

SMART ATTENDANCE SYSTEM USING WEB APPLICATIONS

Submitted in partial fulfillment of the requirements for
the award of
Bachelor of Engineering Degree in Computer Science and Engineering
by

B. Sathish (38110076)



**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
SCHOOL OF COMPUTING
SATHYABAMA**

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

Accredited with Grade "A" NAAC

JEPPIAAR NAGAR, RAJIV GANDHI SALAI,

CHENNAI – 600 119

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SATHYABAMA

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Accredited with Grade "A" by NAAC



Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 600119
www.sathyabama.ac.in

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **B. Sathish (38110076)** who carried out the project entitled "**SMART ATTENDANCE SYSTEM USING WEB APPLICATIONS**" under our supervision from November 2021 to March 2022.

Internal Guide

Mr. K. Amandeep Singh M.E., (Ph.D).,

Head of the Department

Dr. S. VIGNESHWARI, M.E., Ph.D.,

Submitted for viva examination held on _____

Internal Examiner

External Examiner

DECLARATION

I, B. Sathish (38110076), hereby declare that the Project Report entitled “SMART ATTENDANCE SYSTEM USING WEB APPLICATIONS” done by me under the guidance of guide Mr. K. Amandeep Singh M.E., (Ph.D)., Dept of CSE at Sathyabama Institute of Science and Technology is submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree in Computer Science and Engineering.

DATE:

PLACE: CHENNAI

SIGNATURE OF THE CANDIDATE

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ABSTRACT

Over the years the manual attendance management has been carried across most of educational institutions. To overcome the problems of manual attendance, developed “Web based smart attendance Management System”.

Attendance Management System is based on web server, which can be implemented on any computer. In This application, Python is server-side language, MySQL and Python is used as back-end design and HTML, CSS and JavaScript are used as front-end tools.

The system communicates with database residing on a remote server. It calculates automatically, the attendance percentage of students without any manual paper-based work. The system facilitates the end users with interactive design and automated processing of attendance management.

The creation and management of accurate, up-to-date information regarding a students' academic career is critically important in the university as well as colleges. Student information system deals with all kind of student details, academic related reports, college details, course details, curriculum, batch details, placement details and other resource related details too.

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LIST OF ABBREVIATIONS

HTML	–	Hyper Text Markup Language
CSS	--	Cascading Style Sheets
MYSQL	--	My Structured Query Language.
W3C	--	World Wide Web Consortium
MIME	--	Multipurpose Internet Mail Extension
JSP	--	Java Server Pages
RFID	--	Radio Frequency Identification
GSM	--	Global System for Mobile Communications
MUEAMS	--	Mobile Ubiquitous Employee Attendance Monitoring System
SMS	--	Short Message Service

CHAPTER 1

INTRODUCTION

1.1 OVERVIEW

In most educational institutions the attendance is taken manually. It is not only time consuming, but it is also unsecure and unreliable and it can be lost. Some institutions are using punch card for attendance while this will be difficult for teachers to keep track of the large number of students because by using punch card, a student can help the other students or his/her friend to punch their card even the other student may be absent or come late in class, so it is not reliable.

Generally speaking, information technology systems have presented various advantages for a variety of application domains, which increases the importance of the adoption of these systems. Furthermore, the information technology represented an essential tool that helps countries to enhance their economy in both the educational and industrial sectors. Suitable attendance recording and management has become important in today's world. Attendance is one of the work ethics valued by employers. Most of the educational institutions and government organisations in developing countries still use paper-based attendance method for maintaining the attendance records. So, there is a critical need for adopting the attendance management system for measuring the organisations efficiency. Regarding organisational perspective, it helps to possess a tracking for attendance and assessment for particular individuals in different sectors such as employees, university staff and students. Not apart from attendance, usually in the academic sector, attendance management process could help to increase the desire of attending on-time and raising the education level. On other hands, in the industrial sector, the attendance system may be employed as a tool for different activities such as, analysing human resources, manage the daily attendance process, and record the overtime information and transfer it to the payroll system. Several drawbacks have reported using traditional attendance approach such as time consuming, and students may sign on the attendance sheet instead of their friends while they are absent.

Accordingly, the last few decades various developments have achieved to provide an automatic approach to attendance management. The most critical step in the automatic attendance system is the data gathering process, and data processing model, numerous of well-known technologies have hired for this target such as biometric, RFID, magnetic stripe, and the barcode. To end, this study aims to provide a critical analysis of particular studies that have conducted in the context of attendance systems.

To overcome these problems, here is the better system which is Web based; it is fully responsive where a user can use in mobile, tablets and different computer systems. In this system records are kept safe and secure and the attendance information of particular or all students of particular class can be accessed easily and without time consuming, the report is generated automatically.

Our project is an efficient and user friendly web application for an Attendance Monitoring. The application can use on the user's (in this case teacher's) smart phone also. It intends to provide an interface to the teacher who will require minimal details to input for marking of attendance of a particular class of students. Apart from that, the application would support strong user authentication and quick transmission of data via the web service. Another noticeable feature of the entire application would be that no data would be stored on the user device in any form whatsoever. The application thus build would also help to avoid the chance of a proxy as the application would be handled by the teacher only.

1.2 ORGANIZATION OF THE THESIS

Chapter 1 deals with an introduction to the project where the existing system is been discussed. It also gives an overview of how watermarking technique has been implemented with the high security.

Chapter 2 detailed description of the literature survey of the papers which are referred during the course of the project was summarized.

Chapter 3 gives a brief explanation on the aim and scope of the project. Here proposed system has been compared with the existing system. The issues in the existing system and the advantages of the proposed system are also discussed. Deals with the methods and algorithms used. The hardware and software requirements are provided along with the system design, architecture and flow of overall project. Deals with the system implementation of the project.

chapter 4 the Results and Discussion along with the screenshots of each module has been depicted.

Chapter 5 deals with the summary and conclusion of the project. It also includes the future scope of the project.

CHAPTER 2

LITERATURE SURVEY

[1] Smart Attendance Management System International Journal of Academic Research, 2014 Jan 1

Author: Sanjay Badhe, Kunal Chaudhari, Sneha Kale and Tejaswi Mane

The literature survey method is an examination of information on specific subject. It is reviewing what is known, and not what is assumed. It aims to create the final, precise representation of the knowledge and research-based theory available topic. This method is going to be used due to need of gathering and processing theoretical base. The user is going to use different books and articles also other sources like tutorials and forums. In this way by using different group of sources user can get more detail idea about recommendation systems. There are plenty of educational institutions that use RFID technology to record their student's attendance. Easy connection of data into internet make RFID technology most common technology used in recording student attendance. However, RFID technologies incur high cost and need experience people to handle the system.

[2] RFID based student monitoring and attendance tracking system

Author: Chatrati Sai Krishna, Naidu Sumanth and C. Raghava Prasad

Apart from that, biometrics technology is another tremendous use of technology in the domain of attendance reporting and tracking. Most of the biometrics technology used thumb print as sign of system entry. This allows a fair and reliable attendance to be recorded since there is no platform for any attendance cheating. Biometric utilize the fingerprint apart from thumb print method. Fingerprint peripheral used to record the attendance and sent the data into system using wireless technology. Image recording is another recent method used in recording attendance. These advanced technologies require high costing and well-trained system developer. The Design and implementation of Student Attendance Management system based on MVC paper aims at the research of Web technology, as well as the attendance management system based on the

campus network for all college students is implemented. The system is controlled by Web Work, while data or status and logic process are enforced by “Action”. The system uses Multi-layer structure of J2EE which has been realized by Free Marker, Web Work and Spring. Three technologies have been used in page resources layer: HTML performs structure of document, CSS defines style of document and JavaScript decides behavior of document. The presentation layer is realized by JSP in traditional Web development. The modules of attendance management system include importing course-plan, adding, modifying, querying, verifying and summarizing attendance information. The purpose of Automation of Attendance System using RFID, Biometrics, GSM Modem with .NET framework paper is to develop a wireless system to detect and maintain the attendance of a student and locate a student using RFID, Biometrics, GSM modem with .net framework. For, this the students ID (identification) card is tagged with an Radio-frequency identification (RFID) passive tag which is matched against the database and only finalized once his fingerprint is verified using the biometric fingerprint scanner.

[3] Speech Biometric Based Attendance System

Authors: Subhadeep Dey, Sujit Barman and Ramesh K. Bhukya, Rohan K. Das,

The guardian is intimated by a sms (short message service) sent using the GSM (Global System for Mobile Communications) modem. RFID transponder is installed, which will be detecting the location of the student and staff. There will be a website through which the student, teacher and the guardians can view the status of attendance and location of a student at present in the campus. A person needs to be located can be done by two means that is, via the website or by sending the roll number of the student as a sms to the GSM modem which 321 | P a g e will reply by taking the last location stored of the student in the database. The main purpose of A Web Enabled Secured System for Attendance Monitoring and Real Time Location Tracking using Biometric and Radio Frequency Identification paper is to develop a safe and secure web based attendance monitoring system using Biometrics and Radio Frequency Identification (RFID) Technology based on multi-tier architecture, for both computers and smart

phones. The system can maintain the attendance records of both students and faculty members of an institution.

