 

Software requirement specification document for project of a School Management System Specified for Deaf Students

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**1.Introduction**

**1.1 Purpose of this document**

The purpose of this document is to specify the requirements for a software system that manages opeartions for a school that is specified for deaf students, including student, teacher, and staff information, course scheduling, grading, managing schoolwork, and managing managiral work in general. This document will provide a detailed description of the system's features and functionality, as well as the user classes and their characteristics.

**1.2 Scope of this document**

This document will outline the functional requirements for the school management system. It will also describe the operating environment, user classes and their characteristics, and any constraints or assumptions that need to be taken into account during the development of the system.

**1.3 Overview**

The school management system is a web-based application that will be used by school administrators, staff, teachers, and students to manage school operations. The system will be hosted on a server and require a database for storing information. The system will include features for student and teacher information management, course scheduling, grading, attendance tracking, reporting, managiral work, and more.

**1.4 Business Context**

The school management system will provide a centralized platform for managing school operations, which will help to streamline administrative tasks, improve communication between teachers and students, and enhance the overall academic experience. The system will be used by schools of various sizes and types, including K-12 schools, and high-school colleges. The system will be designed to be scalable and customizable to meet the specific needs of each school.

**2.General Description**

**2.1 Product Functions**

The school management system will provide the following functions:

* Student information management: The system will allow administrators to store and manage student information, including contact information, academic history, and enrollment status. It will also allow students to access their school accounts to check for their grades, schedules, and yearly fees.
* Teacher information management: The system will allow administrators to store and manage teacher information, including contact information, academic background, and employment status. It will also allow teachers to access their school accounts to do different types of operations, such as checking salary, checking and editing personal information, take students attendance, view and edit studtents’ information, viewing schedules, and updating grades.
* Course scheduling: The system will allow administrators to create and manage course schedules for each term or semester.
* Grading: The system will allow teachers to enter and manage student grades for each course, and will also allow students to view their own grades.
* Attendance tracking: The system will allow teachers to record and track student attendance for each course.
* Reporting: The system will provide various reports, including student progress reports, course rosters, and attendance summaries. It will also allow the staff to provide the managers with finanical reports to track the organization’s finance regulary.
* Registering new students and staff: The system will allow the administrators to register new students and staff with ease.
* Finance: The system will allow finance staff to do different types of operations, for example, accessing, giving, and editing salary, receiving students’ payments, and sending financial reports.

**2.2 Similar System Information**

There are several existing school management systems on the market, such as Blackboard, Canvas, and PowerSchool. However, the proposed system will differentiate itself by offering a more user-friendly interface, customized reporting, better integration with other school systems, and also specified for deaf students who have hearing and speaking problems.

**2.3 User Characteristics**

The users of the school management system will include administrators, teachers, staff, and students. Administrators will have full access to all system functions, while staff, teachers, students will have access to specific functions related to their roles.

**2.4 User Problem Statement**

The school management system is being developed in response to the problem of inefficient and outdated school management practices. Many schools still rely on paper-based systems or outdated software programs, which can lead to errors, confusion, and delays.

**2.5 User Objectives**

The main objectives of the school management system are to:

* Streamline administrative tasks: The system will automate many administrative tasks, such as enrollment, scheduling, and grading, which will save time and reduce errors.
* Improve communication: The system will provide a centralized platform for teachers, students, and administrators to communicate, share information, and collaborate.
* Enhance academic performance: The system will provide teachers and administrators with the tools they need to monitor and support student progress, which can lead to improved academic performance.

**2.6 General Constraints**

The following constraints will be taken into consideration during the development of the school management system:

* Security: The system must be designed to protect sensitive student and teacher information from unauthorized access or disclosure.
* Compatibility: The system must be compatible with various browsers, operating systems, and devices.
* Scalability: The system must be scalable to accommodate growing numbers of users and data.
* Usability: The system must be user-friendly and intuitive, with clear instructions and help documentation provided for all users.

**3. General Description**

The system shall allow students to view their personal information, academic history, current course schedule, grades, and attendance records. They shall be able to submit assignments. Teachers shall be able to create and manage course schedules, enter and manage student grades, record and track attendance, and communicate with students and other teachers through a messaging system or discussion forum. Administrators shall be able to view and manage student and teacher information, create and manage course schedules, generate various reports, and communicate with teachers and students through a messaging system or discussion forum. The system shall provide a secure login system, be compatible with various browsers and devices, be scalable, provide clear instructions and help documentation, and have a user-friendly and intuitive interface.

**4 Interface Requirements**

**4.1 User Interface 4.1.1 GUI**

* The system shall have a modern, intuitive graphical user interface (GUI) that is easy to use for school administrators, teachers, and students.
* The GUI shall be designed to be responsive and accessible on a variety of devices, including desktop computers, laptops, tablets, and smartphones.
* The GUI shall provide clear and concise navigation options for accessing different features and functionality of the system, such as managing student records, creating class schedules, and generating reports.
* The GUI shall allow for customization and personalization of the user experience, such as allowing users to set their own preferences for colors, fonts, and layout.

**4.1.2 CLI**

* The system shall also support a command-line interface (CLI) for advanced users who prefer to use a text-based interface for certain tasks.
* The CLI shall provide similar functionality to the GUI, allowing users to perform tasks such as adding or editing student records, creating new assignments, or generating reports.
* The CLI shall provide clear and concise documentation and help options to assist users with its use.

**4.1.3 API**

* The system shall provide an Application Programming Interface (API) that enables third-party developers to integrate with the system.
* The API shall be well-documented and follow industry-standard protocols to ensure compatibility and ease of use for developers.
* The API shall provide access to a range of system functionality, such as managing student records, creating new courses, or generating reports.

