A PROJECT REPORT ON

ATTENDANCE TRACKING SYSTEM USING VIRTUAL BEACONS

SUBMITTED TO THE SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE
IN THE PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE

OF

BACHELOR OF ENGINEERING (COMPUTER ENGINEERING)

SUBMITTED BY

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2021-2022

CERTIFICATE

This is to certify that the project report entitles

“ATTENDANCE TRACKING SYSTEM USING VIRTUAL BEACON”

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is a bonafied student of this institute and the work has been carried out by him/her under the supervision of Prof. **Shailaja Pede** and it is approved for the partial fulfillment of the requirement of Savitribai Phule Pune University, for the award of the degree of **Bachelor of Engineering** (Computer Engineering).

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ABSTRACT

The typical approach to attendance tracking is a time-consuming process. Using pen and paper, the individual must keep track of his or her attendance in registers and files. The problem with this strategy is that it necessitates a large amount of paper, which is a nonrenewable natural resource. We are living in an era where we must consider long-term development. Using mobile phones to manage attendance is an alternate option to go in this route. The project focuses on the creation of a stand-alone system that uses Wi-Fi to track students' attendance. Communication between teachers and parents is also an important topic that should be taken into account, because parents can only learn about their children after interacting with teachers. As a result, we attempted to create a system that allows parents to receive regular information on their children on a daily basis.

KEYWORD - Wi-Fi, communication, Attendance Tracking**.**

TABLE OF CONTENTS

LIST OF ABBREVATIONS

ABBREVIATION	ILLUSTRATION
VPN	Virtual Private Network
IP	Internet Protocol
TCP	Transmission Control Protocol

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1

INTRODUCTION

1.1 OVERVIEW

Over the years, we've observed that manual attendance has become common place in practically all colleges. The procedure is time intensive, it is also less efficient at times, which results for bogus attendance records. We don't need to keep attendance registers on paper anymore. Following this line of thought, we presented a Wi-Fi-based attendance tracking system, which is implemented as a python script that communicates with a web based GUI and backend. Wi-Fi technology will be required to connect the mobile application to the database. Our project is an Android mobile application for Attendance Monitoring that is both efficient and user-friendly. The user's smart phone will be loaded with the programmed. Its goal is to create a user interface for teachers who only need to enter a few details in order to mark attendance for a specific class of pupils. As soon as the teacher enters the classroom, he will open a portal for the students, and if the student's mobile device has been connected to the Wi-fi which is given for attendance it will mark attendance. Lecturer has to run the python script and give input name of class to start attendance. They will take attendance using their mobile phone after attendance is started. Even when given with advanced tracking technologies, staff in the same class tracks attendance differently. If a student is willing to check attendance using web-based app.

Virtual Beacons: Virtual beacons are **a budget friendly alternative to physical beacons**, such as iBeacon or Eddystone beacons. They work using the location services on mobile or wearable devices - virtual beacon is tied to a GPS coordinate with given range, which is less accurate than with physical beacons. We have been using Wi-Fi technology for implementation of Virtual beacons concept.

1.2 MOTIVATION

In today's world, educational institutions are largely concerned about student attendance irregularities. The traditional attendance system, which involves calling names and taking attendance, is inefficient and inaccurate. As a result, this approach efficiently automates the traditional attendance method.

1.3 PROBLEM DEFINITION.

Attendance System is that which is used in various places like colleges, companies to track user attendance. This approach will also assist in determining a student's attendance eligibility criteria. The system will be able to generate the students' attendance record with a single mouse click, decreasing the need for manual labor, which is prone to human mistake and time demanding. Our main focus is to track attendance by means of student device MAC address to avoid proxy in our process.

1.4 PROJECT SCOPE & LIMITATIONS

The project's scope is the system, on which the software is installed, i.e., the project is a desktop application that will work for a specific institute. However, the project can be updated in the future to run online.

1.4 METHODOLOGIES FOR PROBLEM SOLVING

There are various methodologies proposed by various people regarding our problem statement but we choose to use Wi-fi for our problem statement. Our main work will be to track attendance or users using MAC address of devices of users and record their presence**.**

CHAPTER 2
LITERATURE SURVEY

2.LITERATURE SURVEY

1] **Paper Name - Attendance tracking using Wi-fi**

Author Name - Basu Kumar Swamy, R Vanitha, Deepak Kumar For taking attendance, a Wi-Fi-based attendance system is used. The suggested system uses a password identification approach to automatically take attendance. This paper's major goal is to keep track of attendance in a quick and efficient manner. The article begins with the concept of using a smartphone to track attendance. The essential premise in this research is that it is made up of a smartphone and a Wi-Fi enabled microcontroller. Every user's password is different, and this is the key to keeping track of attendance.

2] **Paper Name - The Human Positioning System Based on the WiFi Direct and Precision Time Protocol.**

Author Name - Xiao Xiao Liu & Jun Steed Huang, Zujue Chen.Due to the severe environment and unique geological conditions, current technology on the domestic market, when utilised in a coal mine, is unable to adequately meet the need for accurate miner positioning and tracking. RFID technology, for example, is used as an attendance system in the majority of Chinese colliery sector monitoring and positioning systems. When the catastrophe occurs, the technology is unable to pinpoint the miners trapped underneath.