[4] Android-based Attendance Management System

Authors: Siti Aisah Mohd Noor, Norliza Zaini, Mohd Fuad Abdul Latip and Nabilah Hamzah

The system can also detect the current location of the students, faculties, and other staff members anywhere within the domain of institution campus. With the help of android application one can receive live feeds of various campus activities, keep updated with the current topics in his/her enrolled courses as well as track his/her friends on a real time basis. An automated SMS service is facilitated in the system, which sends an SMS automatically to the parents in order to notify that their ward has successfully reached the college. Parents as well as student will be notified via e-mail, if the student is lagging behind in attendance. There is a functionality of automatic attendance performance graph in the system, which gives an idea of the student's consistency in attendance throughout the semester. In Mobile Ubiquitous Employee Attendance Monitoring System using Wireless sensor networks paper a Mobile Ubiquitous Employee Attendance Monitoring System (MUEAMS) is implemented with ZigBee devices to offer real time dynamic monitor for employee presence. This study presents a scalable architecture to integrate wireless sensor networks and mobile technologies for dealing with attendance monitoring application in mobile ubiquitous computing environments. The wireless communication architecture is composed of ZigBee Sensor Network, Mobile Transfer, Middleware Web Server, and Mobile Client. The main advantage of this architecture is that it doesn't require costly equipment or deployment. It can be achieved in a short time and low cost. To demonstrate the feasibility of the architecture, a Mobile Ubiquitous Employee Attendance Monitoring System (MUEAMS) is implemented with ZigBee and Mobile devices to offer real time dynamic monitor for employee presence.

[5] Android College Management System, International Journal of Advanced Research in Computer Engineering

Author: Vishwakarma R Ganesh

This study presents a scalable architecture to integrate wireless sensor networks and mobile technologies for dealing with attendance monitoring application in mobile ubiquitous computing environments. The wireless communication architecture is composed of ZigBee Sensor Network, Mobile Transfer, Middleware Web Server, and Mobile Client. The main advantage of this architecture is that it doesn't require costly equipment or deployment. It can be achieved in a short time and low cost. To demonstrate the feasibility of the architecture, a Mobile Ubiquitous Employee Attendance Monitoring System (MUEAMS) is implemented with ZigBee and Mobile devices to offer real time dynamic monitor for employee presence. The focus A Conceptual Model for Automated Attendance Marking System Using Facial Recognition paper is to analyze and critically evaluate the recent attendance marking techniques using face recognition methods. Literature review reveals the fact that the intelligent application of iterative facial recognition techniques can make attendance management systems more reliable. In this paper, the purpose is a conceptual model for automated attendance system through facial recognition. The proposed model uses an integral validation process which enhances the reliability of your model. If face recognition is to be done to mark attendance, face detection and verification would be a challenge for the system. Hence the implementation is a difficult task.

CHAPTER 3

METHODOLOGY

3.1 SCOPE OF THE PROJECT

This software has developed for daily attendance of students. It made easy to access the attendance information of a particular student. The information is stored through operators, and provided by teacher for related class. This software is helpful in evaluating the attendance eligibility of a student.

Its purpose was to computerize the tradition way of taking attendance and generating of report automatically at the end or between of the session. This project has developed as a desktop application for a specific institute. The technologies which have been used are, python language and for backend mysql.

3.2 OBJECTIVE

The scope of the project is the system on which the software is installed, i.e. the project is developed as a 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.

3.3 PROBLEM DEFINITION

The existing system only hides the message into the image. It does not provide the security needed for the message to be transmitted. Due to this the third party or hacker may find the data that is being transmitted between the users.

3.4 EXISTING SYSTEM

In the present system all work is done on paper. The whole session attendance is stored in register and at the end of the semester the reports are generated and it takes more time in calculation. By the way user are not interested in generating report in the end of the semester but during the semester for the student to take note of his situation, and the department to know what action to take on students with poor attendance even before Exam. So, user is not able to get student regularity report and take necessary action on students whenever user want because of having very time consuming process.

3.4.1 Disadvantages

- Lot of paper work is needed.
- Data loss due to small negligence also.
- Maintenance is very difficult.

3.5 PROPOSED SYSTEM

The new system has been designed as per the user requirements so as to fulfill almost all them. The proposed system is user friendly because the retrieval and storing of data is fast and data is maintained efficiently. More over the interface provided in the proposed system, provides user to deal with the system very easily. Reports are easily generated reports can be easily generated in the proposed system so user can generate the report as per the requirement (weekly, monthly) or in the middle of the semester. User can give the notice to the employees to be regular. Very less paper work The proposed system requires very less paper work. All the data is feted into the computer immediately and reports can be generated through computers. More over work becomes very easy because there is no need to keep data on papers.

- **User Friendly:** The proposed system is user friendly because the retrieval and storing of data is fast and data is maintained efficiently. More over the graphical user interface is provided in the proposed system, which provides user to deal with the system very easily and efficiently.
- **Reports are easily generated:** reports can be easily generated in the proposed system so user can generate the report as per the requirement (monthly) or in the middle of the session. User can give the notice to the students so he/she become regular.
- **Very less paper work:** The proposed system requires very less paper work. All the data is feted into the computer immediately and reports can be generated through computers. More over work becomes very easy because there is no need to keep data on papers and books.
- **Computer operator control:** Computer operator control will be there so no chance of errors. More over storing and retrieving of information is easy. So, work can be done speedily and in time.

3.6 FEASIBILITY STUDY

- **Economically Feasibility:** The system being developed is economic with respect to School or Collage's point of view. It is cost effective in the sense that has eliminated the paper work and book work completely. The system is also time effective because the calculations are automated which are made at the end of the month or as per the user requirement. The result obtained contains minimum errors and are highly accurate as the data is required.
- **Technical feasibility:** The technical requirement for the system is economic and it does not use any other additional Hardware and software.
- **Behavioral Feasibility:** The system working is quite easy to use and learn due to its simple but attractive interface. User requires no special training for operating system.

3.7 MODULES

3.7.1 *Hardware Requirement*

The hardware requirements may serve as the basis for a contract for the implementation of the system and should therefore be a complete and consistent specification of the whole system. They are used by software engineers as the starting point for the system design. It shows what the system does and not how it should be implemented.

PROCESSOR	:	PENTIUM IV 2.6 GHz, Intel Core 2 Duo.
RAM	:	4 GB DD RAM
MONITOR	:	15" COLOR
HARD DISK	:	250 GB

3.7.2 *Software Requirement*

The software requirements document is the specification of the system. It should include both a definition and a specification of requirements. It is a set of what the system should do rather than how it should do it. The software

requirements provide a basis for creating the software requirements specification. It is useful in estimating cost, planning team activities, performing tasks and tracking the team and tracking the team's progress throughout the development activity.

Front End	:	FLASK
Back End	:	MY SQL 5.5
Operating System	:	Windows 10
IDE	:	LICLIPSE

3.7.3 Overview of Python

Python was developed by Guido van Rossum in the late eighties and early nineties at the National Research Institute for Mathematics and Computer Science in the Netherlands.

Python is derived from many other languages, including ABC, Modula-3, C, C++, Algol-68, SmallTalk, and Unix shell and other scripting languages.

Python is copyrighted. Like Perl, Python source code is now available under the GNU General Public License (GPL).

Python is now maintained by a core development team at the institute, although Guido van Rossum still holds a vital role in directing its progress.

Python was conceived in the late 1980s by Guido van Rossum at Centrum Wiskunde & Informatica (CWI) in the Netherlands as a successor to the ABC language (itself inspired by SETL), capable of exception handling and interfacing with the Amoeba operating system.^[8] Its implementation began in December 1989. Van Rossum shouldered sole responsibility for the project, as the lead developer, until 12 July 2018, when he announced his "permanent vacation" from his responsibilities as Python's *Benevolent Dictator For Life*, a title the Python community bestowed upon him to reflect his long-term commitment as the project's chief decision-maker. He now shares his leadership as a member of a five-person steering council. In January 2019, active Python core developers

elected Brett Cannon, Nick Coghlan, Barry Warsaw, Carol Willing and Van Rossum to a five-member "Steering Council" to lead the project.

Python 2.0 was released on 16 October 2000 with many major new features, including a cycle-detecting garbage collector and support for Unicode.

Python 3.0 was released on 3 December 2008. It was a major revision of the language that is not completely backward-compatible. Many of its major features were backported to Python 2.6.x and 2.7.x version series. Releases of Python 3 include the 2to3 utility, which automates (at least partially) the translation of Python 2 code to Python 3.

Python 2.7's end-of-life date was initially set at 2015 then postponed to 2020 out of concern that a large body of existing code could not easily be forward-ported to Python 3.

3.7.4 Overview of HTML

Hypertext Markup Language (HTML) is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript.

Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. HTML elements are delineated by *tags*, written using angle brackets. Tags such as `<img />` and `<input />` directly introduce content into the page.

