
Software Requirements Specification

for

Smart Student Attendance System (SSAS)

Version 1.0 approved

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Table of Contents

1. Introduction.....	1
1.1 Purpose	1
1.2 Document Conventions	1
1.3 Intended Audience and Reading Suggestions	1
1.4 Product Scope.....	1
1.5 References	1
2. Overall Description	2
2.1 Product Users.....	2
2.2 Operating Environment.....	2
2.3 Assumptions and Dependencies.....	2
3. Functional Requirements	2
3.1 User Registration	2
3.2 User Login.....	2
3.3 User Changes Password	3
3.4 Administrators Add Classes	3
3.5 User Modify Class Information.....	3
3.6 Faculty Record Attendance	3
3.7 Faculty Modify Attendance.....	3
3.8 Faculty Upload Attendance Record.....	3
3.9 User View Statistics	3
3.10 User Browse Classes	4
3.11 System Send Alert to Students	3
4. Nonfunctional Requirements	4
4.1 Performance.....	4
4.2 Usability	4
4.3 Security.....	4
4.4 Storage.....	4
4.5 Stability.....	4
5. Other Requirements	5

Revision History

Name	Date	Reason For Changes	Version
Group 3	Oct. 17th 2019	Initialize the Software requirement specifications.	V1.0

1. Introduction

1.1 Purpose

The purpose of this Software Requirements Specification is to collect and analyze ideas related to the customers and stockholders for a Smart Student Attendance System. We need to first make a clear definition of the software (Project users, project scopes and environments). After that, we shall be able to extract software requirements about what we want the software to do for the customers, list and describe the functional requirements and nonfunctional requirements of the software. By that, this document can be used to help customers, developers and possible audience to build an overall understanding of the project and its functionality. The document also serves as a guideline in software process.

1.2 Document Conventions

When writing this SRS document for the Smart Student Attendance System, we use the IEEE Software Requirement Specification Template. In general, this document follows the IEEE formatting requirements. We use Arial font size 11, or 12 throughout the document for text, italics for comments. Document text are single spaced and maintain the 1" margins. All sections and subsections are following these conventions.

1.3 Intended Audience and Reading Suggestions

The intended audience of this document is the developers, project managers, scam masters, testers, users and customers. All readers apart are also welcomed to use this document as a guideline to understand the product and its software process.

The first section of this document is an overall introduction about this SRS document, while the second section is an overall description about the product. The section 3-5 are functional, nonfunctional and additional requirements, these are the most important part in the first version of SRS document. We suggest experienced developers begin with the section 2 directly while other readers start from section 1.

1.4 Product Scope

Primarily, the product scope of this Smart Student Attendance System focuses on the needs of faculty and institutions to record and analyze the student attendance. This document aims to summarize the functionalities customers might require for this product.

Besides, this SRS also aims to transform the both specified and unspecified requirements into detailed descriptions. It will make a clear overview of the user scenarios in the actual applications of the SSAS. In this way, the document can be used to guide the further design and develop process.

1.5 References

Reference to 830-1998 - IEEE Guide for Software Requirements Specifications

2. Overall Description

2.1 Product Users

The Users of this Smart Student Attendance System (SSAS) are class faculty, supervisors from schools, colleges and institutes, and administrators who maintain the software.

2.2 Operating Environment

The Smart Student Attendance System (SSAS) is operated on Android System, both Android Tablets and Android phones. The SSAS requires Android 6.0 (Marshmallow) as the minimum operating system. When using this software, Web connection should be turned on to enable the communication between software and online server.

2.3 Assumptions and Dependencies

We have made several assumptions about the system before we begin to recognize its requirements:

1. The first assumption we made related to this system is that, the Smart Student Attendance System is only used by the faculty, and the administrator in the university and institutions. Under this circumstance, students are not considered as a type of user.
2. The second assumption is that, since the system needs internet connection when operating, all users are connected to the internet before opening the software.
3. Another assumption is that we assumed the faculty is the owner of the attendance data related to the class he/she is teaching. This means faculty has the full right to access and modify the data.

3. Functional Requirements

Basic Features

3.1 User Registration

1. The system should allow the user to choose the school or institution they are in.
2. The system should ask the user to select which kind of user they are registering. (The faculty, supervisors or admins)
3. The system should ask the user to initiate their username and password.
4. The system should allow the user to input their educational email address to verify their identity.
5. The system should send an email to user's mailbox to verify their email address.
6. The system should send another registration confirmation letter to user's mailbox after they registered successfully.

3.2 User Login

1. The system should allow the user to input their username and password.
2. The system should look up the database and verify the username and password.

3.3 User Changes Password

1. The system should require the user to input their previous password.
2. The system should verify the password in the database.
3. The system should allow the user to set their new password.

3.4 Faculty Record Attendance

1. The system should send a reminder to the faculty when the class begins.
2. The system should display a list of the student who should attend the class.
3. The system should allow the faculty to choose the students who attend the class.
4. The system should update the attendance record in database.

3.5 Faculty Modify Attendance

1. The system should display the previous attendance record in the form of table to the faculty.
2. The system should allow the faculty to modify the attendance record table (Add new or delete old).
3. The system should update the database.

3.6 User View Statistics

1. The system should allow the user to select the scenario of the data, including period of time, class, different kind of student.
2. The system should look up the database for the related data and calculate the required statistics.
3. The system should be able to draw charts like histograms and line chart based on the calculated statistics.
4. The system should allow user to interact with the charts, like zoom in and zoom out.

3.7 Search Students and Classes

3.8 Add and Remove Students

Features still under consideration

3.9 System Send Alert to Students

1. The system should calculate the rate of attendance of each student automatically.
2. The system should send an email to the student when the student might be missing too many classes automatically.

3.10 Add Comment on a student

4. Nonfunctional Requirements

4.1 Performance

1. The system should be based on web connection, the server side should be run on a web server, and the user side should be run on Android devices.
2. The system should only take small amount of initial load time, the amount of time should depend on the performance of the device and the strength of internet connection.
3. The system should perform well and operate smoothly on most of common types of cellphones. The server should be able to run fast at normal times. The actual performance should depend upon the hardware of the client side.

4.2 Usability

1. The system should be easy to use. The basic functionalities are easy to understand.
2. The system should help the user to get familiar with the software. Basic tutorial should be provided.
3. The user interface should be simple. The main functions should be placed in noticeable places and are easy to find.

4.3 Security

1. The system should use secure connection when user is login into the system.
2. The system should automatically log out all kind of users after the user has a period of inactivity.
3. The system should send confirmation letter to user's mailbox after they change their password.
4. The system should ask the user to input CAPTCHA when the system detect an abnormal login.
5. The user password should never be displayed. The system should only use special characters to represent the typed characters.

4.4 Storage

1. The system should store information related to the users, the class, students and their attendance record.
2. The system should calculate some complex statistics and store the results in the database.

4.5 Stability

1. The system should remain stable and do not crush when exceptions and errors happened.
2. The system should not take too much memory on client side and make the Android device crushed.
3. The server of the system should be stable and able to handle the large number of requests from user side.

5. Other Requirements

Some other requirements should include:

1. The data is only stored in online databases and only the web server can have access to the database.
2. The database snapshots and backups are created periodically to protect the data from losing.
3. The application should not access user personal data on their Android devices.
4. The administrator has the privilege to access the database through SQL connections.
5. The system should be able to provide basic localizations(Japanese, Chinese).