Online Attendance Application



A project report submitted to Rajiv Gandhi Proudyogiki Vishwavidhyalaya,
Bhopal, towards partial fulfillment of the degree of
MASTER OF COMPUTER APPLICATION
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Recommendation

The project report entitled "Online Attendance Application" submitted by Ritik Jain, Surbhi Barde, Tanya Sharma, Zainab Jafar Hussain students of MCA final year in the session 2020-21, towards partial fulfillment of the degree of Master of Computer Applications of Rajiv Gandhi Proudyogiki Vishwavidhyalaya, Bhopal, is a satisfactory account of their work and is recommended for the award of degree.

Name of Guide

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Certificate

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Internal Examiner : External Examiner

Prof. Pooja Gupta

Date: 25/01/21



We are heartily pleased to acknowledge all those people who have helped us in the successful completion of this project. With great pleasure we express our heartfelt gratitude to our esteemed guide, **Prof. Pooja Gupta**, Lecturer Department of Information Technology (MCA), S.G.S.I.T.S. Indore. Her persistent encouragement, perpetual motivation, everlasting patience and valuable technical inputs in discussions have enabled the successful completion of this project. Her invaluable help, advice and constant encouragement helped us a lot and provide impetus to the progress of the project. We extend our profound indebtedness to the Head of the department **Prof. Sunita Varma**, the word loose their worth for her invaluable guidance, continuous encouragement and cooperation in every respect.

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Ritik Jain Surbhi Barde Tanya Shrama Zainab Jafar Hussain



The project online attendance application helps to mark the attendance of students digitally. Earlier marking attendance involved to much of class time and paper work, thus, it helped to save precious class time. It also generate attendance report on daily, monthly and consolidated basis. It enables to give and calculate class work and sessional work marks of student and as well as to generate the report for the same. It also helps to notify students via email and sms. And also helps to make a call for the same if needed.

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Chapter 1 Introduction

Online Attendance Application is software developed for daily evaluation of students in their continuous assessment record, and performance in accordance with the principle of the institution. It is facilitated to access the performance and information of attendance of a particular Student in a particular semester of study. The information is sorted by the teachers, instructors and advisors, as provided by the student for a particular day throughout a complete semester. This system will also enable the evaluation of student regular presence in various lectures which will determine the eligibility of the student to appear in semester examination.

1.1Preamble

The purpose of developing this online attendance application is to computerized the tradition way of taking attendance. Another purpose for developing this software is to generate the report automatically at the end of the semester.

1.2 Problem Statement

The workflow of current system of attendance is manual which was having following problems:

- In many cases we can forget to take attendance sheet in a period time.
- Sometimes our sheet can be lost or the record can be tattered.
- Record of attendance will increase the no. of sheets and also the space.
- Time consumed in accessing the records of the students.
- No Software present at all in our college.

1.3 Objective

- Application is accessible from any android device and easy to install, easy to mark attendance, data will be managed automatically in our application.
- Use the technologies and Server technology used in here to create strong and secured database connectivity.
- Eliminate duplicate data entry and errors in time and attendance entries
- Eliminate paperwork and save time.
- Automatic calculation of attendance
- To Increase security.

1.4 Scope

The scope of the project is the system on which the software is installed, i.e. the project is developed as laptop or phone (android) application, and it will work for a particular school or college. But later on the project can be modified to operate it online.

1.5 Organization of Report

Chapter 1: Introduction

This chapter contains the brief description about the application, objective and scope of application.

Chapter 2: Technology Description

This chapter contains the android studio framework needed for implementing the application and explains the basic concepts for the development of project and the technology to be used.

Chapter 3: Analysis

This chapter includes the analysis phase of the system development process. It includes Feasibility study, Requirement analysis, Specification, Functional Description of the system with the help of Use-Case Diagram.

Chapter 4: Planning

This chapter deals with the management dexterity. It depicts the software planning process adopted for the system. It describes the scheduling aspects with the help of the UML diagram and project schedule table. It specifies the necessary hardware and software required for the project.

Chapter 5: Design

This chapter elaborates the design process used. In this phase analyzed problem is framed into a design. It describes the architectural design, data design and the interface design of the system.

Chapter 6: Implementation

This chapter deals with the implementation part of the system.

Chapter 7: Conclusion

This chapter concludes the main part of the report with the conclusion section.

References

This chapter concludes the references from where the basic concepts have been referred.

Chapter 2

Literature Survey/ Conceptual Framework

Literature Survey

The purpose of developing attendance management system is to computerized the tradition way of taking attendance. Another purpose for developing this software is to generate the report automatically at the end of the session or in the between of the session.

The design and implementation of the system is to provide service in institute and colleges. The system is to provide comprehensive student information system and user interface is to replace the current paper records. College Staff uploads attendance, results and college notifications through a secure, online interface using android devices. All data is thoroughly reviewed and validated on the server before actual record alteration occurs. The system plans for student user interface, allowing students to access tips and tricks as provided by their seniors. All data is stored securely on servers managed by the college Administrator .

In this survey basic problem of student attendance management is defined which is traditionally taken manually by faculty. One alternative to make student attendance system automatic is provided by Computer Vision. Here, we review the various computerized system which is being developed by using different techniques. Based on this review a new approach for student attendance recording and management is proposed to be used for various colleges or academic institutes.

Module details

1.Admin-

- A Person is a super user who enjoys all the privileges.
- Add Update Delete Subject to be studied.
- Approve/Disapprove teacher/student account.
- Add teacher/student account.
- View attendance of each student.
- View attendance average Percentage
- Download attendance Report as PDF format
- Can send instruction/notification to every Student.
- Update Records
- Can give added permission to teachers

2. Faculty-

- A person is required to create account and then gets approved by the admin.
- Teacher can be assigned Multiple lectures by Admin.
- Teacher can Manage Multiple lectures Attendance.
- View the list of students assigned to them.
- Mark attendance after each lecture
- View attendance of each student assigned to them.