Many tags, particularly the closing end tag for the very commonly used paragraph element `<p>`, are optional. An HTML browser or other agent can infer the closure

for the end of an element from the context and the structural rules defined by the HTML standard. These rules are complex and not widely understood by most HTML coders. Other tags such as <p> surround and provide information about document text and may include other tags as sub-elements. Browsers do not display the HTML tags, but use them to interpret the content of the page.

HTML can embed programs written in a scripting language such as JavaScript, which affects the behaviour and content of web pages. Inclusion of CSS defines the look and layout of content. The World Wide Web Consortium (W3C), former maintainer of the HTML and current maintainer of the CSS standards, has encouraged the use of CSS over explicit presentational HTML since 1997.

3.7.5 Overview of CSS

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language like HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.

CSS is designed to enable the separation of presentation and content, including layout, color, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file, and reduce complexity and repetition in the structural content.

Separation of formatting and content also makes it feasible to present the same markup page in different styles for different rendering methods, such as on-screen, in print, by voice (via speech-based browser or screen reader), and on Braille-based tactile devices. CSS also has rules for alternate formatting if the content is accessed on a mobile device.

The name cascading comes from the specified priority scheme to determine which style rule applies if more than one rule matches a particular element. This cascading priority scheme is predictable.

The CSS specifications are maintained by the World Wide Web Consortium (W3C). Internet media type (MIME type) text/css is registered for use with CSS by RFC 2318 (March 1998). The W3C operates a free CSS validation service for CSS documents.

In addition to HTML, other markup languages support the use of CSS including XHTML, plain XML, SVG, and XUL.

3.7.6 Overview of MySQL

MySQL is free and open-source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses. MySQL was owned and sponsored by the Swedish company MySQL AB, which was bought by Sun Microsystems (now Oracle Corporation). In 2010, when Oracle acquired Sun, Widenius forked the open-source MySQL project to create MariaDB.

The MySQL server software itself and the client libraries use dual-licensing distribution. They are offered under GPL version 2, or a proprietary license.

Support can be obtained from the official manual. Free support additionally is available in different IRC channels and forums. Oracle offers paid support via its MySQL Enterprise products. They differ in the scope of services and in price.

MySQL has received positive reviews, and reviewers noticed it "performs extremely well in the average case" and that the "developer interfaces are there, and the documentation (not to mention feedback in the real world via Web sites and the like) is very, very good". It has also been tested to be a "fast, stable and true multi-user, multi-threaded sql database server".

3.7.7 Overview of Flask

Flask is a web framework written in python. It is classified as a microframework because it does not require particular tools or libraries. It has no database abstraction layer, form validation, or any other components where pre-existing third-party libraries provide common functions. However, Flask supports extensions that can add application features as if they were

implemented in Flask itself. Extensions exist for object-relational mappers, form validation, upload handling, various open authentication technologies and several common framework related tools. Extensions are updated far more frequently than the core Flask program.

Flask was created by Armin Ronacher of Pocoo, an international group of Python enthusiasts formed in 2004. According to Ronacher, the idea was originally an April Fool's joke that was popular enough to make into a serious application.

When Ronacher and Georg Brandl created a bulletin board system written in Python, the Pocoo projects Werkzeug and Jinja were developed.

3.8 SYSTEM ARCHITECTURE

The system architecture establishes the basic structure of the system, defining the essential core design features and elements that provide the framework for the system.

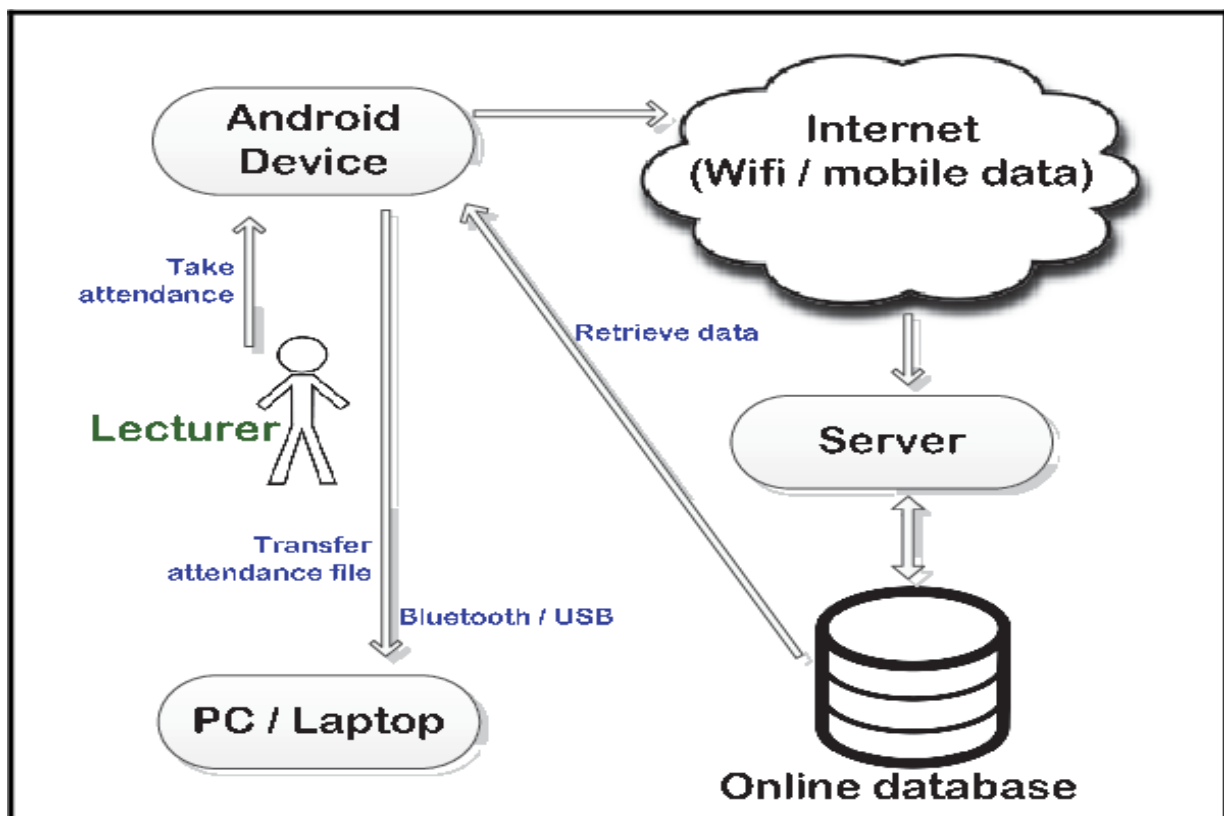


Fig.3.1: Architecture of the system

The systems architecture provides the architects view of the users' vision for what the system needs to be and do, and the paths along which it must be able to evolve and strives to maintain the integrity of that vision as it evolves during detailed design and implementation.

3.9 SYSTEM DESIGN

Our proposed system is divided into four distinct modules described as follows:

- **User authentication:** Initially, when the teacher runs the application for the first time, a login screen will be displayed that will prompt the teacher to enter the username and password required for authentication. The teacher will be provided with a unique username which would be a combination of alphanumeric characters. Only when the teacher enters the correct username and password, a “success” message will be displayed and the teacher will get authenticated and directed to the next screen.
- **Calling of Web Service:** In this module, the teacher will need to select details such as the name of the subject for which the lecture is being taken, time of lecture and the particular semester for which the lecture is conducted. After doing so, the teacher needs to call the web service by clicking a button provided on the screen. The web service thus invoked would return the list of names of all the students belonging to a particular semester and branch as per the input provided.
- **Marking Attendance:** After the list of students has been displayed the teacher needs to begin the process of marking the attendance of students. For this purpose, our application would be providing checkboxes against each student's name that will allow the teacher to mark the student either present or absent. Accordingly, the details of the student will be sent to the remote database and the attendance will be marked for that particular day.
Display information of student: Once the attendance has been marked successfully, the teacher can anytime check the attendance record of a particular student by entering the unique roll number provided to every student. The information thus displayed would include the student's attendance percentage, number of lectures a student has attended for a

particular subject, number of lectures missed, as well as the overall attendance.

3.9.1 FRONT-END DESIGN

Log in website

Before entering into the system (home page), the user must login, for this purpose the log in page is created.

This log in form is made for security purpose i.e. only authenticated users have access into the system, i.e. either administrator or the user.

