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**1. Introduction**

*This section gives a scope description and overview of everything included in this SRS document. Also, the purpose for this document is described and a list of abbreviations and definitions is provided.*

**1.1 Purpose**

*The purpose of this SRS document is to give a detailed description of the requirements for the “Students Attendance Tracking System” (SATS) software. It will illustrate the purpose and complete declaration for the development of system. Also, it will explain what the system should do and how it will do it. This document is meant to be proposed to a customer for it's approval and a reference for the developing team to build the system.*

**1.2 Scope**

*This project will improve the students attendance taking process in universities. Currently, attendance tracking methods in universities are time-consuming which waste valuable lecture time. The project main stakeholders are University Professors and students as they'll benefit tremendously from such software. It will keep professors and students focused on learning and not waste their time doing routine nonproductive task such as taking attendance. Instead of calling each student name in every class, which sometimes can be challenging for foreign professors pronouncing some difficult names, attendance can simply be taken by students scanning badges upon entry. Another benefit this software will produce is the accuracy and fairness of attendance records as there is no room for human error. This software will give immediate feedback to students if they are in the wrong classroom upon scanning.*

*The main goal for SATS is to build a system that can track attendance effortlessly, organized convenient, fairly and improves the process of attendance tracking and monitoring in Imam Mohammad bin Saud Islamic University. SATS is going to have multiple objectives. As a system it will have to create a database with functions to read, write, and manipulate the data. Using Excel file to record students attendance and generate report for professors to view. Dealing with scan code reader to scan students IDs and setup the device.*

**1.3 Definitions, Acronyms, and Abbreviations**

|  |  |
| --- | --- |
| *Term* | *Definition* |
| *User* | *Someone who interacts with the mobile phone application* |
| *Stakeholder* | *Any person who has interaction with the system who is not a developer* |
| *SATS* | *Students Attendance Tracking System* |

**1.4 References**

*[1] IEEE Software Engineering Standards Committee, “IEEE Std 830-1998, IEEE Recommended Practice for Software Requirements Specifications”, October 20, 1998.*

**1.5 Overview**

*This SRS document will let the customer and developing team to understand and have a good knowledge about requirement and specification in details. As we going through this document we will approach and elucidation general description as first chapter and specific requirement as second chapter. For first chapter, general description will explain the product perspective, product functions, user characteristics and assumption and Dependencies. In second chapter, specific requirement it's important to go in detailed through functional requirements and non-functional requirements to have the complete picture of the system.*

**2. General Description**

*The Student Attendance Tracking System (SATS) has many affecting factors that will make it hard to implement. One of the factors is how and where to store students and professors information for the system to use and do its functions. Another factor is the scanning device that will be used to scan students badges and sending the information to the main class computer to mark attendance. And the system interface that will store and display the attended and absent students. The system has constraints on the students information, so every badge scanned the system will validate these constraints from the information received on by the scanning device.*

**2.1 Product Perspective**

*The Students Attendance Tracking System (SATS) is a System. The system is linked to the scanning device, the database, the Excel file, and the software used by professors. The system provides a secure environment for all information of students and for storing and retrieving the information, it’s a faster way to attend the students, and saving lecture time.*

**2.2 Product Functions**

*The Students Attendance Tracking System (SATS) will allow professors to take attends in the class fast and effectively. After the professor start the system it will allow students to scan their badges using the scanning device. The system will retrieve information from scanning device and compare it with the database. The system will know if student is assigned in the course. The system will attend students and record their time of scan and mark them late if they are late and store it in the Excel file. The Excel file will be organizing in specific format to make sure it's clear for the professor to check it when needed. The system will stop taken attends when the professor issues stop command.*

**2.3 User Characteristics**

The main users of Student Attendance Tracking System (SATS) are the professors and students. The professors are the ones who will run the system, so that students can scan their badges to mark their attendance, the amount of product training needed for the professors and students are none, because the main idea of the product is to make it fast and easy for both the professors and students to take attendance every class.

