

ATTENDANCE SYSTEM FOR EDUCATIONAL INSTITUTE BASED ON ANDROID PLATFORM

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Abstract— In today's world paper based attendance marking system is used in educational institutes where the teacher calls out students roll numbers. This is a manual process and is prone to many human errors. There are many different systems with different technologies for attendance marking and monitoring such as finger print based system, biometric based system. But these systems have one or the other drawback. To overcome the traditional systems, we propose a drawbacks of mobile enabled attendance recording and monitoring system. It includes a mobile application which can be made available to each teacher and the teacher can run the application and start the process of taking the attendance. The input to the application will be speech which will be converted further to text using android speech libraries. The record can be uploaded to the server at any time for monitoring purpose. The system includes many privileges for students, faculty, head of department and Institute.

Keywords- DFD, RFID, SRS, UML etc.

1. INTRODUCTION

Since evolution of modern educational institution marking of attendance has been one of the most important tasks for ensuring the presence of students or even teachers. The traditional approach of marking of attendance is based on teacher calling out each and every student name or the roll number of particular student in the class and making its entry in the record book. In every educational institute, attendance of students need to be recorded after each and every lecture separately by the respective teachers of the recording lectures conducted. This is a tedious process which involves teacher preparing attendance report at the end of each month. It is only after the teachers monthly report that the head of departments can view the attendance. This traditional process could allow impersonation and the attendance sheet could be lost. In today's technological world this manual process does not tin and hence its time for a change by replacing the traditional system with new efficient, reliable and an automated system. There are various other attendance systems like biometric-based system, card based system and fingerprint based system [6][2]. These various systems use different technologies for attendance marking. For example, fingerprint attendance system requires students to mark their thumb impression on the finger print scanning device[8]. However, marking attendance of students in each and every lecture with the device is not feasible. In various schools and colleges lectures and practical take place at

different classes and laboratory. So this system fails to manage attendance process in these situations. In the proposed attendance system using a mobile devices the faculty takes the attendance and gets recorded the database. At the end the of lecture when the faculty has to submit the record of attendance to higher authority the faculty can directly upload the attendance in the server.

In this paper, we have proposed a mobile application which is based on speech recognition for attendance marking. This system removes the drawback of the fingerprint based attendance system and allows the faculty to mark attendance of students regardless of the place and time. It enables the faculty to generate reports of the students like lists of students below the specified percentage of attendance. Other privileges can be assign to faculty members, class coordinator, head of department and Institute.

2. LITERATURE REVIWE of EARLIER SYSTEM

Different methods and principles have been applied to effectively monitor the attendance of the students. A system providing an electronic card and card reader serially interfaced to the digital computer system was pro-posed, which is an embedded computer based attendance management system. A wireless attendance management system used the iris of the individual for authentication[7]. A system that uses passwords for authentication was designed and implemented, but this type of system allows for impersonation since the password can be shared or tampered with. Passwords can be forgotten at times thereby preventing the user from accessing the system. Attendance monitoring systems are also developed using biometric system as a mode of authentication and marking the attendance of the students. Another implementation that uses fingerprints to mark the attendance and generate the reports at the end of the semester. RFID system has also been used to develop an attendance and monitoring system[4]. RFID system basically consists of two components: the first one consists of tags and readers, and the second is a computer software or application. The main function of the reader is to provide the means of communicating with the tags and enabling data transfer.

Google Speech to Text Patent (U.S. Pat. No. 55769): [1] A speech-to-text conversion system comprises of at least one user terminal for recording speech, at least one automatic speech recognition processor to generate text from a

recorded speech file and communication means operative to return a corresponding text file to a user. The server, the user terminal and the speech recognition processor are remote to each other. The system consists of user terminals attached by E-mail or phone links to a server. The server is connected via a network to a number of processors for speech recognition. These processors are connected via electronic mail (E-mail) links to corrector terminals. The corrector terminals will be described in more detail later. Each corrector terminal has at least one output terminal. The system basically operates by speech being captured at the terminal and sent via links to the server. The server controls the speech-to-text conversion operations in particular by sending the speech to speech recognition processors for conversion to text data. This text data is transferred via E-mail to remote corrector terminals. The text data is displayed and corrected by an operator. After corrections are made is reported to the speech recognition processor for adaption purposes to improve the accuracy of subsequent speech recognition. The server acts to queue the speech-to-text conversion jobs and assign them to the various speech recognition computers. A client may submit dictation at any time and under the control of the server, this is forwarded to a selected speech recognition processor for processing.