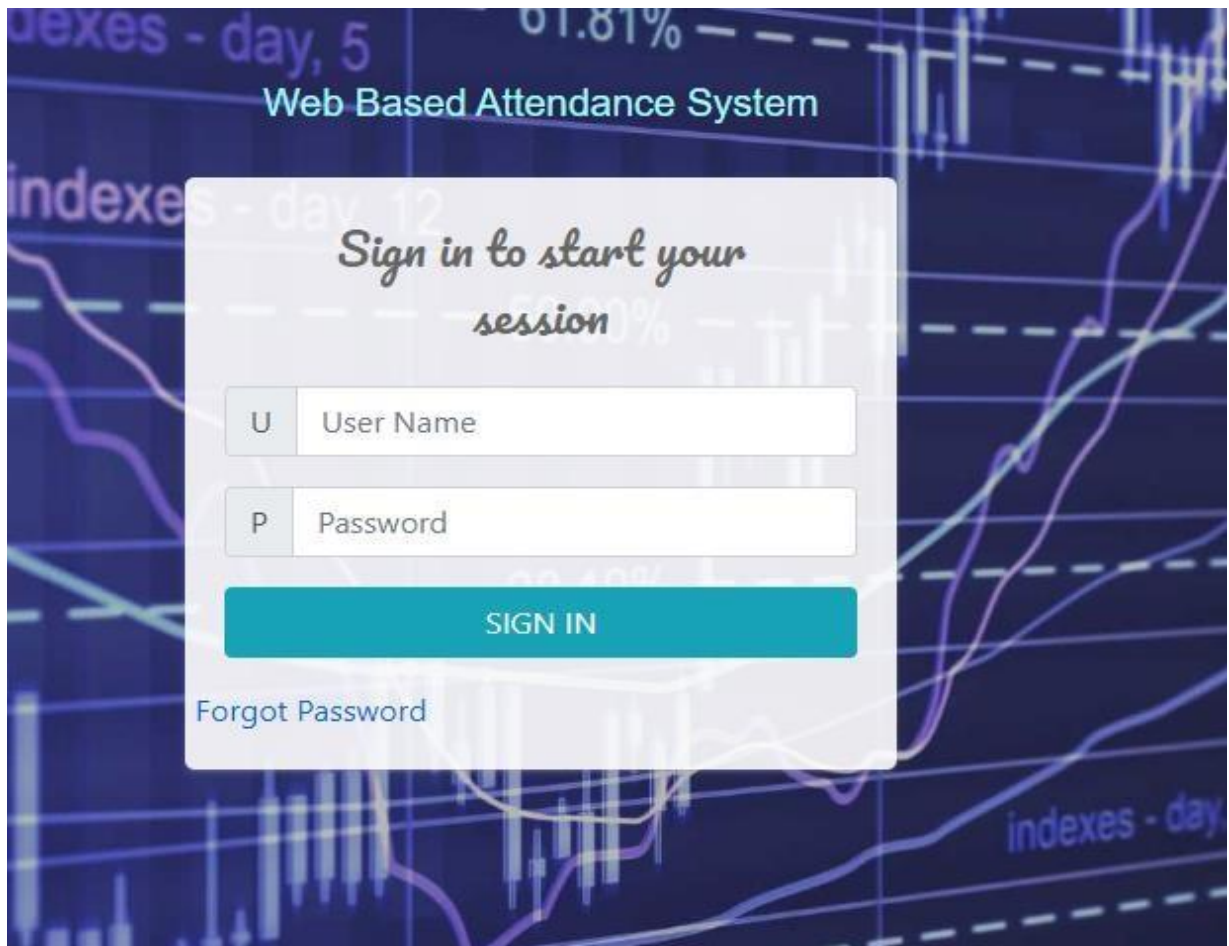


Fig.3.2 : Login page of the system

Dashboard:

This is the Home screen of the proposed system which consists of seven buttons. In order to go to the desired screen; the users just have to click the related button.

By clicking the Home, Setup, student, absent, Report and the Log Out buttons, their respective screens will appear.



Fig.3.3 : Dashboard of the system

Dept setup:

In this page where user can create branch or department name by clicking create button.

Create		
Department Name	isActive	Action
CSE	True	EditDelete
I.T	True	EditDelete
ece	True	EditDelete
eee	True	EditDelete
Mech	True	EditDelete
Create		

Fig.3.4 : Creating department

Student details:

This is the student screen which provides information about student's data such as Student Name, DOB, Gender, Email, Phone, Address, Session, Program, and Semester in the form of rows and columns.

The Insert button enables the user to enter new entries similarly Update button enables the user to edit / modify, whereas, delete button is used for deleting the record.

Create Student

Student Name	Student Name
Address 1	Address 1
Address 2	Address 2
City	City
State	State
Address	Pincode
Contact No	Contact No
Email ID	Email ID
Aadhar No	Aadhar No
Year	Year 1
Degree	B.E
Section	A

Fig.3.5 : Student data entry

Attendance process:

In this page where the user needs to take the students those who are absent else it automatically selects other students are present. That list is stored in a excel file.

Create Absentee

Student

john

Create

Cancel

Fig.3.6 : Attendance process

3.9.2 Back-End Design

Introduction

Microsoft SQL Server is a relational database management system developed by Microsoft. As a database server, it is a software product with the primary function of storing and retrieving data as requested by other software applications—which may run either on the same computer or on another computer across a network.

To achieve the flow of data and data processing task, I have created a database named Attendance_db and inside this database entities have been created.

Student:

This statement creates the definition of a server for use with the federated storage engine. The CREATE SERVER statement creates a new row in the servers table in the mysql database. This statement requires the SUPER privilege.

The server_name should be a unique reference to the server. Server definitions are global within the scope of the server, it is not possible to qualify the server definition to a specific database. server_name has a maximum length of 64 characters (names longer than 64 characters are silently truncated), and is case-

insensitive. You may specify the name as a quoted string. The server name is “Attendance system”. In this student details are recorded under student database.

Column Name	Data Type	Allow Nulls
studentID	int	☐
studentName	nvarchar(500)	☒
address1	nvarchar(500)	☒
address2	nvarchar(500)	☒
city	nvarchar(50)	☒
state	nvarchar(50)	☒
pincode	nvarchar(50)	☒
contactNbr	nvarchar(50)	☒
emailID	nvarchar(500)	☒
aadharNbr	nvarchar(50)	☒
degreeID	int	☒
sectionID	int	☒
year	nvarchar(50)	☒
		☐

Fig.3.7 : Defining student data

Attendance process:

In this student present and absent details are recorded.

Column Name	Data Type	Allow Nulls
uniqueID	int	☐
effDate	date	☒
studentID	int	☒
degreeID	int	☒
sectionID	int	☒
		☐

Fig.3.8 Storing attendance records

3.10 SYSTEM IMPLEMENTATION

3.10.1 Use Case Diagram

The use case diagram is used to explain how the actors are involved in the system. The sender logs into the system and takes the attendance of students.

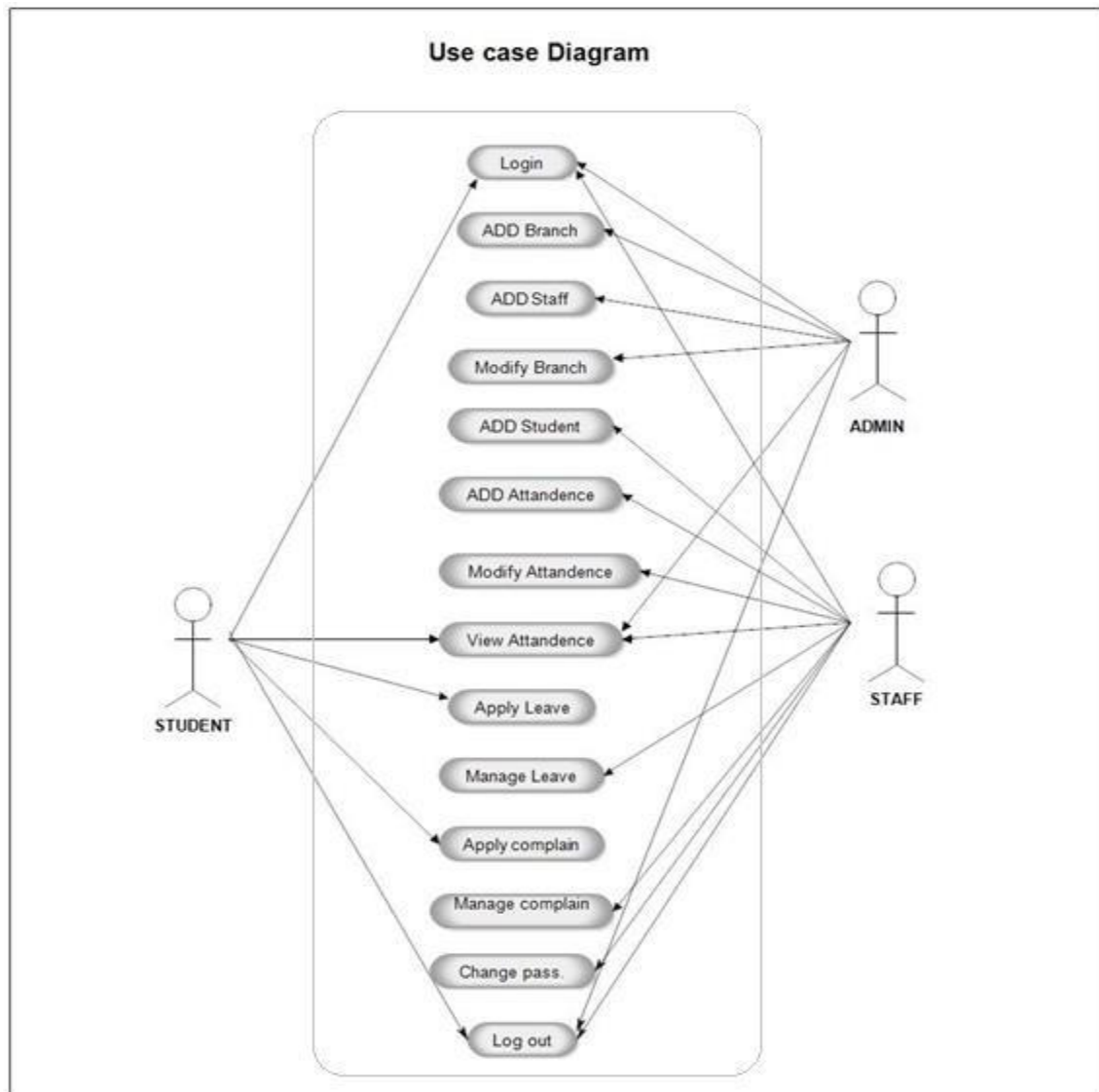


Fig.3.9: Use case diagram

3.10.2 Data Flow Diagram

In the DFD the user logs into the system and takes the attendance process. It will be stored in the database.