- Generate/Download Report of attendance in PDF Format
- Check Average Attendance
- Update Password(encrypted format)

3.Student-

- A person has less privilege to the access of the system; the student can only view his own record by providing his username and password.
- A person will be able to see the percentage of his attendance as well as his results. If any comment or change of class schedule the student can see in his own profile only.
- This user can receive alert / message from his teachers related to his attendance performance. It is obvious that Students with poor Attendance will see their attendance in a Red warning table that can make the student to be careful not to miss classes anymore.

Chapter 3 Analysis

Analysis is a step of the software development life cycle that results in the specification of software's operational characteristics (Function, data and behavior). The activities performed during analysis indicate the software's interface with other system elements.

3.1 Feasibility Study

After requirements clarification, analysis proposes some solutions. After this it is checked whether it is practically possible to implement that solution or not. This is done through feasibility study. In this various feasibility aspects are analyzed depending on the context of the system. The outcome of the feasibility study should be clear.

Technical Feasibility

The technical feasibility assessment is focused on gaining an understanding of the present technical resources of the organization and their applicability to the expected needs of the proposed system. So, after being ensured, we can say yes, the project is technically feasible. Because in development of the project, Python-django and android studio are used. Android Studio license free, is a platform independent and the project can be completed within the limited resources.

Operational Feasibility

Operational feasibility is a measure of how well a proposed system solves the problems and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development. The operational feasibility assessment focuses on the degree to which the proposed development project fits in with the existing business environment and objectives regarding development schedule, delivery date, and corporate culture and existing business process.

3.2 Requirement Analysis and Specification

Requirements analysis involves frequent communication with system users to determine specific feature expectations, resolution of conflict or ambiguity in requirements as

demanded by the various users or group of users, avoidance of feature creep and documentation of all aspects of the project development process from start to finish. Energy should be directed towards ensuring that the final system or product confirms to client needs rather than attempting to mold user expectations to fit the requirements. Requirements analysis is a team effort that demands a combination of hardware, software and human factors engineering expertise as well as skills in dealing with people. Requirements of the project were to secure the user data from unauthorized users to read or modify it. Besides this core process, it also should have a user-friendly interface to handle all the operations of the project very easily.

3.3 Functional Requirements

- Taking Attendance
- Detail inserted by Admin
- Faculty
- Student
- Subject
- Course
- Department
- Semester
- Retrieving details

3.4 Information Flow Representation

3.4.1 Data Flow Diagram

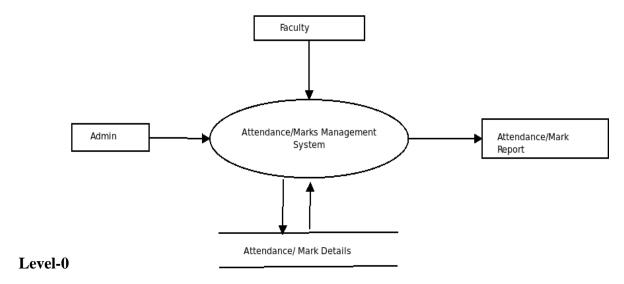


Fig 3.1 Data flow diagram (Level 0)

Admin and faculty will provide attendance and marks (input) to online attendance

application and it will generate the report (output) for the same.

Level 1 -

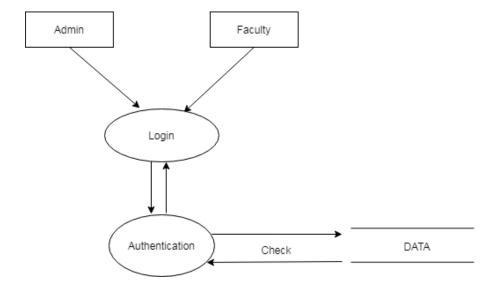


Fig 3.2 Data flow diagram (Level 1)

Admin tries to login via password stored in database . The password is then verified and on successful verification , admin gets logged in.

Faculty logs in via their registered gmail account.

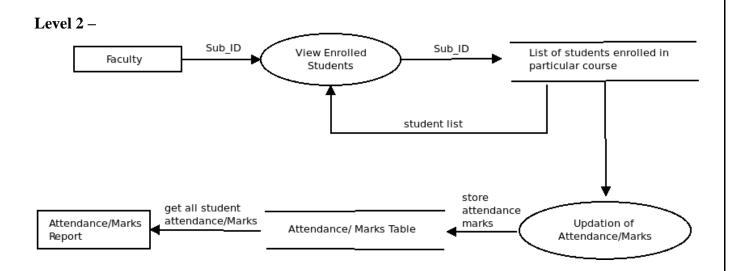


Fig 3.3 Data flow diagram (Level 2)

After logging in, faculty can view enrolled students of assigned subject and can mark and update their attendance and can also generate report.

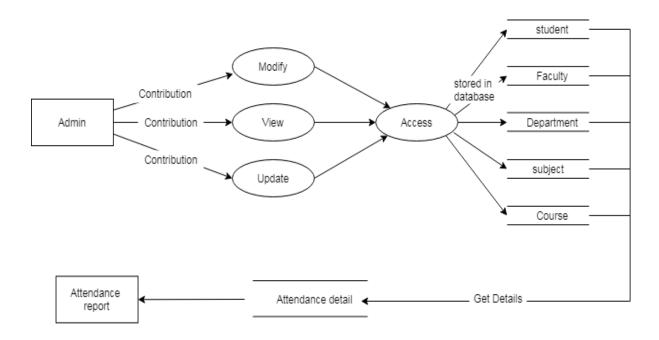


Fig 3.4 Data flow diagram (Level 2)

Admin can view , modify and update the student, faculty, department, subject and course , can access their details and can also generate report.