RFID Based System: [4] RFID based Attendance System uses RFID reader to get the student information through student matrix card [5]. After getting the student information, it will send it to the computer in that class or lab. After that, the individual in charge (Professor, staff, and student) must connect to the PC using Bluetooth to make his/her see the student attendance in that particular class. RFID based attendance system is very time consuming and it also requires sufficient distance to read the RFID chip for marking attendance of object. RFID system also takes help of manual efforts because one person is always required for manually counting for head count of all the attendants of a system.

Fingerprint Based System: [6] In fingerprint attendance system, the method distinguishes the match between two human beings by their fingerprint. Here, the fingers are the main focus because of their characteristics that vary from person to person. A device called fingerprint scanner is required which performs two basic jobs it needs to get an image of one finger, and it needs to determine whether the pattern of ridges and valleys in this image matches the pattern of ridges and valleys in pre-scanned images. Only specific characteristics which are unique to every fingerprint are filtered and saved as an encrypted biometric key or mathematical representation. No image of a fingerprint is ever saved, only a series of numbers (a binary code), which is used for verification. The algorithm does not allow the reconversion of fingerprints to an image, so no one can duplicate your fingerprints [8]. Once the fingerprint is scanned, the attendance of that particular person will be recorded for the day. This system can fail because of dryness or dirt on finger. It is very intrusive because it is still related to criminal identification. The database is having requirement of large storage as the images are to be stored and matched with the existing records.

3. USERS OF THE PROPOSED SYSTEM

A. Administrator

The Administrator is responsible for the registration of the students and teachers in the system. Administrator is having full authority over the system. Administrator can add or update and even delete the streams, teachers, students means the various users of system. Key role is played by administrator in the system, only admin is having authority to provide each user of system with their username as well as passwords thus registration of all other users is done by administrator.

B. Teacher

The teacher plays the role of taking the attendance from the student using the application in his/her smart phone. The teacher launches the application and starts the attendance personally the students while proceeding with the attendance process. The teacher can edit the attendance sheet selecting particular roll numbers on the mobile application before it is uploaded on server. The attendance taken by all subject teachers of a particular class has to be submitted to the class co-ordinator for generating the monthly attendance report of the class. The proposed system introduces a website for the teacher so that he/she can keep a track of the lectures conducted in a particular month of the subject the teach.

C. Student

Student can view his/her attendance of each subject by logging in to the website. Students will be provided with the username as well as passwords to check their attendance for each subject.

D. Head of the Department

The system provides the Head of the Department, the central authority to manage and view the attendance of each class of the department on the server. The system have given the direct control only to the Head of the Department to access the attendance reports of each class such as subject report, monthly report, and defaulters report on the server. The HOD has to log-in with its credentials on the server and initiate the service of the Attendance system. The HOD is also responsible for maintaining the database of teaches students, courses as well as the application.

E. Principal

The Principal of the institute has the privilege to view the attendance of the students belonging to different departments and their respective classes. The system provides a login for the Principal to view the monthly attendance report of each class of a department.

