Software Requirements Specification (SRS) for Quiz Management System

1. Introduction

1.1 Purpose

The purpose of this document is to define the software requirements for the Quiz Management System. The system will facilitate teachers in creating and storing questions, making announcements, and evaluating student answers. Students will be able to access quizzes, submit answers, and review past questions.

1.2 Document Conventions

This document follows standard SRS formatting, with sections dedicated to different aspects of the system's requirements.

1.3 Intended Audience and Reading Suggestions

This document is intended for software developers, project managers, system designers, testers, and stakeholders involved in the project. Readers should follow the document sequentially for a complete understanding.

1.4 Project Scope

The Quiz Management System allows teachers to create and store questions, evaluate student answers, and make announcements. Students can access quizzes, submit answers, and download previous questions. The system automates the evaluation process, ensuring accurate and efficient grading.

1.5 References

- IEEE Software Requirements Specification Standard
- Database design principles for educational platforms
- Best practices for secure authentication systems

2. Overall Description

2.1 Product Perspective

The system will function as a standalone web-based application accessible through web browsers. It will support role-based access control, where users are categorized as students or teachers.

2.2 Product Features

- User authentication (login/signup)
- Question submission (by teachers)
- Answer submission (by students)
- Automated and manual grading
- Announcement section for teachers
- Question bank for students

2.3 User Classes and Characteristics

- **Teachers:** Create quizzes, evaluate answers, store questions, and post announcements.
- **Students:** Attempt quizzes, submit answers, and access previous questions.

2.4 Operating Environment

The system will be hosted on a cloud-based server and accessed through standard web browsers (Google Chrome, Firefox, Edge) on desktop and mobile devices.

2.5 Design and Implementation Constraints

- Must comply with GDPR for data privacy.
- The system should handle at least 500 concurrent users.
- Should integrate with existing learning management systems if required.

2.6 User Documentation

User manuals and tutorials will be provided for both teachers and students.

2.7 Assumptions and Dependencies

- Users must have a stable internet connection.
- The system requires a relational database for storing quiz-related data.
- The AI-based evaluation component should have predefined grading logic.

3. System Features

3.1 User Authentication (Login/Signup)

- **Description:** Users (students and teachers) can register and log in securely.
- **Stimulus/Response Sequences:** Users enter credentials, and the system verifies them.
- **Functional Requirements:**
    - Users must provide valid credentials.
    - Passwords should be encrypted.
    - Multi-factor authentication should be supported.

3.2 Question Submission

- **Description:** Teachers can submit quiz questions.
- **Stimulus/Response Sequences:** Teachers enter questions, which are stored in the database.
- **Functional Requirements:**
    - Support for multiple-choice, open-ended, and mathematical questions.
    - Questions must be categorized for easy retrieval.

3.3 Answer Submission

- **Description:** Students submit answers to quiz questions.
- **Stimulus/Response Sequences:** Students enter responses, which are stored for evaluation.
- **Functional Requirements:**
    - Students should receive confirmation of submission.
    - Answers should be timestamped.

3.4 Marks Distribution

- **Description:** The system evaluates student answers and assigns marks.
- **Stimulus/Response Sequences:** AI evaluates responses and stores results.
- **Functional Requirements:**
    - Automatic grading for multiple-choice questions.
    - Manual grading option for teachers.
    - Students can view marks after evaluation.

3.5 Announcement System

- **Description:** Teachers can post announcements.
- **Stimulus/Response Sequences:** Teachers create an announcement, and students receive notifications.
- **Functional Requirements:**
    - Announcements must be timestamped.
    - Students should receive notifications for new announcements.

3.6 Question Bank

- **Description:** Teachers can store and manage past questions.
- **Stimulus/Response Sequences:** Students can browse and download past questions.
- **Functional Requirements:**
    - Search and filter functionality for easy access.
    - Download option for students.

4. External Interface Requirements

4.1 User Interfaces

- Web-based interface with a dashboard for students and teachers.
- Responsive design for desktop and mobile devices.

4.2 Hardware Interfaces

- Web servers for hosting.
- Cloud storage for quiz data.

4.3 Software Interfaces

- Integration with third-party authentication providers.
- Database management system (e.g., MySQL, PostgreSQL).

4.4 Communications Interfaces

- HTTPS protocol for secure communication.
- Email notifications for announcements and results.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

- The system should support 500+ concurrent users.
- Page load time should be under 2 seconds.

5.2 Safety Requirements

- Data backups should be performed daily.
- System should provide role-based access control.

5.3 Security Requirements

- Encryption for sensitive data.

- Secure authentication with OAuth2.

5.4 Software Quality Attributes

- **Maintainability:** Modular codebase for easy updates.
- **Usability:** Intuitive UI/UX for better user experience.

6. Other Requirements

- The system should comply with accessibility guidelines.
- Detailed logs should be maintained for audits.

Appendices

A. Glossary

- **Quiz Management System (QMS):** The platform for managing quizzes.
- **AI Evaluation:** Automated grading of student answers.

B. Analysis Models

- Use case diagrams for user interactions.
- Sequence diagrams for answer evaluation.

C. Issues List

- Pending discussion on AI grading accuracy.
- Need for additional accessibility features.