

Lecture and Attendance Management System

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Abstract— Attendance is an important aspect of conducting lectures and practical in any academic institution. Lecturers manually take attendance in classes either calling out names/ roll numbers or else asking them to write them down on paper. Taking attendance on paper or muster can get tedious. Also maintaining records in such cases can get problematic and inaccuracies can get induced. Solution for this: Digitization of the records and attendance. In addition to that it will help automation of report generation and handling of attendance. With addition to attendance next thing required highly in academic institution is a way to convey notices and important messages to staff and students. Digitizing this work will also further help staff reduce their work and thereby giving more time for themselves and other important academic work.

Key words: Lecture Management System, AMS

I. INTRODUCTION

Lecture and Attendance Management System (here after LAMS) is system developed for regular lecture and practical's student attendance in academics institutes.

It will provide facility to maintain and create attendance record for all students lecture and class wise. The information is very useful to users, teachers and in-charges in particular, for knowing the track record of a student of attending lecture(s). The information can also be used as proof for representing the number of lectures student has attended whenever claimed. This system will also help in evaluating attendance eligibility criteria of any/a student.

Major need behind the project is digitization, computerization and automation of the traditional way of taking attendance. Another motivation is automatic generation of periodic reports that are required by teachers, H.O.D.s, students etc.

For any academic institution, term attendance management includes several tasks throughout the academic session. These tasks include: recording student attendance, maintaining it, generating periodic reports, contacting students and informing and confirming from g\warden of students about the low attendance record. Basic concept behind this project is to digitize all and automate most of above tasks so that the extra burden the teaching staff feels can be reduced considerably.

Also in every institute other important aspect of institute includes issuing various types of notices to student and staff. Traditional way of doing this pining a printed copy of notice or declaration on notice board. Though this does not guarantee reaching of message or notice to every student/staff concerned.

II. LITERATURE REVIEW

Paper studied shows various techniques that can be and are being used for marking attendance of students. Most systems use Radio Frequency Identification (RFID) cards and devices. In such methods students simply place their RFID card embedded identification cards in front of RFID terminal to mark their attendance. Some papers use biometric techniques to authenticate student and mark attendance of students. Students marks attendance trough fingerprint or iris. Both techniques are very useful for daily based attendance. Students, in daily based attendance, have to mark attendance either while entering campus only or both while entering and leaving the campus. For lecture based attendance, however, it is better if teacher takes attendance personally with the help of handheld devices. The papers summarize following necessary functions for users of system:

A. Required Function by a Lecturer:

- 1) Confirming student's attendance based on the information of date and time slot of classes defined on each courses, confirmation should done automatically.
- 2) Flexible setting on course date and time slot before and after classes. Cancellation or unscheduled make-up of class may happened so that the system should be flexible enough to adopt the schedule changes.
- 3) Flexible modifying of specific attendance records. Students cannot attend the class due to various reasons such as an officially allowed absence as the representative of university, or due to diseases such as influenza.

B. Required Function by a Student:

- Reviewing own attendance record and having and alert based on number of absent.

C. Required Functions by Member of Students Care and Administrative Section:

- Cross-course alerting if students are absent from classes for few consecutive days without specific reasons.
- Capability of statistical analysis such as the relation between student's attendance and their immediate and final marks.

III. EXISTING SYSTEM

A. Current System

Current system is completely manual attendance form; all work is done on paper and session attendance is maintained in register. Reports are generated at the end of months and semester. More frequent reports cannot be generated as it requires lot of calculations by teacher and consumes a lot of time. A student is notified only after the report of month and there might not be much time by then to improve the attendance record.

B. Disadvantage of Current System

- 1) Not user friendly: The current system is not user friendly because the retrieval of data is very slow and data is not stored efficiently
- 2) Difficult in report generation: We require more calculations to generate the report so it is generates at the end of session. Students get very less chance to redeem their attendance.
- 3) Manual Control: All calculations to generate report is done manually so there is greater chance of error
- 4) Lots of paper work: Existing system requires lot of paper work. Loss of even a single register/record can lead to difficult situation because all papers are required to generate the reports.
- 5) Time Consuming: Every work is done manually so we the overall speed of attendance recording, report generation is very low. The complete manual process of attendance is hence very time consuming eating its way into teachers' time that can be diverted for other tasks.

IV. PROPOSED SYSTEM

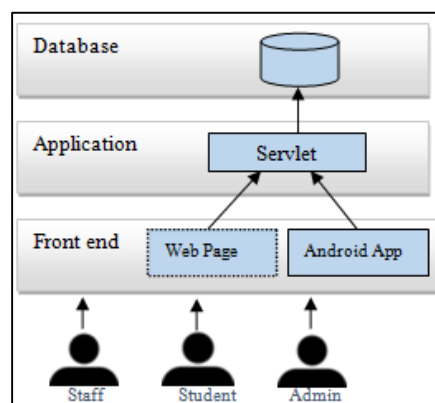


Fig. 1: Architecture for proposed system

Proposed system, Lectures and Attendance Management System works on three levels. Database level - where DB is stored, application level – Java SRVLET and front end i.e. web browser (web pages generated by SERVLET) and android app. System has three categories of user: student, staff and admin.

Fig. 1.0 above shows levels of the system. As depicted, the system is 3 layered:

A. Database Layer

Database for the system is stored on this layer. It will store user information, notices, attendance record and all other important and required data required by the system to operate.