4. DESIGN AND SPECIFICATIONS

1. Description of Modules

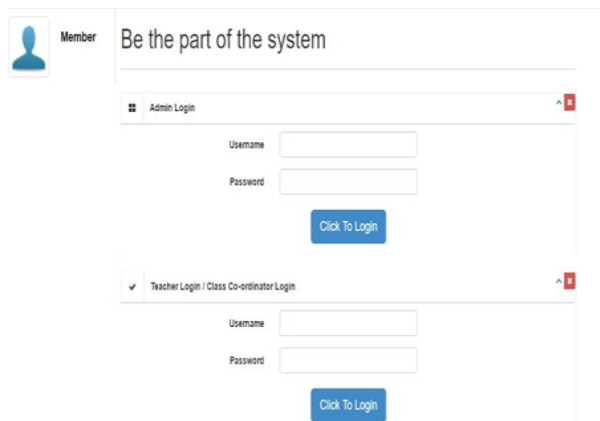


Fig.1 Image of Log-in Page 1

The Fig.1 shows the Administrator and Teacher/Class Coordinator Log-in page

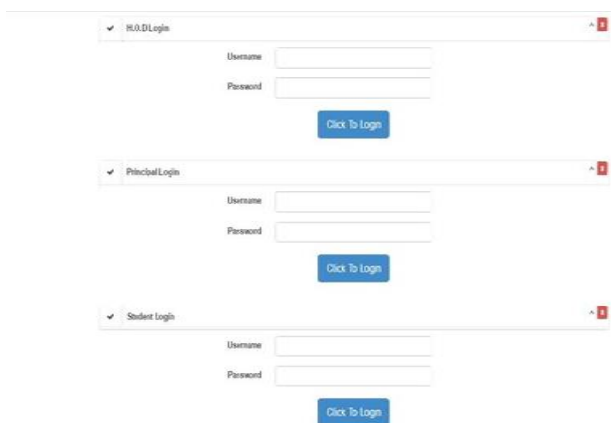


Fig.2 Image of Log-in Page 2

The Fig.2 shows the H.O.D, Principal and Student Log-in for website.



Fig.3 Image of Attendance marking

The Fig.3 shows the attendance marking procedure in which the student calls the roll no and for this number is marked.

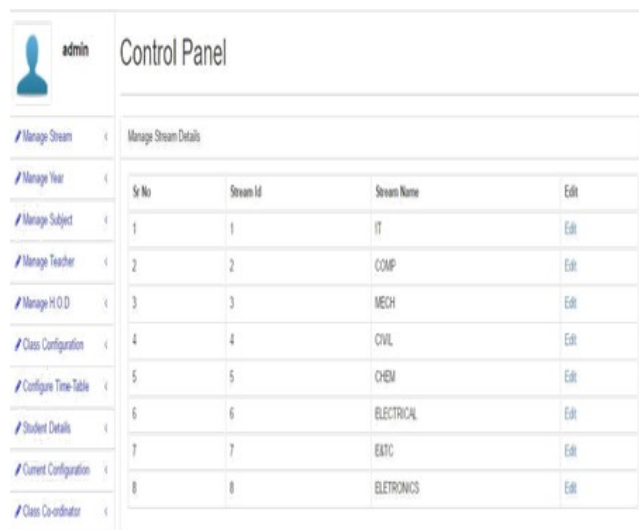


Fig.4 Image of Control Panel

The Fig.4 shows the control panel for the administrator in which he can manage Streams, Teachers, Subject etc.

2. UML Diagrams

Class diagram is a type of static structure diagram which describes the structure of a system by representing the classes of the system, their attributes, operations and the relationships among these classes. The Fig.5 represents the class diagram for the attendance system. In this system, we have nine classes namely Faculty, Student, Branch, Subject, Application, Website, HOD, Principal and Admin.

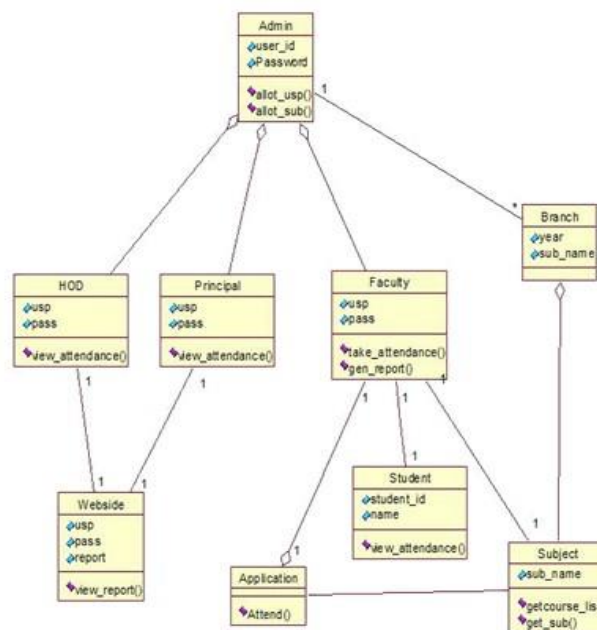


Fig.5 Class diagram of the system

A DFD (data flow diagram) is a graphical representation of the data flow through an information system which is used to model the process aspects of the system.

