

Software Requirements Specification

Group 1 : Attendance Management System

1 Introduction

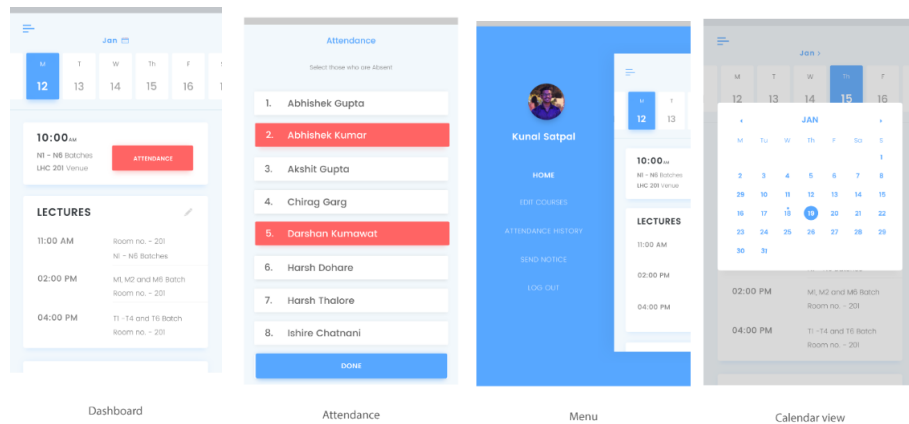
1.1 Product Overview

Our attendance management system will automate the traditional way of attendance management. We intend to reduce time required by the manual approach. Our system provides a modern approach, hence making it viable perennially. It also removes manual labour thereby increasing the efficiency of the model as a whole. Our main target for developing this tool is to save efforts of teachers in maintaining records of attendance and hence allowing them to spend their time more efficiently making tedious practice of transferring records from hard copies into excel sheet obsolete.

2 Specific Requirements

2.1 External Interface Requirements

2.1.1 User Interfaces



2.1.2 Hardware Interfaces

A device with at least a i3 Processor, 4GB RAM, HDD (128GB) and camera with a minimum resolution of 720p. A device with a sufficient amount of unused non-volatile memory.

2.1.3 Software Interfaces

Operating System: We have chosen Windows operating system for its best support and user-friendliness. Browser: Any browser which supports HTML, JS, Web API and CGI Database: For storing user data we have chosen MySQL database.

2.1.4 Communications Protocols

For uploading of files to the database and retrieving the data from the database over the internet TCP protocols will be used. All types of web browsers are supported for communication.

2.2 Software Product Features

Functional Requirements:

●Registration :

Student and teacher registration and validation of college email id. At the time of registration, the system shall accept face images of the students and teachers from five different angles.

●Login :

Validating the user identity by verifying their college email id. At the time of login, the system shall accept the email id, password and OTP (Optional) generated on the registered college email id that was previously registered.

●Face Detection :

Capture face images via webcam or external USB camera. Faces on an image must be detected. The faces must be detected in bounding boxes. Compute the total attendance based on detected faces. Crop the total number of faces detected. Resize the cropped faces to match faces the size required for recognition.

●Face Recognition :

Train faces for recognition. Perform recognition for faces stored on database. Compute recognition rate of the system. Perform recognition one after the other for each face cropped by Face Detector. Display the name of the output image above the image in the plot area.

●Attendance Management :

Based on the face detection and recognition results the attendance of students will be marked. Attendance will be considered only for first 15 minutes after

the professor enters the classroom.

●Web Portal :

The web portal will have three types of accounts that is of students, teachers and admin. The students will be able to access their attendance records and the study content provided by the teachers. The teachers will be able to view the daily lecture's attendance percentage and upload their study content.

2.3 Software System Attributes

2.3.1 Reliability

The user should have a strong internet connection whenever they want to use the application as the application is completely reliable on data provided by the server.

2.3.2 Availability

The system will be available at all times, meaning the user can access it using a web browser, only restricted by the down time of the server on which the system runs. If the internet service gets disrupted while sending information to the server, the information can be sent again for verification. In case of database corruption, backup will be stored with the help of recovery system by the concerned authority.

2.3.3 Security

Login is done through 3 way handshake protocol and also the user's password is stored in database after undergoing a hash function. So the original password stays only with the user and is never revealed to anyone else. Also all the bills generated can be accessed only by the user and the organization. Access to the admin and organizational logins is restricted to some specific login credentials.

2.3.4 Portability

As the entire application is web based, it is easily portable to any device the user wants it on. The new device should have web access, a supported OS and sufficient memory requirement. For removing the misuse of portability, a user verification is done each time a new device is used.

2.3.5 Performance

The facial recognition will take at most time of 15 seconds. The web portal pages should take maximum of 2-5 seconds to load.

2.4 Database Requirements

The user(students/teachers) enters the details in the User registration, which will have a special roll number as primary key and their facial ID as well which will be used to link with other tables in the database. A teacher can upload multiple documents (notes, ppt, etc) for students to refer anytime. Students' attendance will be stored in our database. The roll number should be present in the User Registration Table in order to access their attendance..

Figure 1: ER Diagram

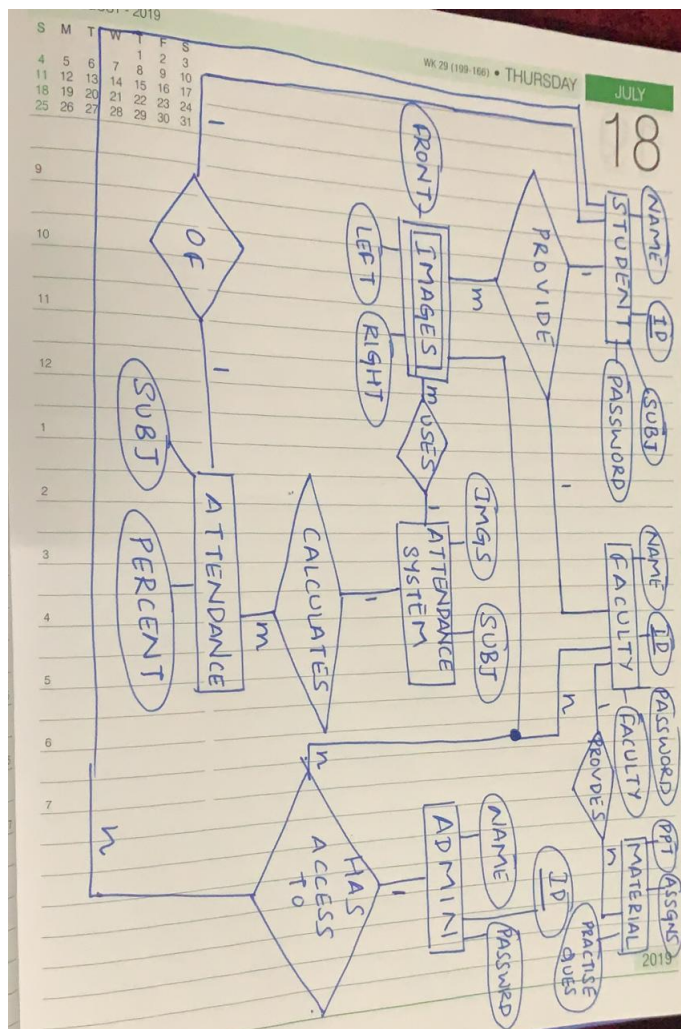


Figure 2: Relational Model