**4.1.4 Diagnostics or ROM**

* The system shall include diagnostic tools or a read-only memory (ROM) that can be used to troubleshoot issues and identify potential problems in the system.
* The diagnostic tools or ROM shall be easily accessible to authorized administrators and technicians, and shall provide clear and concise feedback on any issues detected.

**4.2 Hardware Interfaces The School Management System will require specific hardware components to function correctly. These include but are not limited to:**

* Personal computers/laptops for administrative staff to manage the system
* Scanners for digitizing documents
* Printers for generating reports
* Biometric scanners for attendance tracking

**4.3 Communications Interfaces The School Management System will need to communicate with external systems, including but not limited to:**

* Email servers for sending and receiving messages
* SMS gateway for sending text messages to parents
* Payment gateway for processing online payments
* Library system for tracking books borrowed by students
* Learning Management System (LMS) for integrating academic information

**4.4 Software Interfaces The School Management System will need to integrate with other software applications, including but not limited to:**

* Database management system (DBMS) for storing and retrieving data
* Accounting software for financial management
* Student information system for storing and managing student records
* Human Resource Management (HRM) system for managing employee records
* Transportation management system for managing bus routes and schedules

**5 Performance Requirements The School Management System must meet the following performance requirements:**

* Response time for user actions must be less than 3 seconds
* The system must handle at least 1000 concurrent users
* Reports must be generated within 10 seconds
* The system must maintain 99.9% uptime

**6 Design Constraints**

**6.1 Standards Compliance The system must comply with relevant standards, such as:**

* Web Content Accessibility Guidelines (WCAG) 2.1
* General Data Protection Regulation (GDPR)
* Family Educational Rights and Privacy Act (FERPA)

**6.2 Hardware Limitations The system must be designed to run on the following hardware configurations:**

* Minimum system requirements for desktop and laptop computers
* Minimum requirements for mobile devices

**7 Other non-functional attributes The School Management System must meet the following non-functional requirements: 7.1 Security The system must ensure data security through:**

* User authentication and authorization
* Encryption of sensitive data
* Regular system backups

**7.2 Binary Compatibility The system must be compatible with the following software versions:**

* Windows 10 and higher
* MacOS 10.14 and higher
* iOS 14 and higher
* Android 10 and higher

**7.3** Reliability The system is be reliable and free of errors, with a mean time between failures (MTBF) of at least 1000 hours.

**7.4** Maintainability The system is be designed to be easily maintainable, with clear documentation and code structure.

**7.5** Portability The system is be designed to be portable across different platforms and devices.

**7.6** Extensibility The system is be designed to allow for future extensions and enhancements.

**7.7** Re-usability The system is be designed to facilitate code reuse.

**7.8** Application Affinity/Compatibility The system is be compatible with other applications used in the school, such as the library system and learning management system.

**7.9** Resource Utilization The system is optimize resource utilization, such as memory and processing power.

**7.10** Serviceability The system is be designed to be easily serviceable, with easy access to hardware components and replaceable parts

**8** Preliminary Object-Oriented Domain Analysis The School Management System will use object-oriented design principles to model the domain of the system.

**8.1 Inheritance Relationships The following inheritance relationships exist in the class diagram:**

* Person is the superclass of Teacher and Student
* Course is the superclass of Section

8.2 Class descriptions The following information will be provided for each class in the system:

8.2.1 Class name:

* User
* Teacher
* Student
* Course
* Classes
* Staff
* Courses
* Managers
* Adminstartor
* Finance Secertary
* Nurse
* Libririan
* Technician
* Principle
* Market
* Level Manager

**8.2.2 List of Superclasses:**

* Teacher, Staff, and Student inherit from User
* Finance Secretary, Nurse, Librarian, and Technician inherit from Staff
* Principle and Level Manager inherit from Managers

**8.2.3 List of Subclasses: None**

**8.2.4 Purpose:**

* User: Represents a generic user in the system
* Teacher: Represents a teacher in the system
* Student: Represents a student in the system
* Course: Represents a course in the system
* Classes: Represents a section of a classes in the system
* Staff: Represents the staff
* Courses: Represents the courses
* Manager: Represents the Managers of the system
* Administrator: Represents the Admins of the sysrem
* Finance Secretary: Represents the staff who work in the financial department of the school
* Nurse: Represents the nurses
* Librarian: Represents the librarians of the school
* Technician: Represents the techs of the school
* Principle: Represents the principles of the school
* Market: Represents the Market of the school
* Level Manager: Represents the low level managers in the school

**8.2.5 Collaborations:**

* user: Collaborates with Teacher and Student
* Teacher: Collaborates with class and Course
* Student: Collaborates with Section and Enrollment
* Course: Collaborates with Section and Teacher

**8.2.6 Attributes:**

* user: username, address, phonenum, password, First Name, Last Name, age
* Teacher: certificate, salary, code
* Student: grade level, courses, ID
* Course: courseID, description, registered students
* staff: StaffID, job, salary
* Classes: class name, number of students, number of desks, has smart board
* Managers: ManagerID
* Market: quantity of products, productID

**8.2.7 Operations**: None specified

**8.2.8 Constraints:** None specified at the moment

**9 Operational Scenarios The School Management System will support the following operational scenarios:**

* Teachers will be able to create and manage courses.
* Students will be able to enroll in courses and view their grades.
* Administrators will be able to manage student records and course offerings.
* The system will provide reports on student performance and course offerings.

**10** Preliminary Schedule Adjusted The schedule for the School Management System will be adjusted based on the development timeline and availability of resources. A preliminary schedule will be created during the planning phase and adjusted as necessary during the development process.

**11** Preliminary Budget Adjusted The budget for the School Management System will be adjusted based on the development timeline and availability of resources. A preliminary budget will be created during the planning phase and adjusted as necessary during the development process.