3.4.2 Control Flow Diagram

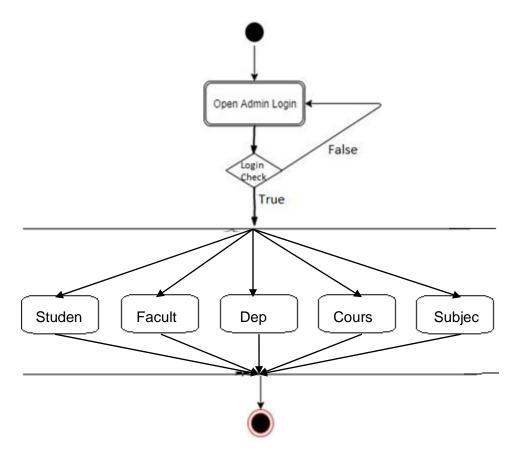


Fig 3.6 Control Flow Diagram of Admin

Flow diagram represents the flow of the system i.e. in which order the operations will execute. The admin can login through admin login activity and after the successful authentication of credentials it can access the system and the different operations of managing the faculties, students, departments, course and subjects.

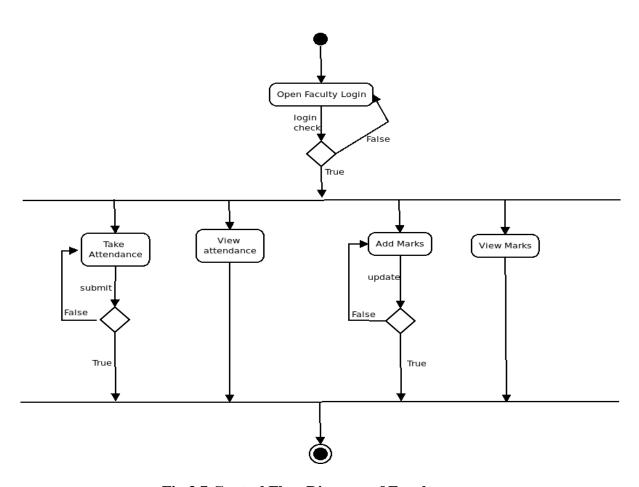


Fig 3.7 Control Flow Diagram of Faculty

The faculties can also login through the faculty login activity and after successful authentication they can perform related functions like take attendance and submit to the database and can also view attendance.

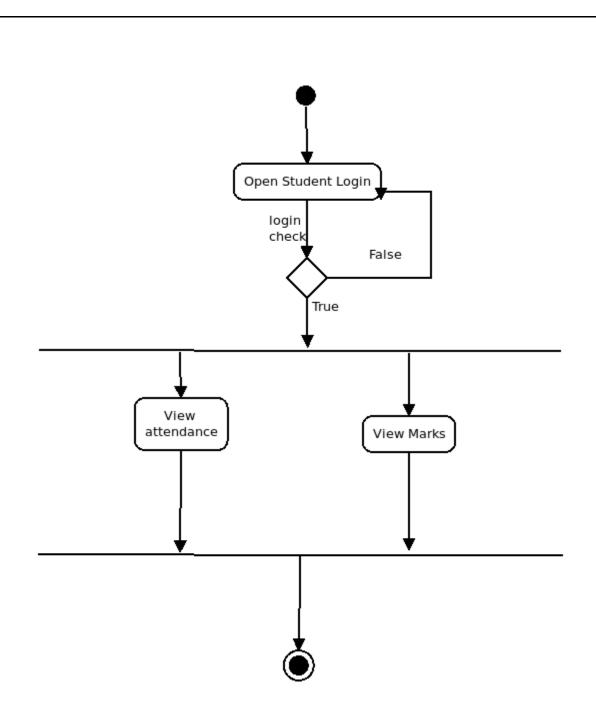


Fig: 3.8 Control Flow diagram for students

3.4.3 Use-Case Diagram

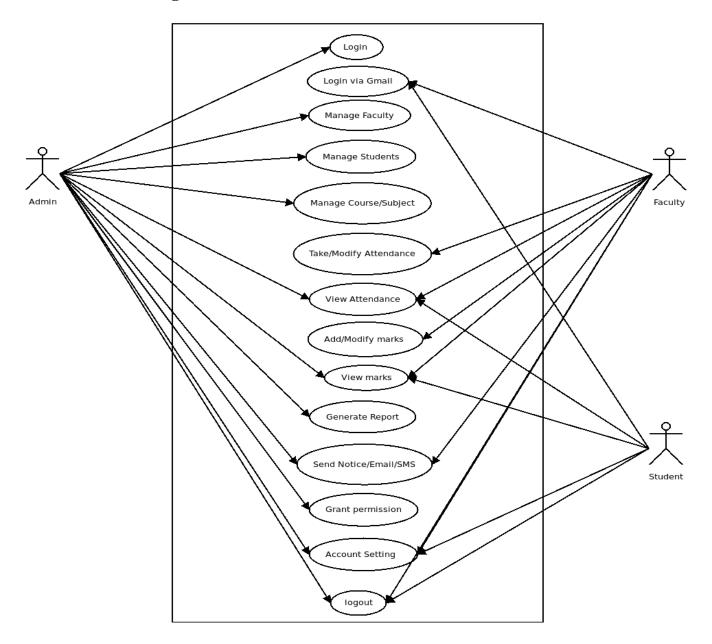
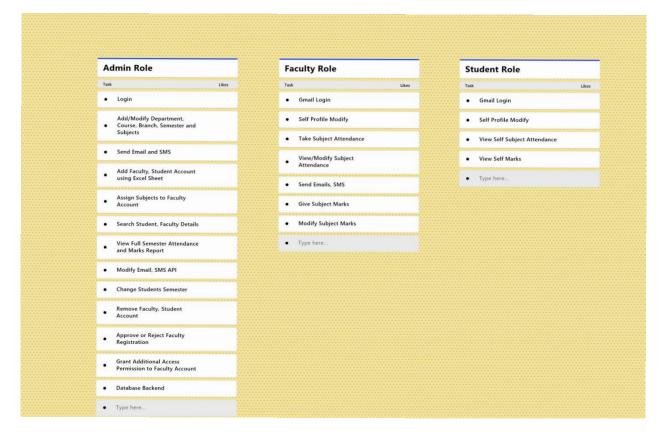


Fig 3.9 Use Case Diagram Attendance

Use case diagrams are the diagrammatic representation depicting user's interactions with the system. This diagram shows different types of users and various ways in which these users interact with the system. These use case diagram has two actors admin and faculty.

