, and disable unnecessary programs. |  |  |
| FE-03, Exam Interface | Explanation of login screen elements and post-login functionalities (show paper, download materials, submit guide). |  |  |
| FE-04, Submission Guide | Detailed instructions for submitting exam answers (browsing and selecting the folder, naming conventions). |  |  |
| FE-05, Submission Errors | Troubleshooting submission errors (missing submission path, unselected question, server disconnection during submission). |  |  |
| FE-06, Submission Confirmation | Steps for a successful submission and necessary actions post-submission (notify the proctor). |  |  |

## References

The following documents and resources are referenced in this SRS:

* **EOS Client Information**: Internal documentation provided by the institution's IT department.

These references provide additional information necessary for the installation, configuration, and use of the FEA Client.

# Overall Description

## Product Perspective

The FEA Client is a new application designed for online exams. It works independently but connects to the EOS Client for user login. It also communicates with the exam server to fetch exam papers, submit answers, and provide real-time monitoring.

## User Classes and Characteristics

The software is intended for:

Students: The main users who take exams.

Proctors: Supervisors who monitor exams and assist with issues.

Technical Support: IT staff managing installation, troubleshooting, and maintenance.

Each user class has specific needs and interacts with the software differently.

## Operating Environment

The FEA Client operates in the following environment:

Hardware: PC with Core i3 or better, 2GB RAM, network connectivity.

Operating Systems: Windows 10 Pro 64-bit.

Software: .NET Framework 3.5 and 4.0, default Windows firewall settings.

Locations: Can be used anywhere with stable internet.

Hosting: Managed by the educational institution.

The software should work well with antivirus programs, communication tools, and file utilities.

## Design and Implementation Constraints

The development of the FEA Client is constrained by:

* **Policies**: Must follow institutional IT guidelines.
* **Hardware**: Specific configurations needed for stability.
* **Interfaces**: Integration with EOS Client and network infrastructure.
* **Technology**: Compatible programming languages and frameworks.

## Assumptions and Dependencies

The software assumes:

Third-Party Components: Use of .NET Framework and Windows 10 Pro 64-bit.

User Environment: Users have recommended hardware and software.

Network Availability: Reliable internet connectivity.

Institutional Support: Technical support and infrastructure provided by the institution.

# System Features

#### 3.1 Software Installation and Login

##### **3.1.1 Description and Priority**

* **Description**: This feature provides the download link and instructions for installing the software. Users login using their EOS Client credentials. It is a high-priority feature as it ensures that users can install and access the software properly.
* **Priority**: High

##### **3.1.2 Stimulus/Response Sequences**

* **Sequence 1 (Download and Install Software)**:
  + **Stimulus**: A user visits the provided download link.
  + **Response**: The system provides the software download and installation instructions.
* **Sequence 2 (User Login)**:
  + **Stimulus**: A user launches the software and selects the "Login" option.
  + **Response**: The system provides a login form for users to enter their EOS Client credentials.

##### **3.1.3 Functional Requirements**

* **REQ-1: Provide Download Link**
  + The system shall provide a download link for the software.
* **REQ-2: Installation Instructions**
  + The system shall provide clear instructions for installing the software.
* **REQ-3: User Login**
  + The system shall authenticate users based on their EOS Client credentials.

#### 3.2 System Requirements and Recommendations

##### **3.2.1 Description and Priority**

* **Description**: This feature provides the system requirements and recommendations for optimal software performance. It is a high-priority feature as it ensures users are aware of the necessary system specifications.
* **Priority**: High

##### **3.2.2 Stimulus/Response Sequences**

* **Sequence 1 (View System Requirements)**:
  + **Stimulus**: A user accesses the system requirements section.
  + **Response**: The system displays the recommended system requirements and additional recommendations for optimal performance.

##### **3.2.3 Functional Requirements**

* **REQ-4: Display System Requirements**
  + The system shall display the following system requirements: Windows 10 Pro 64-bit, .NET Framework 3.5 and 4.0, 2GB RAM free, CPU Core i3 or higher, default Windows firewall settings, and disabling unnecessary programs.

#### 3.3 Exam Interface

##### **3.3.1 Description and Priority**

* **Description**: This feature explains the elements of the login screen and functionalities available post-login. It is a high-priority feature as it guides users on how to navigate the software during exams.
* **Priority**: High

##### **3.3.2 Stimulus/Response Sequences**

* **Sequence 1 (Login Screen Explanation)**:
  + **Stimulus**: A user views the login screen.
  + **Response**: The system provides explanations for each

element on the login screen.