The Fig.6 shows how student and staff interact with for the purpose of attendance and Fig.7 shows how student and staff and Admin interact with the application as well as the website for the purpose of attendance taking and report generation.

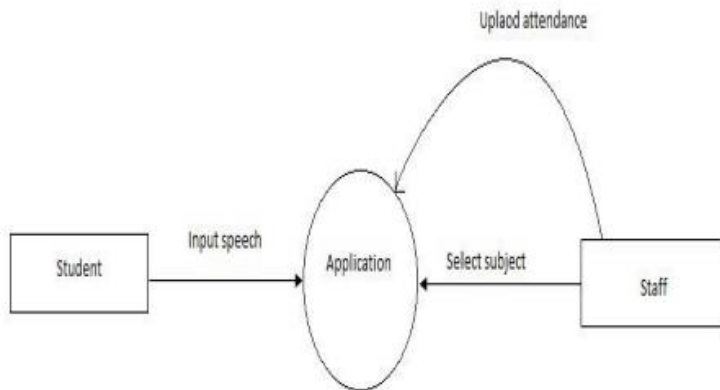


Fig.6 DFD Level 0

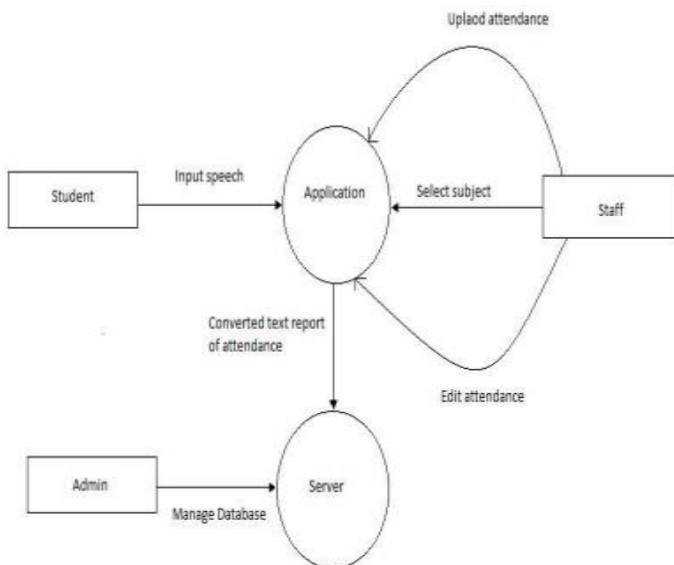


Fig.7 DFD Level 1

3. Resource Requirement

- Hardware requirements for the proposed system are:
 - 1 GHz Processor
 - 512 MB RAM
 - 1GB of Storage.
- Software requirements for the proposed system are:

1.Android Device's Operating system: Android 2.3 and above.

2.Operating System Used: Windows Xp and above

3.Programming Language: JAVA and XML

4.Development Kit: Android SDK and ADT

5.Editor: Eclipse juno/Luna or Android Studio.

5. RESULT AND ANALYSIS

Early documentation of SRS and UML models were prepared and verified. Required platforms for the development are understood, learnt and practiced. Designs of Common layouts of Web pages were completed to bring consistent UI. Database Schema was designed, improved, normalized and verified. Front-end and Back-end modules for students, faculty and administrators were designed and integrated with previous web page layouts. All Comparison modules were developed and integrated into a single package. All the hardware and software platforms were set up at server side. Web UI, Comparison modules, Database are interfaced with each other and saved in web application directory. In this way, we focused on step-by-step implementation during the development of our Web application and our application, i.e. a novel attendance system.

6. CONCLUSION

With the development of software and hardware capabilities of mobile devices, there is an increased need for device-specific content in the recent market changes. Speech recognition technology is of particular interest due to the direct support of communications between human and computers. The student attendance is generally manual, which is an inconvenient task and wastes time of a lecturer. To avoid this, we have developed an automated system which would save the time, labor and moreover the system would be immune to impersonation.

Using the speech recognizer, which works over the internet, allows much faster data processing. Another advantage is the much larger databases that are used. Many believe that this mode is a big step for speech recognition technology. The accuracy of the system has significantly increased and become more accessible to everyone. The application, unlike fingerprint attendance doesn't require students to give their fingerprints in each lecture. Moreover, the advantage of mobile attendance is that it provides accuracy and removes the manual process of taking attendance.

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