Admin's basic function is to add and view the departments, courses, faculties, students and subjects. He can view all the list of courses, faculties, departments and students. Then he can add the details directly to the server. It shows all the different possible ways in which a faculty can use the attendance system. Every faculty can use the system through their mobile phones to take the attendance. The faculty after logging into the system can take attendance. Then he can view the list of enrolled students in a particular course and can take attendance for selected subject. He can also view the attendance at a later stage. He can directly upload the attendance details in the server through his mobile phone.

Roles and Features



Chapter 4 Planning

Planning is an act of thinking about action before they carried out. Specific details are decided before caring out the plan, as well as organizing the steps of the plan.

Software Project Planning

The software project management process begins with a set of activities that are collectively called project planning that involves estimation. Software cost and effort estimation will never become an exact but can be transformed from indistinguishable to a series of systematic steps. Following things have been estimated before the software development.

Project Complexity

It has strong effort on uncertainty that is inherent in planning. Our project is evolutionary project, as the requirements are very large. An expert team usually develops such system.

Structural Uncertainty

The structure refers to the degree to which requirements have been solidified, the case with which functions can be compartmentalized, and the hierarchical nature of information that must be processed.

Project Tracking and Scheduling

Tracking can be accomplished by conducting periodic project status meetings wherein every Team member report progress and problems, evaluation results of the reviews conducted throughout comparing actual start due to the planned star date for each project task etc

Project Tracking

S.No	Work Task	Description	Timeline(Days)
1	Requirement	Complete	1-2
	Specification	specification	
2	High level and	DBMS Design and	5-6
	detailed design	wireframe design	
3	Implementation	Implementing	6-15
		screen	
4	Integration testing	Thorough Testing	4-5

Resource Planning Hardware Requirements

- Mobile Phone(Android)
- Laptop: 40GB HDD 4GB RAM dual core processor

Software Requirements

- Android Studio
- Visual Studio
- Python-Django
- Azure Cloud for Hosting
- Postgress Database

Chapter 5 Design

The system should be designed in such a way that only authorized people should be allowed to access particular modules. The records should be modified by onlyadministrators and no one else. The user should always be in control of the application and not the vice versa. The user interface should be consistent so that the user can handle the application with ease and speed. The application should be visually, conceptually clear.

Architecture Design Block Diagram

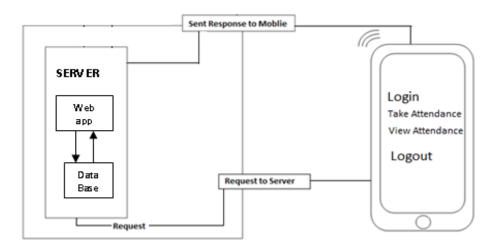


Fig 5.1 Block Diagram
Working of Block Diagram

- 1. Request Send to the Server using Internet
- 2. Request Data for User Request from Server
- 3. Send Data to Server from database
- 4. Server Response for the Request using Internet

Data Design ER diagram

An ER diagram shows the relationship among entity sets. An entity set is a group of similar entities and these entities can have attributes. In terms of DBMS, an entity is a table or attribute of a table in database, so by showing relationship among tables and their attributes, ER diagram shows the complete logical structure of a database.

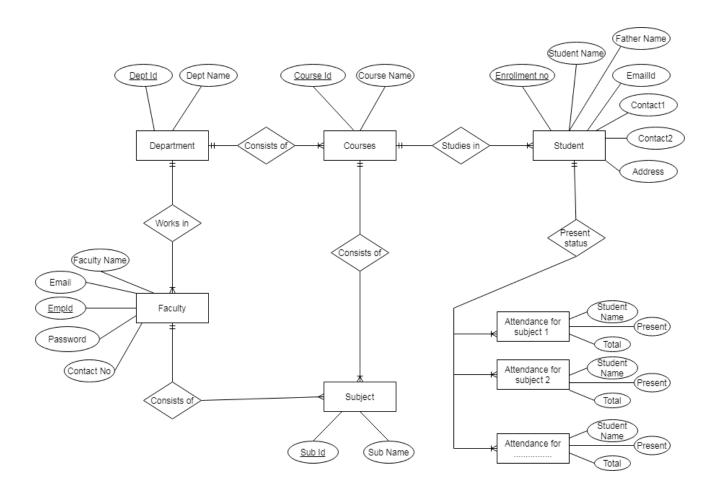


Fig 5.2 Entity Relationship Diagram

Interface Design

5.2.1 Sequence Diagram

Sequence diagram represents the sequence in which the actions will take place, like the faculty will first login into the system and if the login credentials get authenticated then can access the system, take the attendance and store it.

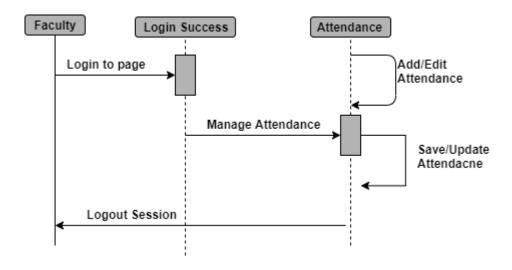


Fig 5.3 Sequence Diagram of Login

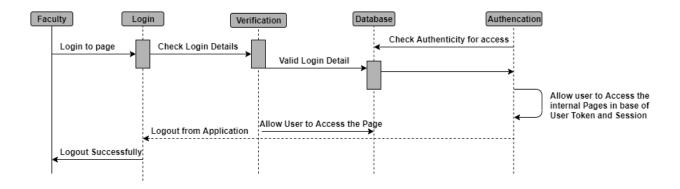


Fig 5.4 Sequence Diagram of Attendance

5.2.2 Activity Diagram

Activity diagram is a graphical representation of the workflow and the sequence of activities used to describe the functioning of the system. This diagram shows the overall control flow of the system. The figure 5.3 shows the activity diagram of the Admin. The Admin login leads to all the options that can be performed by the Admin. Its basic function is to add and view the course, faculty, student, subject and department. Then the admin can perform different functions. He can view all the attendance list of students by the course, department and subject. Then he can download the details directly from the server.