* **Sequence 2 (Post-login Functionalities)**:
  + **Stimulus**: A user successfully logs in.
  + **Response**: The system displays and explains functionalities such as "Show Paper," "Download Given Materials," and "Submit Guide."

##### **3.3.3 Functional Requirements**

* **REQ-5: Login Screen Explanation**
  + The system shall provide explanations for the elements on the login screen.
* **REQ-6: Post-login Functionalities**
  + The system shall display and explain the functionalities available after login, including "Show Paper," "Download Given Materials," and "Submit Guide."

#### 3.4 Submission Guide

##### **3.4.1 Description and Priority**

* **Description**: This feature provides detailed instructions for submitting exam answers, including browsing and selecting the folder, and naming conventions. It is a high-priority feature as it is crucial for students to submit their exam answers correctly.
* **Priority**: High

##### **3.4.2 Stimulus/Response Sequences**

* **Sequence 1 (Submit Exam Answers)**:
  + **Stimulus**: A user accesses the "Submit Guide."
  + **Response**: The system provides detailed instructions on how to submit exam answers, including browsing and selecting the correct folder, and following the naming conventions.

##### **3.4.3 Functional Requirements**

* **REQ-7: Detailed Submission Instructions**
  + The system shall provide detailed instructions for submitting exam answers, including browsing and selecting the folder and naming conventions.

#### 3.5 Submission Errors

##### **3.5.1 Description and Priority**

* **Description**: This feature provides troubleshooting steps for common submission errors, such as missing submission path, unselected question, and server disconnection during submission. It is a high-priority feature as it helps ensure successful submission of exam answers.
* **Priority**: High

##### **3.5.2 Stimulus/Response Sequences**

* **Sequence 1 (Troubleshoot Submission Errors)**:
  + **Stimulus**: A user encounters a submission error.
  + **Response**: The system provides troubleshooting steps for the encountered error.

##### **3.5.3 Functional Requirements**

* **REQ-8: Troubleshooting Submission Errors**
  + The system shall provide troubleshooting steps for common submission errors, including missing submission path, unselected question, and server disconnection during submission.

#### 3.6 Submission Confirmation

##### **3.6.1 Description and Priority**

* **Description**: This feature provides steps for a successful submission and necessary actions post-submission, including notifying the proctor. It is a high-priority feature as it ensures that submissions are completed correctly and the process is verified.
* **Priority**: High

##### **3.6.2 Stimulus/Response Sequences**

* **Sequence 1 (Submit and Confirm)**:
  + **Stimulus**: A user submits their exam answers.
  + **Response**: The system confirms successful submission and provides instructions to notify the proctor.

##### **3.6.3 Functional Requirements**

* **REQ-9: Successful Submission Steps**
  + The system shall provide steps for ensuring a successful submission of exam answers.
* **REQ-10: Post-submission Actions**
  + The system shall provide instructions for notifying the proctor after successful submission of exam answers.

# Data Requirements

## Logical Data Model

A data model is a visual representation of the data objects and collections the system will process and the relationships between them. Below is a logical representation for the data that the system will manipulate, created as an entity-relationship diagram (ERD).

**Entity-Relationship Diagram (ERD)**

The ERD for the FEA Client software includes the following entities and relationships:

**User**

Attributes: UserID, Username, Password, Role

Relationships: Each User can have multiple ExamAttempts.

**Exam**

Attributes: ExamID, ExamName, ExamCode, ExamDate, Version

Relationships: Each Exam can have multiple ExamAttempts.

**ExamAttempt**

Attributes: AttemptID, UserID, ExamID, StartTime, EndTime, SubmissionStatus

Relationships: Each ExamAttempt is associated with one User and one Exam.

**Submission**

Attributes: SubmissionID, AttemptID, FilePath, SubmissionTime, Status

Relationships: Each Submission is associated with one ExamAttempt.