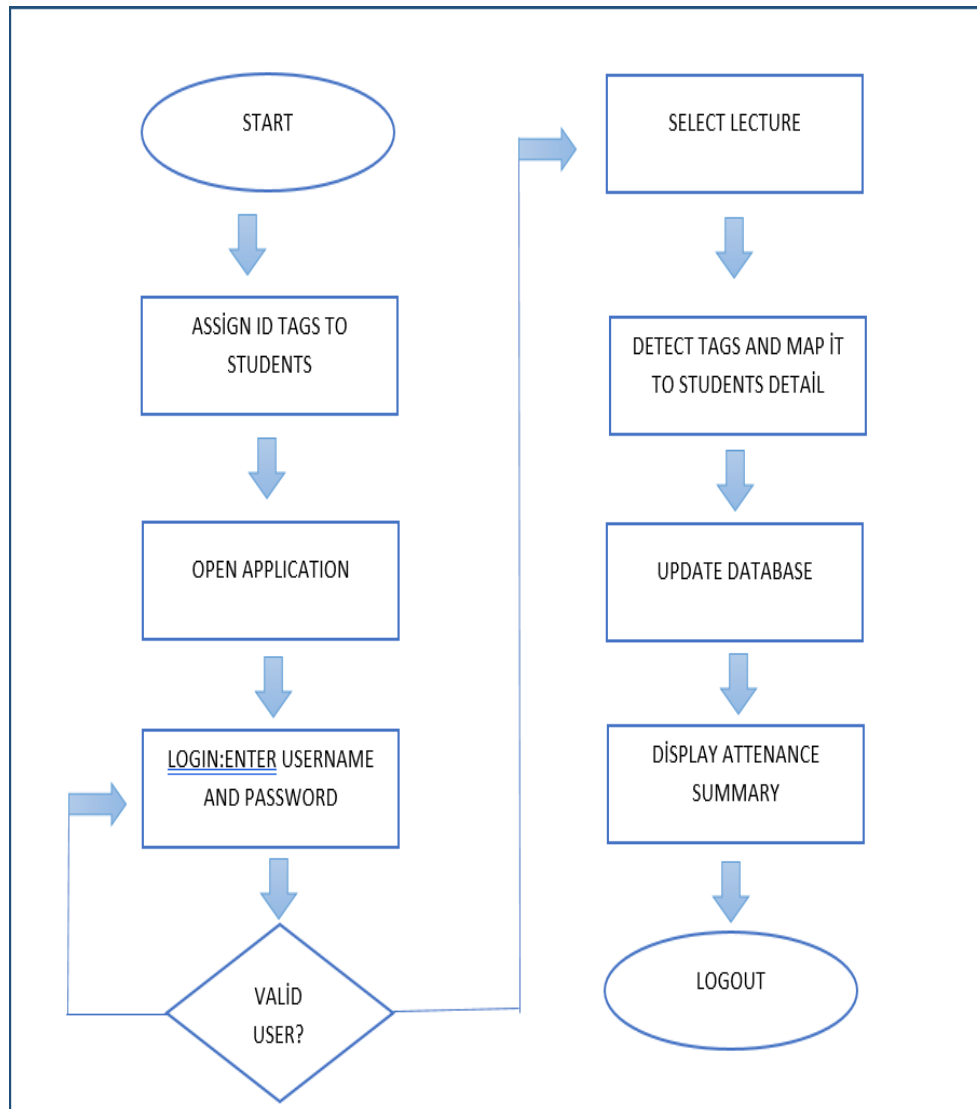


Fig.3.10 : Data flow diagram

3.10.3 Entity Relationship Diagram

In the ER diagram where the details of student are stored in a record. Based on the register number the attendance will be taken.

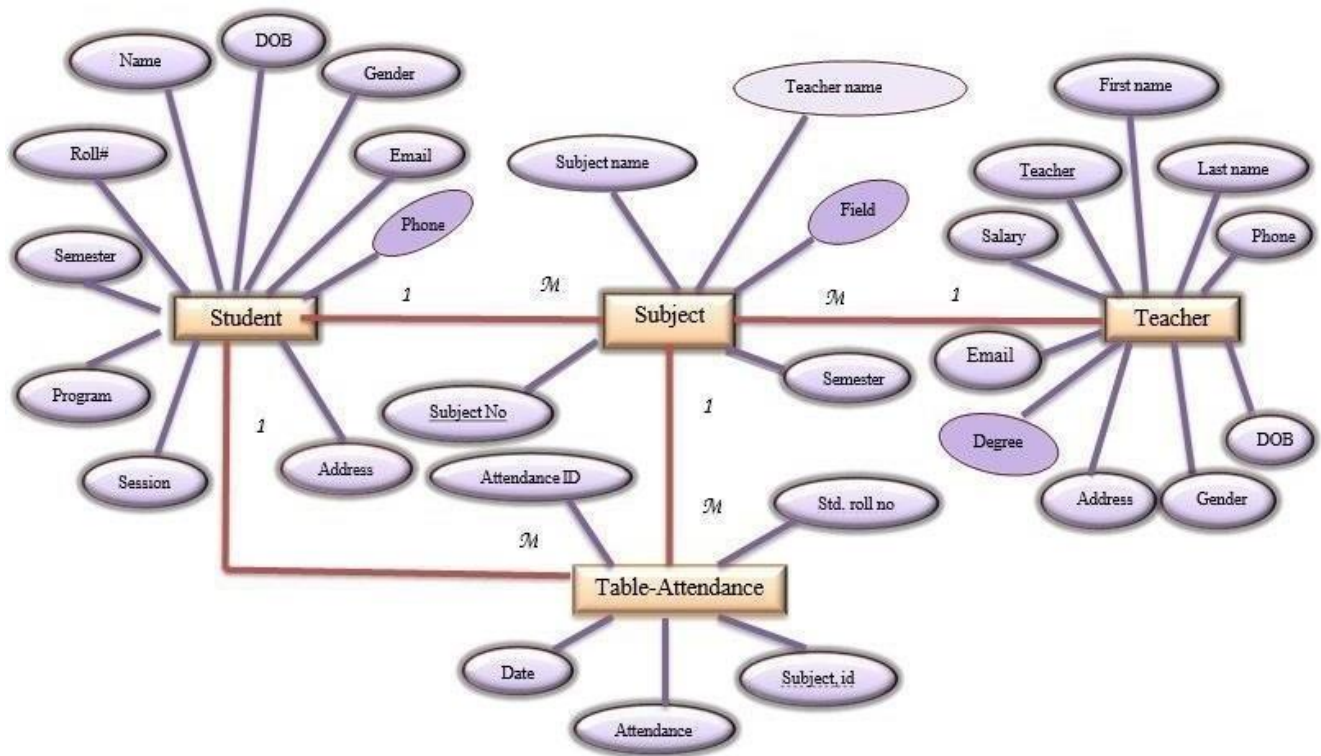


Fig.3.11 : E.R diagram

3.10.4 Sequence Diagram

In the sequence diagram the objects are created in the flow. Creation of department and student details will be done on the set-up event. From, there it will be stored in the database.