B. Application Level

Server application resides on this layer. Application provides interface between database layer and front end. It will also be programmed to generate periodic reports. The server application will be programmed using Java SERVLET. The SERVLET will provide access to both the application and web interface. Hence it is to be programmed for serving two different types of front end. It will check the incoming front end request to determine the authenticity of source.

C. Front End

The System has two front ends: Android application and the web interface. Both will help user to access the system with ease.

D. Android Application

Android application will allow staff to record attendance. Attendance cannot be recorded by web interface. Various features of android – such as push notifications, auto data sync, etc. – will help user to get access to system with least amount of data and time consumption. Android application will be programmed as a base framework which will only access the user related information and run time information required there by saving data and time. Various security options provided by android can be used secure data.

E. Web Interface

It will allow non-android users to access system. This interface is though useful only for student, admin and mentors. The staff requires android app to record the attendance. All other functions except attendance recording can be performed via web interface.

F. Users

Users to the systems are classified broadly in three categories – student, staff and admin. Each user category has its own privileges and access rights to the system. The individual user is further given specific access level within their categories depending on their functions, charges and classes assigned.

G. Admin

An admin has highest level of access rights though in a very restricted manner. An admin will have right to add new users (staff and student). He/she cannot perform any other function related to system other than adding user and editing user details.

H. Staff

Staff is a second level user. Staff can create lectures, create extra lectures or cancel any scheduled lecture. Access to most important task of recording the attendance also vests with staff. Though once confirmed attendance record cannot be changed by anyone, not even admin or staff who confirmed it. Staff has further deviations in rank such as H.O.D., lecturer and mentors. They will have access rights accordingly.

I. Student

Student has only read rights through out the system. He can view his personal information, basic info about other user (except admin), his personal attendance record and get system-wide or user-specific notifications.

V. REQUIREMENT ANALYSIS GENERAL DESCRIPTION

A. User Characteristics

The target users for this system are staff and student of academic institute. The users are classified as:

- Admin: Super user to system
- Staff: User to system with more access rights to the system
- Student: User with least amount of access rights/

B. Product Perspective

The product is a standalone web based application that will run on internet with the help of access point (a regular web browser or android app developed with product). The minimum requirements are given in this section.

C. Functional Requirements

Following are functional requirement for end users:

- Admin should govern users of system.
- Each user should be uniquely identifiable.
- Each student should be uniquely identifiable.
- Staff should be able to access student in their charge.
- Mechanism to ensure only records attendance.
- Mechanism to preview attendance by teacher before recording it.
- Mechanism to ensure once recorded attendance cannot be changed.
- Mechanism to generate automated reports.
- Mechanism to alert users of notifications.
- System should have help feature.

D. Hardware Requirements:

1) By Client:

- Processor: P IV or above
- Ram: 512MB or above
- Android Device (mandatory for staff optional for other two) with:
 - 512 Mb of Ram
 - 15 Mb of Internal Memory
 - Android 2.3 (Ginger Bread)

2) By Server:

- Processor: P IV or above
- Ram: 1 GB or above
- 1 GB of Hard-disk Space

E. Software Requirements:

1) By Client:

- Web browser (Mozilla Firefox 5.0 or above, Chrome 3.0 or above)
- Android app (Available as product package)

2) By Server:

- Tomcat Server

- JDK 5 or above

Note all above requirements (hardware and software) are minimum requirements. Better configurations will result in better performance of system.

F. Specific Requirements

External Interface Requirements:

- Simple, Attractive, user friendly.
- Self-contained, Consistent, Self-explanatory.
- Robust.

VI. FEASIBILITY STUDY

A. Economic Feasibility

System is being developed with keeping economic expenditure on the system minimum. The system requires minimum installment expense that is occurred for installation of server. The software used for server – Tomcat server and JDK – are freeware there by incurring least installation charges. Maintenance charges include internet charges and other system maintenance costs. This are though minor costs. With implementation of system, paper usage would be eliminated and thereby reducing cost to institute.

B. Technical Feasibility

Technical feasibility of system checks the technology that is to be used for system, its availability and ease of access to them. The technologies used are widely available and cost effective. Android powered smart-phones are common in almost every user today. Server requires no special hardware and software that is not available or would not be cost effective.

C. Operational Feasibility

Operational feasibility of system checks how easy the system is to access and use by the end user. System is quite easy to operate and requires no special training to user. The system and all its components are self-explanatory and hence user can access the system quite easily and without any glitch.

VII. TECHNOLOGY

A. Servlet

Servlet is a server side programming language for generating user specific dynamic web page. Shortly after the Web began to be used for delivering services, service providers recognized the need for dynamic content. Initially, Common Gateway Interface (CGI) server-side scripts were the main technology used to generate dynamic content. Although widely used, CGI scripting technology had many shortcomings, including platform dependence and lack of scalability. Servlet was developed as replacement for CGI web technology to overcome its shortcomings.

B. Android

Android is mobile operating system currently being developed and managed by Google Inc. Android is based on Linux kernel primarily built for touch screen based mobile devices such as smart phones and tablets. It was initially developed by Android Inc. later bought by Google Inc. Android Interface is based on direct interaction with touch interface using touches and gestures. Android's source code is released by Google under Open Source licenses

VIII. CONCLUSION

This paper shows the research done to implement the project "Lecture and Attendance Management System". According to the research the project will provide an easy way to record and manage attendance of students with minimal work on part of staff and a user friendly way to interact with system.

IX. FUTURE PROSPECT

The project is to be implemented on two interfaces web and android mobile. Development of web is to be done in two stages: static web pages for designing followed by adding of dynamism using Servlet. Android application is to be developed on Android Studio – IDE supported by Google.

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