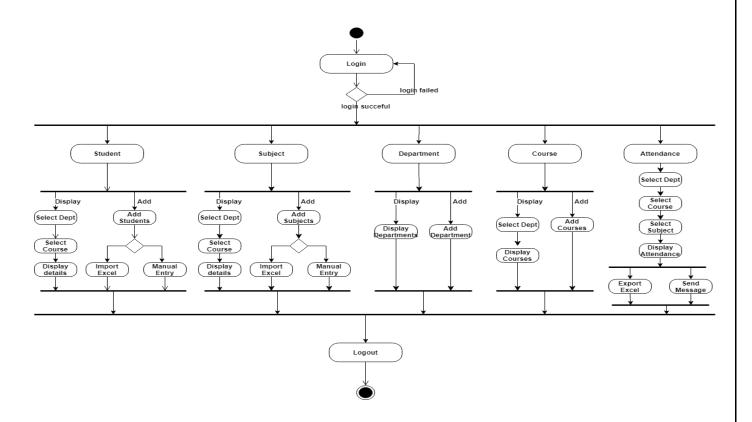


Fig 5.5 Activity Diagram of Attendance Web Application

Figure 5.4 shows the activity of faculty. Here login leads to all the options that can be performed by the faculty. Its basic function is to view the course taken by the faculty. Then the faculty can perform different functions. He can view the list of students enrolled in the courses and can take attendance for that particular course. Then he can either view the attendance details or can upload the details directly in the server.

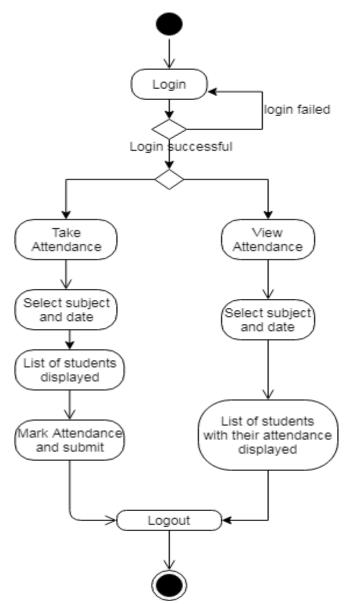


Fig 5.6 Activity Diagram of Attendance Android Application

Chapter 6 Implementation

6.1 Testing

Software testing is an investigation conducted to provide stakeholders with information about the quality of the software product or service under test.

Integration testing

Testing of all integrated modules to verify the combined functionality after integration is termed as integration Testing. Modules are typically code modules, individual applications, client and server application on a network, etc. This type of testing is especially relevant to client/server and distributed system.

Black-Box Testing

Black box testing, also known as Behavioral Testing, is a software testing method in which the internal structure/design/implementation of the item being tested is not known to the tester. These tests can be functional or non-functional, though usually functional.

This method is named so because the software program, in the eyes of the tester, is like a black box; inside which one cannot see. This method attempts to find errors in the following categories:

- Incorrect or missing functions
- Interface errors
- Errors in data structures or external database access
- Behavior or performance errors

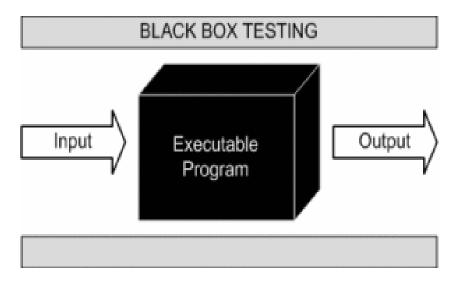
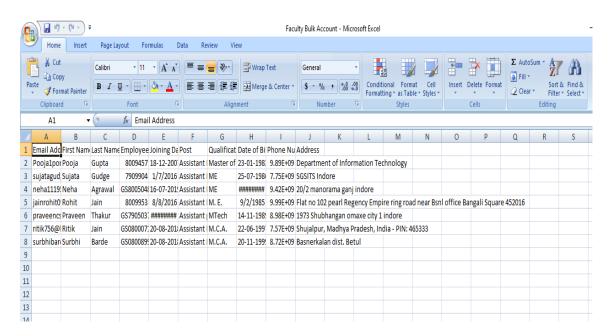


Fig 6.1 Black Box Testing

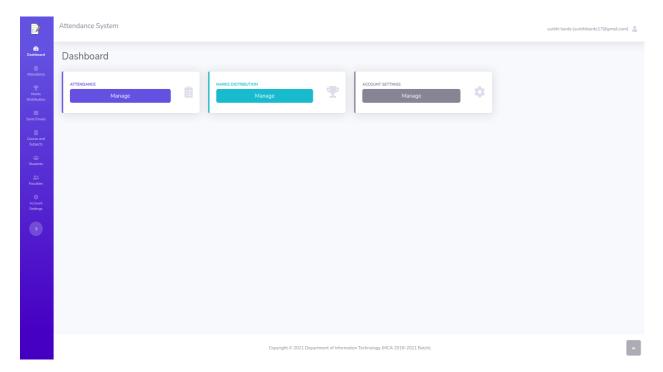
INPUT:



These are the details entered to system via excel sheet during testing, so faculty can direct log in into their account without creating it.

6.2 Results

On logging in by faculty, these dashboard appears and faculty can perform rest of the operations.



Chapter 7 Conclusion

Conclusion

This system was developed to take attendance using android application. Track the attendance of each student by student as well as by faculty. Each faculty take attendance using any android phone just login into the application from anywhere.