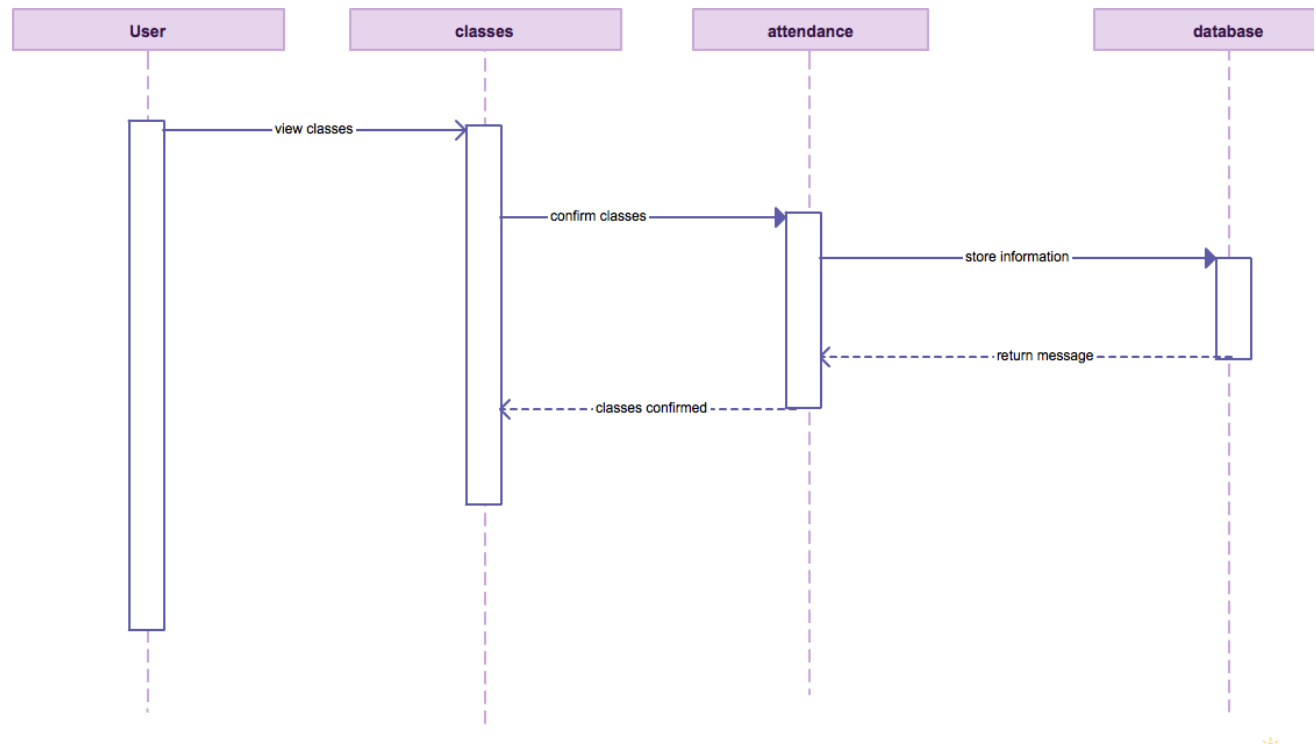


Fig.3.12: Sequence diagram

3.10.5 Activity Diagram

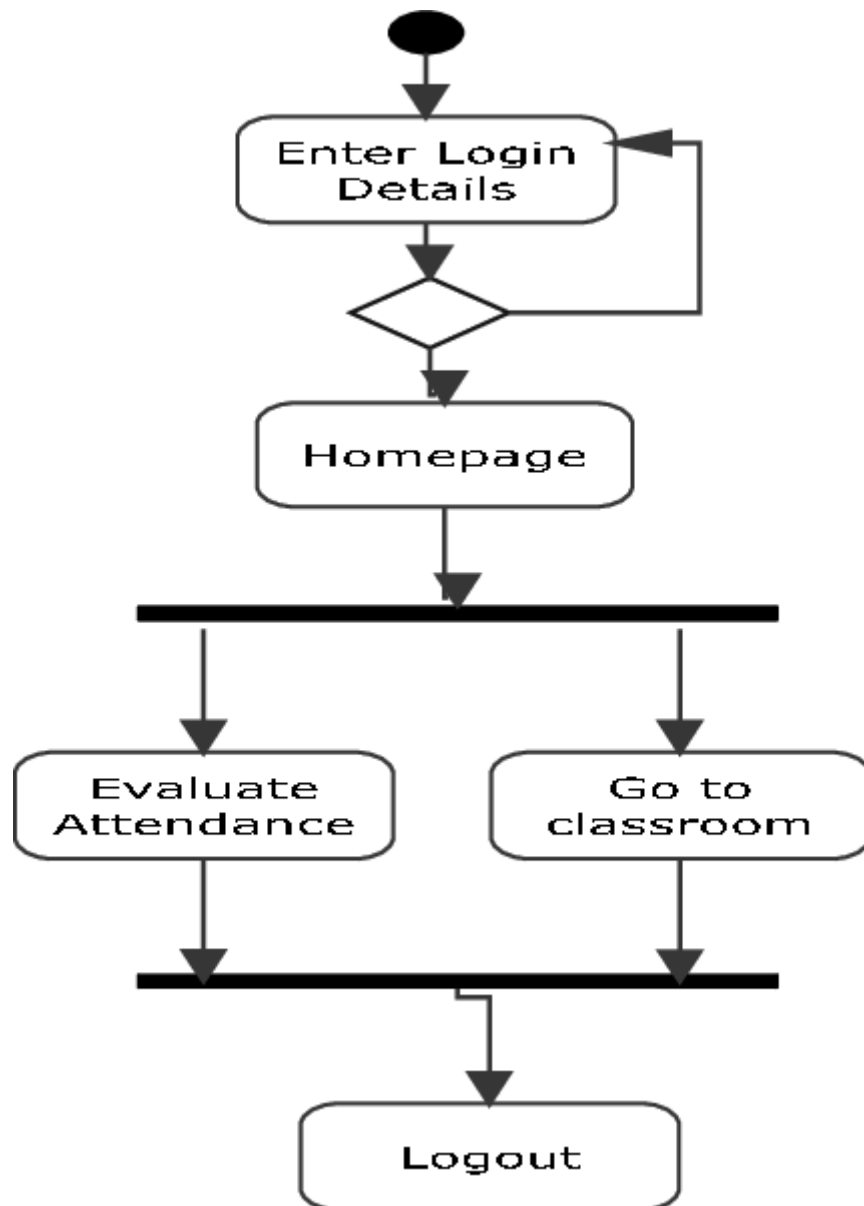


Fig.3.13: Activity Diagram

CHAPTER 4

RESULTS AND DISCUSSION

4.1 MONTHLY REPORT

In this chapter, the presented results or reports that the system is generating are two reports, one is the monthly report of the selected student and the other one is the overall report that provides the attendance information of all students. It generates the monthly attendance percentage of selected student.



Fig.4.1 : Attendance Report

It generates the attendance percentage and status of all of student percentage report. It counts the number of days the student presents. Based on the count it will calculate the percentage automatically. It is helpful for semester percentage calculation.

	A	B	C	D
	Student N	No of Day	Perc	
	sai	1	1.111111	
	pavan	1	1.111111	
	Nikhil	2	2.222222	
	karthik	2	2.222222	
	john	1	1.111111	

Fig.4.2 : Attendance percentage

4.2 STUDENT ATTENDANCE REPORT

In this report the student attendance system can be fetched from to date. Click start date and end date of the student. Click generate button it automatically stores in the excel file.

Upload Data

Section	john	▼
From Date	dd/mm/yyyy	📅
To Date	dd/mm/yyyy	📅

Fig.4.3 : Student attendance report

4.3 DAILY PRESENT REPORT

In this student present list is generated.

	A	B	C
	Eff Date	Student Name	
	2020-02-22	Subash Kannan	
	2020-02-22	john	
	2020-02-22	karthik	
	2020-02-22	Nikhil	
	2020-02-22	sai	
	2020-02-22	pavan	

Fig.4.4 : Daily present report

4.4 SECTION ATTENDANCE REPORT

In this it generates the particular section and particular date.

Upload Data

Section	A
From Date	dd/mm/yyyy
To Date	dd/mm/yyyy
Generate Cancel	

	A	B	C	D
	Section Name	Eff Date	Student Name	
	A	2020-02-22	john	
	A	2020-02-22	Nikhil	
	A	2020-02-22	pavan	
	A	2020-02-22	sai	

Fig.4.5 : Section attendance report

4.5 DAILY ABSENT REPORT

It generates the absent students report from particular date.

Daily Attendance Report

From Date

dd/mm/yyyy



To Date

dd/mm/yyyy



Generate

Cancel

A	B	C	D
Eff Date	Student Name		
2020-02-22	john		
2020-02-22	karthik		
2020-02-22	Nikhil		
2020-02-22	pavan		
2020-02-22	sai		

Fig. 4.6: Daily absent report

CHAPTER 5

CONCLUSION AND FUTURE WORK

5.1 CONCLUSION

In this work , the web based attendance management system is developed using MySQL server-side scripting language and CSS,HTML ,JavaScript and Python for designing which is fully meet the system's goals.

This system overcome many limitations incorporated in attendance, this system saves a great amount of time and reduces errors which may occur during attendance calculation.

The system I have developed is fully responsive which can be used in mobile, tablets and different operating systems. Some other benefits are,

- Automated and web-based for easy accessibility
- It is a dynamic and flexible system
- It excludes paperwork and the possibility of making mistakes while using paper for taking attendance
- It is very user friendly and handy
- The records of current and previous can be available in prompt and an immediate.

5.2 FUTURE WORK

I will make some future improvement in my project by making this Biometric Attendance System in order to make more advanced and increase its reliability and effectiveness.

Biometrics is automated technique of identifying a person behavioral or physiological characteristic.

A fingerprint scanner has two basic tasks which are,

- It requires to get an image of a person finger.