**ErrorLog**

Attributes: ErrorID, UserID, ExamID, ErrorType, ErrorMessage, Timestamp

Relationships: Each ErrorLog is associated with one User and one Exam

## Data Dictionary

The data dictionary defines the composition of data structures and the meaning, data type, length, format, and allowed values for the data elements that make up those structures. Here is a summary:

**User**

UserID: Integer, Primary Key

Username: String, 50 characters

Password: String, 50 characters

Role: String, 20 characters (e.g., "student", "proctor")

**Exam**

ExamID: Integer, Primary Key

ExamName: String, 100 characters

ExamCode: String, 20 characters

ExamDate: Date

**ExamAttempt**

AttemptID: Integer, Primary Key

UserID: Integer, Foreign Key

ExamID: Integer, Foreign Key

StartTime: DateTime

EndTime: DateTime

**Submission**

SubmissionID: Integer, Primary Key

AttemptID: Integer, Foreign Key

FilePath: String, 255 characters

SubmissionTime: DateTime

Status: String, 20 characters (e.g., "success", "failure")

**ErrorLog**

ErrorID: Integer, Primary Key

UserID: Integer, Foreign Key

ExamID: Integer, Foreign Key

ErrorType: String, 50 characters

ErrorMessage: String, 255 characters

Timestamp: DateTime

## Reports

The application will generate several reports to assist users and administrators in managing exams and submissions. The following reports will be included:

**User Login Report**

-Description: Lists all user login attempts with timestamps and status.

-Content: UserID, Username, LoginTime, Status

**Exam Attempt Report**

-Description: Provides details on each user's exam attempts.

-Content: UserID, ExamID, StartTime, EndTime, SubmissionStatus

**Submission Report**

-Description: Details of all submissions, including status and file paths.

-Content: AttemptID, FilePath, SubmissionTime, Status

**Error Log Report**

-Description: Lists all errors encountered during the exam and submission process.

-Content: ErrorID, UserID, ExamID, ErrorType, ErrorMessage, Timestamp

Each report must conform to a specific predefined layout, ensuring consistency and clarity. Detailed report layouts will be defined during the design stage.

**Example Report Layouts**

**User Login Report:**

-Sorted by LoginTime, grouped by UserID.

-Includes totals for successful and failed login attempts.

**Exam Attempt Report:**

-Sorted by StartTime, grouped by ExamID.

-Includes totals for completed and pending attempts.

**Submission Report:**

-Sorted by SubmissionTime, grouped by Status.

-Includes totals for successful and failed submissions.

**Error Log Report:**

-Sorted by Timestamp, grouped by ErrorType.

-Includes totals for each error type.

# External Interface Requirements

## User Interfaces

The user interface for the FEA Client software includes:

-Installation and Setup: Users are required to download the exam program from https://hcmportal.fpt.edu.vn/download/PEAClient/PEA\_Client.rar or http://lms-undergrad.fpt.edu.vn and extract the files. Execute PEALogin.exe in the PEA\_Client directory as an Administrator to initiate the exam.

-Login Credentials: Users must use their provided User and Password for EOS Client login.

## Software Interfaces

The software interfaces with:

-Operating System: Compatible with Windows 10 Pro 64-bit.

-Dependencies: Requires .NET Framework 3.5 and 4.0.

-System Requirements: Recommends a minimum of 2GB RAM and a Core i3 processor or higher for stability.

-Network Configuration: Firewall settings should remain default for optimal performance.

-Language Support: Instructions for using Vietnamese, Japanese, and Chinese languages require specific setup steps.

## Hardware Interfaces

Hardware requirements include compatibility with:

-Supported Devices: Standard desktop and laptop configurations.

-Communication Protocols: Utilizes standard network protocols for data exchange.

## Communications Interfaces

Communication requirements involve:

-Network Connectivity: Ensures stable network connection for server interactions.

-Error Handling: Provides guidance on handling common errors such as incorrect exam codes or login credentials.

# Quality Attributes

## Usability

Define characteristics that make the software user-friendly:

-Ease of use, learning, and memorability

-Error handling and recovery

-Efficient interactions and accessibility

-Compliance with UI design standards.

## Performance

Specify performance requirements:

-Response time, throughput, and resource utilization

-Scalability, reliability, and availability.

## Security

Detail security and privacy requirements:

-Physical, data, and software security measures

-Compliance with regulations and standards.

## Safety

Specify safety requirements:

-Safeguards against loss or harm

-Prevention of dangerous actions

-Compliance with safety certifications and regulations.

# Internationalization and Localization Requirements

Internationalization and localization requirements ensure that the software is suitable for use in diverse cultural and geographic settings beyond its origin. These requirements may address differences in:

-Currency, date and number formats, addresses, and telephone numbers.

-Language variations, including spelling conventions (e.g., American vs. British English), symbols, and character sets.

-Order of given names and family names.

-Time zones, international laws, regulations, and cultural norms.

-Paper sizes, weights, measures, electrical voltages, and plug types.

-Ensure compliance with these requirements to support global usability and accessibility.