Limitations

- Inconsistency in data entry and generate errors
- System is fully dependent on skilled individuals
- Entry of false information
- Duplication of data entry

Difficulties Encountered

- Study of android studio and also deep study on Python Django framework.
- It was very challenging to fetch the data from server.

Future Enhancements

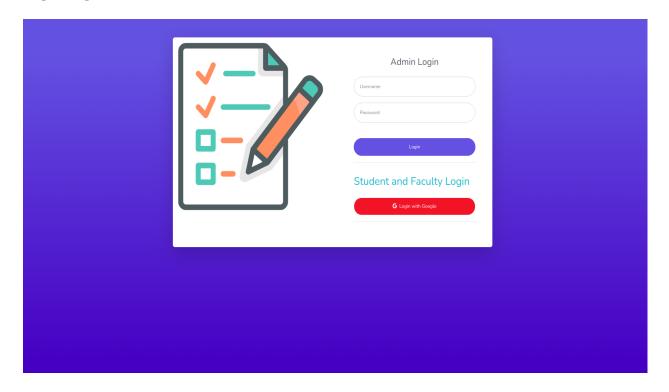
In future, we can implement same project on a platform independent and this can be more efficient and secure.

References

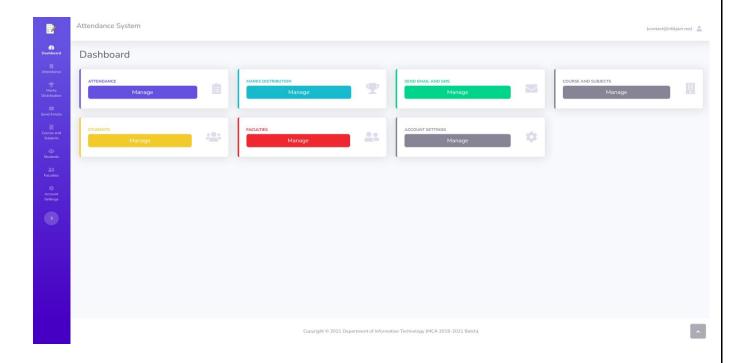
- [1] https://www.youtube.com/user/akshayejh
- [2] https://www.youtube.com/channel/UCY7t-zBYtdj6ZgiRpi3WIYg
- [3] https://developer.android.com/studio/intro
- [4] https://www.google.com/search?q=android
- [5] https://abhiandroid.com/ui/radiobutton
- [6] http://iiti.ac.in/people/~tanimad/JavaTheCompleteReference.pdf
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- [8] https://www.android.com > intl > en in > history