**2.4 General Constraints**

*The system provides access for professors to implement the scanning process for students to scan their badges. The user interface will be intuitive enough so that no training is required. All the information of students will be added by the professors in the database in the beginning of the semester. The database only allows to take student names and IDs and will allow to use characters and numbers only.*

**2.5 Assumptions and Dependencies**

*One assumption about the product is that it will always be used on the main class computer that is connected to the scanning device. If the professor wants to take the attendance on his personal device he will need to install the product and connect the scanning device, but the problem is the type of data base that has all the students information which is necessary to the product is SQL which will run on the main class computer. Another assumption is that the system will always save the attendance on the same excel file deleting it or changing it may cause problems.*

**3. Specific Requirements**

*This will be the largest and most important section of the SRS. The customer requirements will be embodied within Section 2, but this section will give the D-requirements that are used to guide the project’s software design, implementation, and testing.*

*Each requirement in this section should be:*

* *Correct*
* *Traceable (both forward and backward to prior/future artifacts)*
* *Unambiguous*
* *Verifiable (i.e., testable)*
* *Prioritized (with respect to importance and/or stability)*
* *Complete*
* *Consistent*
* *Uniquely identifiable (usually via numbering like 3.4.5.6)*

*Attention should be paid to the carefuly organize the requirements presented in this section so that they may easily accessed and understood. Furthermore, this SRS is not the software design document, therefore one should avoid the tendency to over-constrain (and therefore design) the software project within this SRS.*

**3.1 External Interface Requirements**

**3.1.1 User Interfaces**

**3.1.2 Hardware Interfaces**

**3.1.3 Software Interfaces**

**3.2 Functional Requirements**

*Student Attendance Tracking System (SATS)/Control Software/SRS/3.2.1*

***Function:*** *Create Database*

***Description:*** *Create database of students including student's firstname, lastname and student ID.*

***Inputs:*** *first name, last name and student ID*

***Source:*** *Those information comes from professors manually.*

***Output:*** *A student DB*

***Action:*** *Create DB will connect to the local DB and initialize it then store the data.*

***Requirement:***

***Pre-condition****: We will check first if there is any DB with the same name or not*

***Post-condition:***

***Side effects:*** *None*

*Student Attendance Tracking System (SATS)/Control Software/SRS/3.2.2*

***Function:*** *Comparing students data with the database students*

***Description:*** *When the students do scanning the system compare it with the database Id*

***Inputs:*** *firstname, lastname, student ID*

***Source:*** *student data will be received from scan reader device.*

***Output:*** *A true or false statement*

***Action:*** *Comparing students data with the students database if the data match that's mean student is taking this course which will return true false if there no matching.*

***Requirement:*** *A DB with students information and the student's data from scan reader.*

***Pre-condition:*** *DB has to be created.*

***Post-condition:***

***Side effects:*** *None*

*Student Attendance Tracking System (SATS)/Control Software/SRS/3.2.3*

***Function:*** *Recording scanning time*

***Description:*** *When the student places his card in the scanner, the system must record its entry time*

***Inputs:*** *time in hour and mins*

***Source:*** *the time will be computed from the system*

***Output:*** *the current time of the scan activity*

***Action:*** *when student scan his\her badge the time will be stored and used in the system.*

***Requirement:*** *scanning the student's badge.*

***Pre-condition:***

***Post-condition:*** *compare the scanning time and lecture time.*

***Side effects:*** *None*

*Student Attendance Tracking System (SATS)/Control Software/SRS/3.2.4*

***Function****: Connecting scan reader with the system*

***Description****: we must link between the scanner and the system to find the compatible data.*

***Inputs****: Reading Badges IDs.*

***Source****: Read from Scanning device.*

***Output****: None.*

***Destination****: Main class computer.*

***Action****: After scanning the badges on the scanning device. The information will compare with the information in the database and will make the student present if he assigned in the course.*