- It requires identifying and diagnosing that whether the pattern of ridges and valleys in current image matches the pattern of ridges and valleys of previous scanned images.

Unique characteristics of every fingerprint are filtered and saved as a mathematical representation. The image of fingerprint will not be saved, only sequence (series) of binary code, that is used for verification is saved the algorithm can't be transformed to an image, so no one can duplicate any one's fingerprints.

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APPENDIX

A. SOURCE CODE

```
import boto3
from flask import Flask, request, render_template, redirect, url_for, session
import os
import pypyodbc
import zipfile
import numpy as np
import cv2
from os.path import isfile, join
from DepartmentModel import DepartmentModel
from SectionModel import SectionModel
from RoleModel import RoleModel
from DegreeModel import DegreeModel
from UserModel import UserModel
from Constants import connString
from datetime import datetime
app = Flask(__name__)
app.secret_key = "MySecret"
ctx = app.app_context()
ctx.push()
with ctx:
    pass
userName = ""
roleObject = None
message = ""
msgType = ""
def initialize():
    global message, msgType
    message = ""
    msgType = ""
def processRole(optionID):
```

```

if optionID == 10:
    if roleObject.canRole == False:
        return False
if optionID == 20:
    if roleObject.canUser == False:
        return False
if optionID == 30:
    if roleObject.CL111 == False:
        return False
if optionID == 40:
    if roleObject.CL222 == False:
        return False
if optionID == 50:
    if roleObject.CL333 == False:
        return False
return True

@app.route('/')
def index():
    global userID, userName
    return render_template("Login.html") # when the home page is called
Index.html will be triggered.

@app.route('/processLogin', methods=['POST'])
def processLogin():
    global userID, userName, roleObject
    userName = request.form['userName']
    password = request.form['password']
    conn1 = pypyodbc.connect(connString, autocommit=True)
    cur1 = conn1.cursor()
    sqlcmd1 = "SELECT * FROM UserTable WHERE userName = " + userName
+ " AND password = " + password + " AND isActive = 1";
    cur1.execute(sqlcmd1)
    row = cur1.fetchone()
    cur1.commit()

```

```

if not row:
    return render_template('Login.html', processResult="Invalid Credentials")
userID = row[0]
userName = row[3]
conn3 = pypyodbc.connect(connString, autocommit=True)
cur2 = conn3.cursor()
sqlcmd2 = "SELECT * FROM Role WHERE RoleID = " + str(row[6]) + "";
cur2.execute(sqlcmd2)
row2 = cur2.fetchone()
if not row2:
    return render_template('Login.html', processResult="Invalid Role")
roleObject = RoleModel(row2[0], row2[1], row2[2], row2[3], row2[4], row2[5])
return render_template('Dashboard.html')

@app.route("/ChangePassword")
def changePassword():
    global userID, userName
    return render_template('ChangePassword.html')

@app.route("/ProcessChangePassword", methods=['POST'])
def processChangePassword():
    global userID, userName
    oldPassword = request.form['oldPassword']
    newPassword = request.form['newPassword']
    confirmPassword = request.form['confirmPassword']
    conn1 = pypyodbc.connect(connString, autocommit=True)
    cur1 = conn1.cursor()
    sqlcmd1 = "SELECT * FROM UserTable WHERE userName = " + userName
+ " AND password = " + oldPassword + "";
    cur1.execute(sqlcmd1)
    row = cur1.fetchone()
    cur1.commit()
    if not row:
        return render_template('ChangePassword.html', msg="Invalid Old
Password")

```

```

if newPassword.strip() != confirmPassword.strip():
    return render_template('ChangePassword.html', msg="New Password and
Confirm Password are NOT same")

conn2 = pypyodbc.connect(connString, autoccommit=True)
cur2 = conn2.cursor()
sqlcmd2 = "UPDATE UserTable SET password = " + newPassword + "
WHERE userName = " + userName + """;
cur1.execute(sqlcmd2)
cur2.commit()
return render_template('ChangePassword.html', msg="Password Changed
Successfully")

@app.route("/Dashboard")
def Dashboard():
    global userID, userName
    return render_template('Dashboard.html')

@app.route("/Information")
def Information():
    global message, msgType
    return render_template('Information.html', msgType=msgType,
message=message)

@app.route("/UserListing")
def UserListing():
    global userID, userName
    global message, msgType, roleObject
    if roleObject == None:
        message = "Application Error Occurred"
        msgType = "Error"
        return redirect(url_for('Information'))
    canRole = processRole(10)
    if canRole == False:
        message = "You Don't Have Permission to Access User"
        msgType = "Error"

```

```

        return redirect(url_for('Information'))
conn2 = pypyodbc.connect(connString, autocommit=True)
cursor = conn2.cursor()
sqlcmd1 = "SELECT * FROM UserTable ORDER BY userName"
cursor.execute(sqlcmd1)
records = []
while True:
    dbrow = cursor.fetchone()
    if not dbrow:
        break
    conn3 = pypyodbc.connect(connString, autocommit=True)
    cursor3 = conn3.cursor()
    temp = str(dbrow[6])
    sqlcmd3 = "SELECT * FROM Role WHERE RoleID = '" + temp + "'"
    cursor3.execute(sqlcmd3)
    rolerow = cursor3.fetchone()
    roleModel = RoleModel(0)
    if rolerow:
        roleModel = RoleModel(rolerow[0], rolerow[1])
    else:
        print("Role Row is Not Available")
    row = UserModel(dbrow[0], dbrow[1], dbrow[2], dbrow[3], dbrow[4],
dbrow[5], dbrow[6], roleModel=roleModel)
    records.append(row)
    return render_template("UserListing.html", records=records)
@app.route("/UserOperation")
def UserOperation():
    global userID, userName
    global message, msgType, roleObject
    if roleObject == None:
        message = "Application Error Occurred"
        msgType = "Error"
        return redirect(url_for('Information'))

```

```

canRole = processRole(10)
if canRole == False:
    message = "You Don't Have Permission to Access User"
    msgType = "Error"
    return redirect(url_for('Information'))
operation = request.args.get('operation')
unqid = ""

@app.route("/RoleOperation")
def RoleOperation():
    global message, msgType
    if roleObject == None:
        message = "Application Error Occurred"
        msgType = "Error"
        return redirect(url_for('/'))
    canRole = processRole(120)
    if canRole == False:
        message = "You Don't Have Permission to Access Role"
        msgType = "Error"
        return redirect(url_for('Information'))
    operation = request.args.get('operation')
    unqid = ""
    row = RoleModel(0, "", 0, 0, 0, 0)
    if operation != "Create":
        unqid = request.args.get('unqid').strip()
        conn2 = pypyodbc.connect(connString, autoccommit=True)
        cursor = conn2.cursor()
        sqlcmd1 = "SELECT * FROM Role WHERE RoleID = " + unqid + ""
        cursor.execute(sqlcmd1)
        while True:
            dbrow = cursor.fetchone()
            if not dbrow:
                break

```

B. PUBLICATION

Smart Attendance System using Web Applications

Nareddula Nikhil Kumar Reddy¹, Nandireddy Karthik Reddy², D. Usha Nandini³

Sathyabama Institute of Science and Technology, Chennai

nikhil1998reddy@gmail.com¹, nkarthikreddy1998@gmail.com², usha.cse@sathyabama.ac.in³

Abstract- Throughout the years the manual participation the executives has been conveyed across the greater part of instructive organizations. To beat the issues of manual participation, we have created "electronic participation Management System". Participation Management framework depends on web server, which can be actualized on any PC. Right now, is server side language, MySQL and PHP is utilized as backend plan and HTML, CSS and JavaScript are utilized as front-end devices. The framework speaks with database dwelling on the remote server. It figures naturally, the participation level of understudies with no manual paperbased work. The framework encourages the end clients with intuitive plan and robotized preparing of participation the executives.

The creation and management of accurate, up-to-date information regarding a students' academic career is critically important in the university as well as colleges. Student information system deals with all kind of student details, academic related reports, college details, course details, curriculum, batch details, placement details and other resource related details too.

INTRODUCTION

In most informational associations the cooperation is taken genuinely. It isn't so to speak monotonous, yet then again is unbound

and conflicting and it might be lost. A couple of foundations are using punch card for interest while this will be difficult for instructors to screen colossal amounts of understudies considering the way that by using punch card, an understudy can support different understudies or his/her ally to punch their card for sure, even the other understudy may be missing or arrive behind schedule in class, so it isn't reliable. To overcome these issues we have developed an unrivaled structure which is Web based what's more, is totally responsive where a customer can use in adaptable, tablets and unmistakable PC systems. At the present time are stayed cautious what's progressively, secure and the interest information of explicit or all understudies of explicit class can be found a workable pace without time eating up, the report is created normally.

In early punch card was utilized for information stockpiling, it is known as Hollerith cards, through these cards organizations had the option to store and access by means of entering the card into the PC framework. Presently a days it is utilized as one of the most well known participation framework.

Representatives are utilizing this card for in and out, they as it were need to wave the punch card close to the peruser at that point it will guarantees the nearness of worker in the specific spot. Work area application for participation created to take one by one involvement in higher studies. At that point

data of a specific class is put away by the administrators that will be given by the instructor.