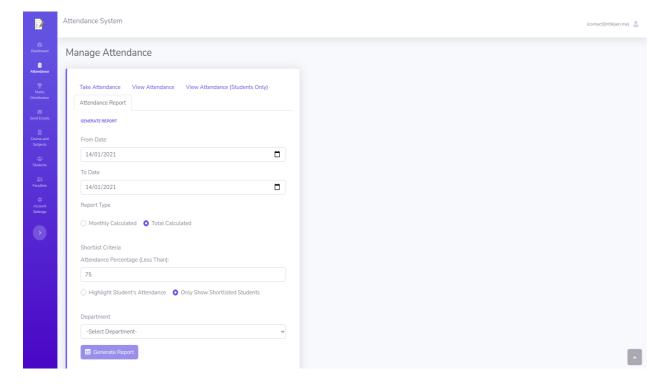
Appendix A Screen Shots

Login Page

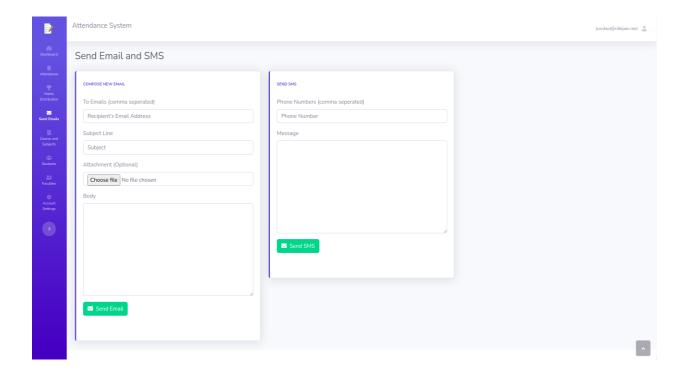


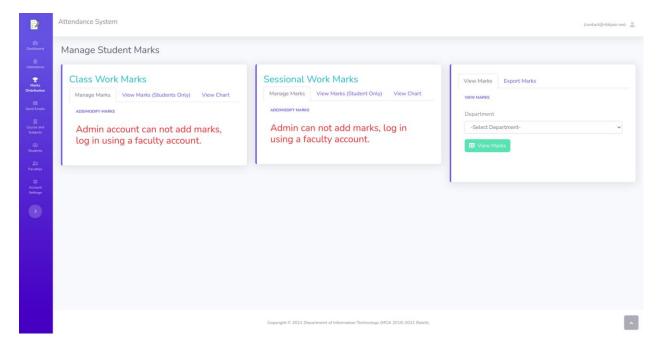
Login by admin

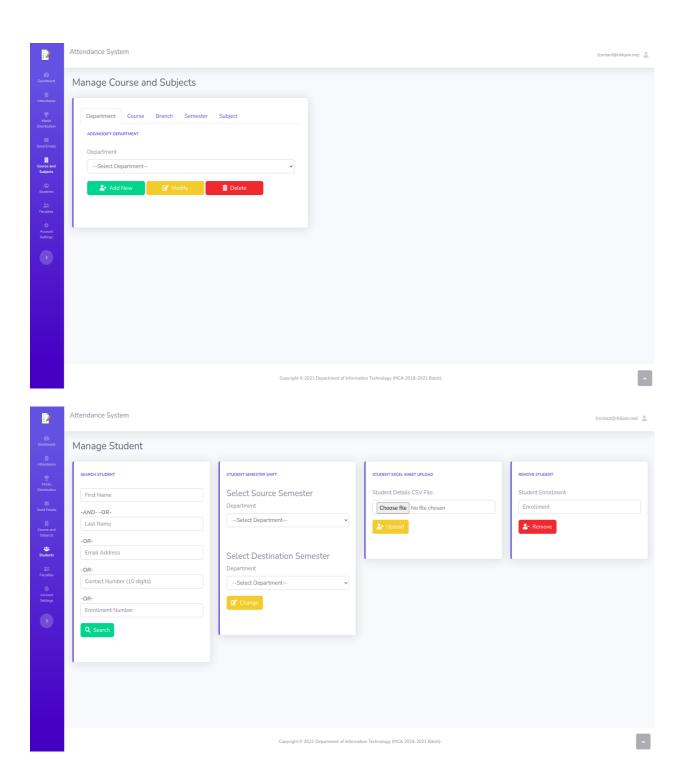


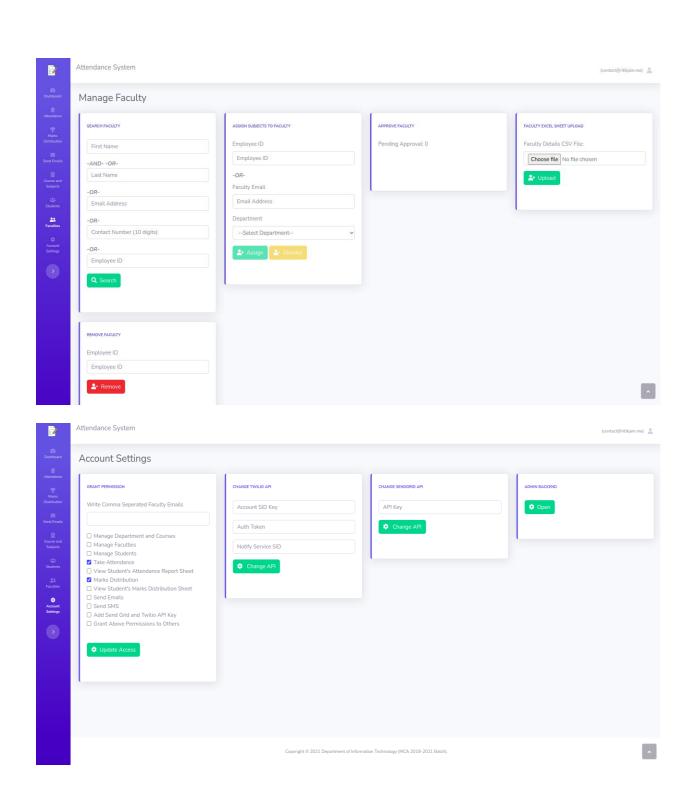


Login by Faculty

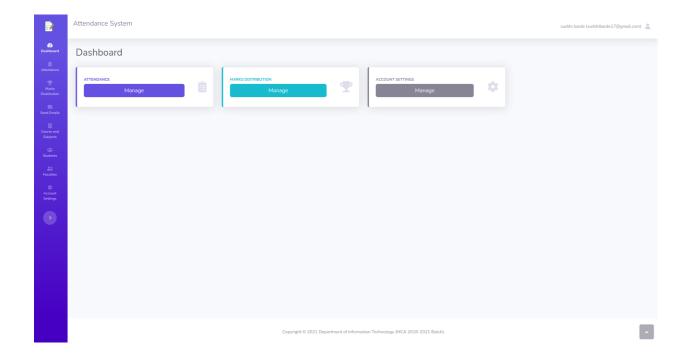


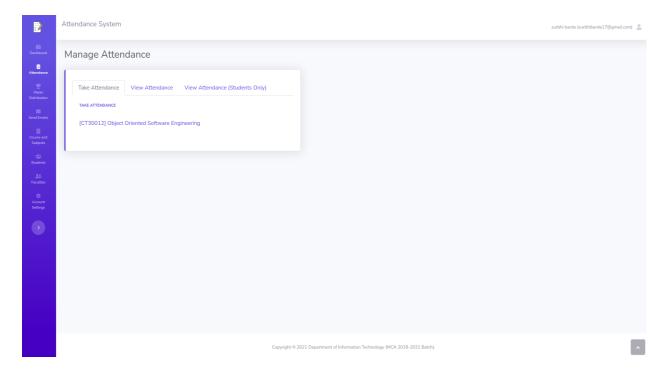


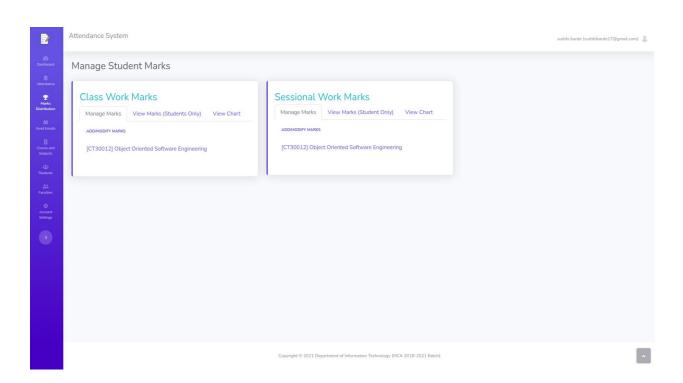


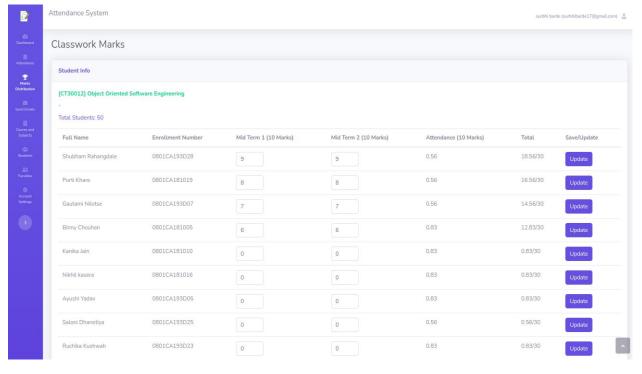


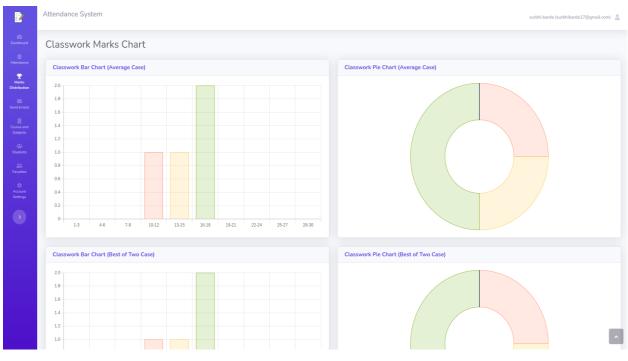
Login for Student