***Requirements****: Database with information of students.*

***Pre-condition:*** *The student is assigned to the course.*

***Post-condition****: Making the student present or absent or late.*

***Side effects****: None.*

*Student Attendance Tracking System (SATS)/Control Software/SRS/3.2.5*

***Function****: comparing scanning time with the lecture time.*

***Description****: to find out if the student is early or late, we must compare.*

***Inputs****: Reading Badges IDs and the time of the scanning.*

***Source****: Read from Scanning device.*

***Output****: Time of scanning the badges.*

***Destination****: Main class computer.*

***Action****: After scanning the badges on the scanning device and the time of scanning. The system will compare it with the lecture time and make the student late if he late or present if he early.*

***Requirements****: Database with information of students and the starting of the lecture time.*

***Pre-condition:*** *compare the time of the lecture with time of scanning.*

***Post-condition****: Making the student present or absent or late.*

***Side effects****: Depends on the professor time. which mean how much time to be late.*

*Student Attendance Tracking System (SATS)/Control Software/SRS/3.2.6*

***Function****: comparing and creating Excel file*

***Description****: compare the data from the scanning device with database then save it in Excel file.*

***Inputs****: Reading Badges IDs.*

***Source****: Read from Scanning device.*

***Output****: Students information, Time;*

***Destination****: Main class computer.*

***Action****: After scanning the badges on the scanning device. The information will compare with database and will save in an Excel file and will filling the blanks in it.*

***Requirements****: Database with information of students.*

***Pre-condition:*** *The database have the data of students to compare.*

***Post-condition****: Making the student present or absent or late.*

***Side effects****: None.*

**3.3 Non-Functional Requirements**

*Student Attendance Tracking System (SATS)/Control Software/SRS/3.3.1*

***Function:*** *Constraints on students names that is must be just string of letters.*

***Description:*** *Validating**students names in the database making sure it is just letters with no numbers or any other than letters.*

***Inputs:*** *Enter all students information in the database.*

***Source:*** *The professors or the college staff.*

***Outputs:*** *pointing invalid names in the database to be fixed.*

***Action:*** *The software first will check the students names in the data base and validate if all names entered are correct than it will output successful. If the software output not successful than it needs to be fixed and entered correctly.*

***Requirements:*** *The database with all students names so that the software can check for mistakes.*

***Pre-condition:*** *Filled database with students names.*

***Post-condition:*** *Incorrect names fixed.*

***Side effects:*** *None.*

*Student Attendance Tracking System (SATS)/Control Software/SRS/3.3.2*

***Function:*** *Constraints on students ID that is must be just string of numbers.*

***Description:*** *Validating**students ID in the database making sure it is just numbers with no letters or any other than numbers.*

***Inputs:*** *Enter all students information in the database.*

***Source:*** *The professors or the college staff.*

***Outputs:*** *pointing invalid IDs in the database to be fixed.*

***Action:*** *The software first will check the students ID in the data base and validate if all IDs entered are correct than it will output successful. If the software output not successful than it needs to be fixed and entered correctly.*

***Requirements:*** *The database with all students ID so that the software can check for mistakes.*

***Pre-condition:*** *Filled database with students IDs.*

***Post-condition:*** *Incorrect IDs fixed.*

***Side effects:*** *None.*

*Student Attendance Tracking System (SATS)/Control Software/SRS/3.3.3*

***Function:*** *The system will stop taking attendance after the lecture hours.*

***Description:*** *The system must accept inputs from the scanning device and marking attendance just in the lecture hours after the lecture ends the system will shut.*

***Inputs:*** *None.*

***Source:*** *The developer must provide the system with lecture time of beginning and ending.*

***Outputs:*** *None.*

***Action:*** *The software will take inputs from the scanning device when the professor runs the system, and mark attendance with every scan. Students can’t input any scan before the professor starts the system also students can’t input any scan after the lecture hours provided by the developer in the system.*

***Requirements:*** *Assigning the lecture hours for the system to shut after lecture ends.*

***Pre-condition:*** *The professor need to start the system.*

***Post-condition:*** *Time of lecture ends.*

***Side effects:*** *None.*

**4. Conclusion**

*Summary of this SRS documents. What has been achieved and what is left, and some future work.*