The guideline characteristics of our made system is this it is on the web, totally responsive what's increasingly, versatile. It will in general be found a good pace PC paying little mind to where you are. Its purpose behind existing is to make an live assistance set of guidelines for explicit division to enlist the study nuances their chapters and common areas. The step by step support of understudies are taken thusly by picking understudy name likewise, program, If the understudy was accessible by then the present checkbox is clicked equivalently in the event that study was missing, at that point the missing checkbox is switched on as opposed to the current tick box, and by touching the extra cache information will be taken care of in the storage. The cooperation file will be made normally with no time eating up where is strong and expected no misunderstandings.

LITERATURE SURVEY

A composing study is a scholarly paper, which fuses the current data appending absolute revelations, similarly as speculative and methodological duties to a particular subject. Composing overviews are helper information, and not to intimate fresh or exceptional test work. The brilliant participation framework utilizing web innovation advances semicomputerized recording of understudy participation, grew particularly for the college. In drawing the framework structure, various electronic techniques and works have been seen and alluded.

Web Server Modules

Web Server: The web server here alludes either gear (PC) or programming (application) that helps with passing on content transparently accessible with the help of online. It results the webpage value by enduring requests from the customer's program and responds by sending back to

static records and reports. To engage the structure dynamic functionalities, the web server has the data gatherer section, a storage and the interactive UI pages empowering on the web relationship with in system customers.

Database: A database is characterized as a sorted out assortment of information and customized to our framework, our database is utilized to principally store the information caught. Optionally the database is additionally used to store information assembled from the online web-interface, for example, class timetable and understudy individual data. In offering more highlights to the clients, our online framework can control the recorded understudy participation record by questioning the database for complex information recovery. This incorporates mechanized activity, for example, abridging an individual understudy participation by computing the participation rate for a specific course.

Graphical User Interface (GUI): The GUI part of the framework is intentionally produced for inviting association with the clients. The two sorts of clients, specifically the understudies and scholastic staffs are given one of a kind access to their individual part territory, where the understudies can get to their own data, while the scholarly staffs can screen their understudy data. The created GUI is as powerful website pages, which are database driven. This connotes the data showed on the website pages are built dependent on the information removed from the database. The website pages are ordered into four modules, in particular the User List, Log, Timetable and Attendance. The pages are created utilizing the Hypertext Preprocessor (PHP) scripting language and perfect with all significant internet browsers.

Web Development: The server is actualized in a PC. There are three phases for to actualize this one. Initial one is to get the information from the controller [3]. The subsequent one is to store the information, gauging participation and refreshing it. The third one is to build up a web-application for to checking reason or for altering which is given control just for a teacher.

Windows Application: The windows application is produced for to take the information from the controller while an individual flashes their card at the peruser. For this, reason we are utilizing C# language and SQL server for the structuring and information stockpiling reason.

Data Base Server: The information for the went to understudies will be taken and put away dependent on the instructor's quality just so at whatever point a teacher came into the class when their card is flashed at the peruser the understudy's participation will be taken and put away in a server which is executed by utilizing SQL server and the executives studios.

Web-Application: After all the above work done, if a teacher or an understudy need to check the participation, we have to build up a web application in a graphical UI mode.

React js:

Respond is a JavaScript library for building UIs. It is kept up by Facebook and a network of individual engineers and organizations. Respond can be utilized as a base in the improvement of single-page or portable applications.

SQL:

SQL is a zone express language used in programming and expected for directing data held in a adapted storage data the panel structure, or for stream planning in a social

data stream the board system. It is particularly useful in dealing with composed data, for instance data uniting relations among more virtual components and variables.

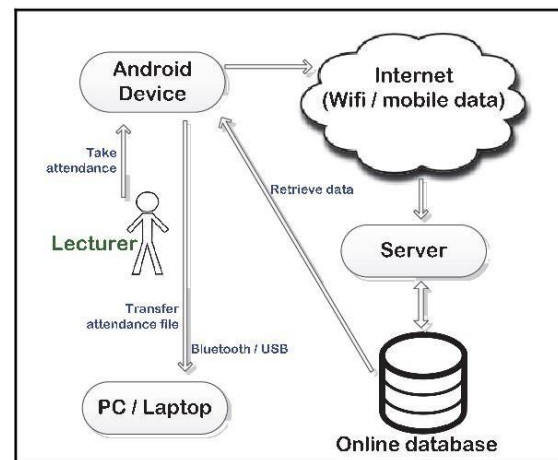


Figure 1. System architectural diagram

EXISTING SYSTEM

This product has created for every day participation of understudies. It made simple to find a good pace information of a particular detailed study. The data is put away through administrators, and gave by instructor to related class. This product is valuable in evaluating the support capability of an detailed study. Its motivation was to modernize the custom method for gauging participation and producing of report naturally toward the end or between of the meeting. This undertaking has created as a work area application for a particular foundation. The advancements which have been utilized are, VB.NET language and for backend MAccess

This framework has same undertaking and quality as upper programming however here innovation that utilized is,

Language: ASP.NET

Backend: SQL.

It is a two-level framework which comprises of a committed database, and an uncommonly developed Java Client Application. The upside

of this arrangement is that the preparing is not any more unified. Despite what might be expected, the customer application devours the assets of the client running it locally. The main thing that is brought together is the database. Control the database through Java Client Application by utilizing JDBC API offered by the Oracle for associating and recovering information from information sources. The asset utilization was limited by using equal preparing through the Threading API of the Java stage, additionally, the occasion driven nature of the work area application made limiting the asset utilization simpler, since just the procedure that the client starts will utilize the assets

PROPOSED SYSTEM

This approach contains three significant stages, i.e, participation stamping, participation the board and report age. Client verification is one of the central point in participation checking framework. Each understudy is validated dependent on his/her novel client recognizable proof number/code. This remarkable ID will be finished by checking the QR(Quick Response) code present on the ID card. The underneath figure shows the essential working of the proposed web administration for understudies participation the executives framework

ATTENDANCE MARKING

The QR Code present on the Identification card is checked first utilizing a QR Code Scanner. At the point when the understudy examines the personality card, the QR code scanner gives a signal demonstrating that the character card has been filtered. At that point the checked data is encoded, that is in parallel structure will be sent to the server through web administration. The database will at that point be refreshed by denoting the individual understudy's participation. Here the USN will be considered as the essential key for denoting the participation.

Attendance Management

The understudy subtleties, for example, USN, name, date of birth, clump id, email id, versatile number are put away into the database for each bunch. The participation is kept up subject insightful. The participation will be refreshed consistently. If there should arise an occurrence of any year misfortune or move of understudies to other school, their name is expelled from the participation list. It is the executive's obligation to refresh this data in the database.

Report Generation

Just the administrator, the concerned staff or employee is given the power to create report. The report is created by choosing from and to dates. We can see the subject code, subject name, absolute number of classes directed, all out number of classes joined in and the participation rate. Separate modules are composed for every one of the accompanying capacities.

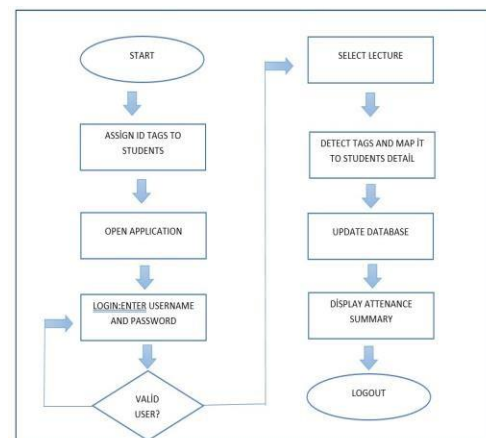


Fig. 2 Data flow diagram for attendance system
CONCLUSION

Right now, electronic participation the executives framework is created utilizing Javascript, CSS and HTML for organizing and PHP server-side scripting language. which is totally got the system's destinations. This system vanquish various limitations participated in investment, this structure saves a ton of time and decreases bumbles which

might occur during cooperation calculation. The structure is made totally responsive and it can be used in convenient, tablets and unmistakable performing systems. Very few various focal points are, Automated and electronic for basic accessibility. this is related to active and versatile system. This rejects work area work and the possibility of submitting blunders when using paper for measuring support. It is exceptionally simple to utilize and supportive. The data of present and former can be available in quick and prompt.

FUTURE WORK

This will change small upcoming development in my endeavor by developing it into the Attendance System using biometric to make additionally created and extend its constancy and sufficiency. Biometrics are modernized arrangement of perceiving an separate social or carpological identification. A one of a kind imprint scanner has two fundamental tasks which are, it requires to get an image of an individual finger. It needs perceiving and diagnosing that in present picture facilitates the case of valleys and edges of past inspected images.

Excellent characteristics of every remarkable imprint are isolated and saved as a numerical depiction. The image of special imprint can't be saved, only (course of action) of twofold code, that is used for affirmation is saved the count can't be altered to an image, then no one can duplicate any others fingerprints

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