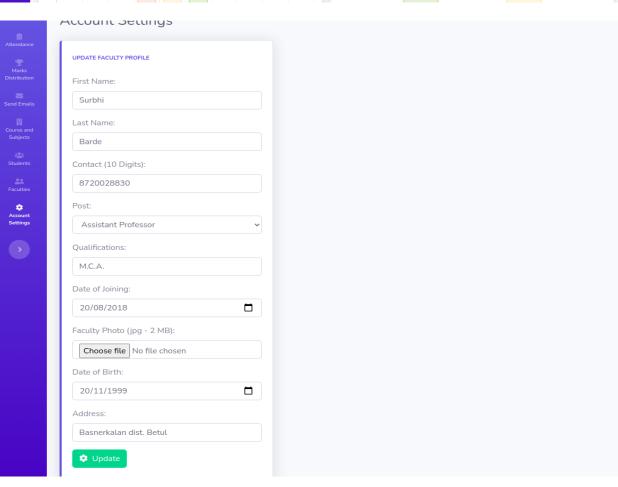


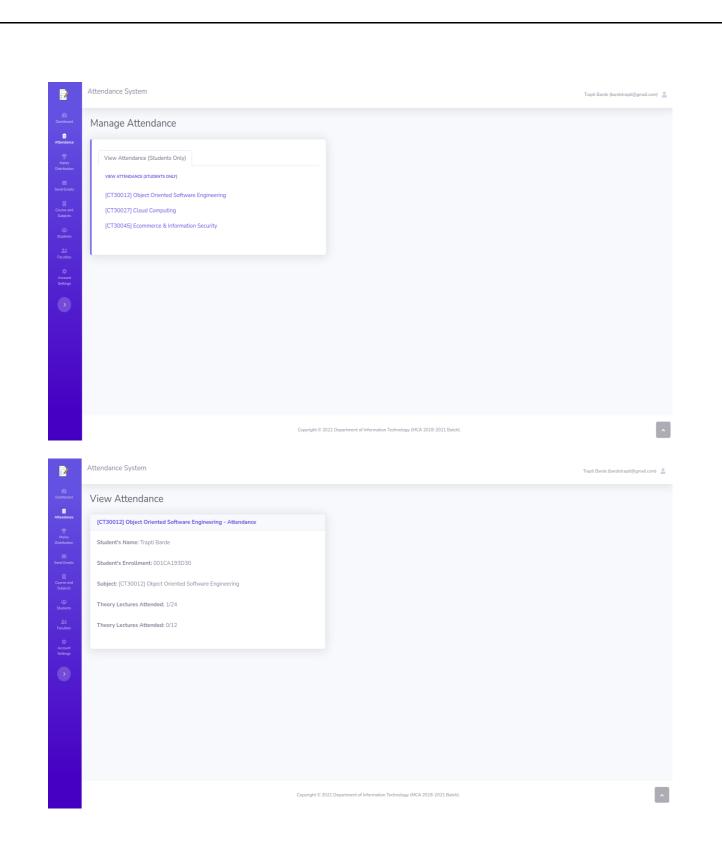


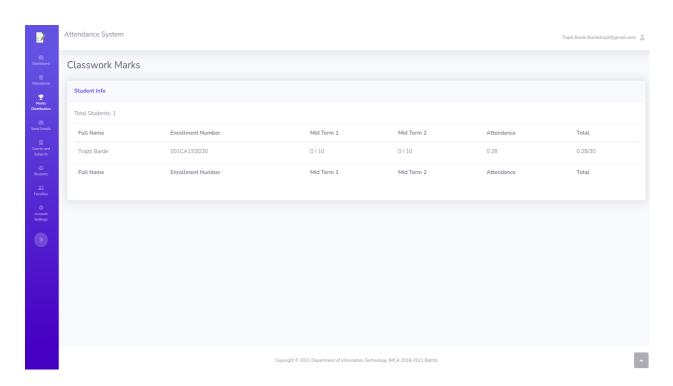


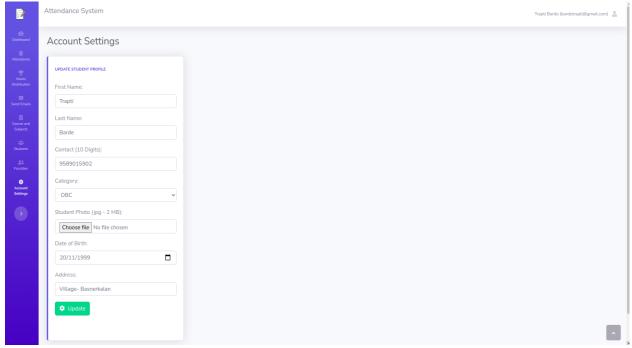












Appendix B Glossary / Acronyms used

- **Dissertation** A treatise advancing a new point of view resulting from research, usually a requirement for an advanced academic degree.
- **Project** Any piece of work that is undertaken or attempted. A planned undertaking.
- **Report** A written document describing the findings of some individual or group.