3] **Paper Name - cloud-based class attendance record system**

Author name - Huimin Zhang, Xinlei Feng, Hongyu Liu, Ping Guo, Sujatha Krishnamurthy, Changing Zhang.Traditional class attendance registration relies on professor roll-calling, sign-in, and other inefficient methods. Despite the fact that facial recognition has been increasingly

popular at home and abroad in recent years, there is no effective application system for this purpose in Chinese university campuses. The paper outlines a system for automatically recording class attendance. A common research challenge for computer programmers is human identification and authentication. Face recognition, iris recognition, retina scan, voice recognition, fingerprint, signature, and voice analysis are just a few examples of biometric authentication.

4] **Paper Name - Cloud Based Smart Attendance System for Educational Institutions**
Author Name - Vikas Yadav, G. P. Bhole.The Internet of Things (iot) is fast transforming how we communicate with one another and obtain information about ourselves and the world around us. Smart Transportation, Smart Energy, Smart Healthcare, and Smart Waste Management are just a few of the domains where iot has been shown to be cost-effective and efficient in addressing underlying issues and flaws. The Internet of Things has seen steady expansion and interest as the cost of computing devices, sensors, and internet has decreased.

5**] Paper Name - mManagement: Wi-Fi Hotspot based Attendance Application using Android Smartphone**: Author Name : Jawad Rasheed, Erdal Alimovski. It proposes a automated android application which tracks attendance by means of Wi-fi Hotspot feature. The main objective is to get attendance in an effective way and have maximum performance from the system.

CHAPTER 3

SOFTWARE REQUIREMENTS SPECIFICATION

3. SOFTWARE REQUIREMENTS SPECIFICATION

3.1 ASSUMPTIONS AND DEPENDENCIES

- User should have some insights of the web application.
- User must have the knowledge of English. One should have the required dependencies or software to run for the system.

3.2 Functional Requirements:

GUI Application:

A 3-tier Android app consists of presentation logic, business logic, and data logic. Presentation logic is where you design the user interface (UI) that is used by users to initiate web requests. Business logic is where validation and web service functions are written. Data logic is tied to all database queries generated as a result of web requests.

3.3 EXTERNAL INTERFACE REQUIREMENTS.

3.3.1 User Interfaces:

WIFI Topologies:

There are many distinct types of network topologies, each with its own set of advantages and disadvantages. The most basic network is for point-by-point connection. This is a connection between two nodes on a single network. In practice, except in some important or specific applications, connecting merely two nodes is becoming increasingly rare. Daisy-chaining, which comes in two flavors': Linear and Ring, is the simplest technique to add new nodes to our network. The third node in a linear

3.3.2 **Software interfaces.**

This is the configuration of our project. The programming language used and the various tools used is given below.

- Operating System : Windows 10
- Front End : html, css, bootstrap, python, Java script.
- Tool : Sublimetext3,python
- Database : MySQL

3.3.3 Communication interfaces

- User will access the web application from class.
- Basic internet connection is mandatory.

3.4 Nonfunctional Requirements

3.4.1 Performance Requirements

- High Speed: System should perform all tasks parallel to get maximum output and all task to work. Then system must simultaneously wait for process to finish.
- Accuracy: System should process the request correctly, display the result accurate and faster. System output should be as required by user.

3.4.2 Safety requirements

Data security should be ensured by setting up secure and reliable transmission media. Source and location information should be included correctly to avoid any misuse or malfunction. User-generated password contains letters, special characters and numbers to make it harder to break the password. Thus, that user account is secure. Unauthorized access, use, disclosure, disruption, alteration or destruction. The terms security information, computer security and information security are often interchangeably misused. These domains are closely related and share common objectives for the protection of privacy, integrity and access to information; however, there are subtle differences between them.

User password must be stored encrypted for security reasons

- All user information will only be available to senior executives.
- Access will be controlled by usernames and passwords.

3.4.3 Security requirements

Secure access of confidential data (user's details).

Information security means protecting information and their systems.

3.4.4 SOFTWARE QUALITY ATTRIBUTES

1. Availability
2. Modifiability [includes portability, reusability, scalability]
3. Performance
4. Security
5. Testability

3.5 SYSTEM REQUIREMENTS

3.5.1 Database requirements

MySQL: It is an relational database management system (RDBMS). Its free and readily available for usage.

3.5.2 Software requirements

Operating system : Windows 8 and above.

Programing Interface : Python

IDE : Sublimetext3, PyCharm.

3.5.3 HARDWARE REQUIREMENTS.

1.System : Pentium V 2.4 Ghz.
2.Hard Disk : 100 GB.

3. Wi-Fi router is required for the purpose of taking attendance.

3.6 ANALYSIS MODELS:

3.6.1 SDLC MODEL TO BE APPLIED

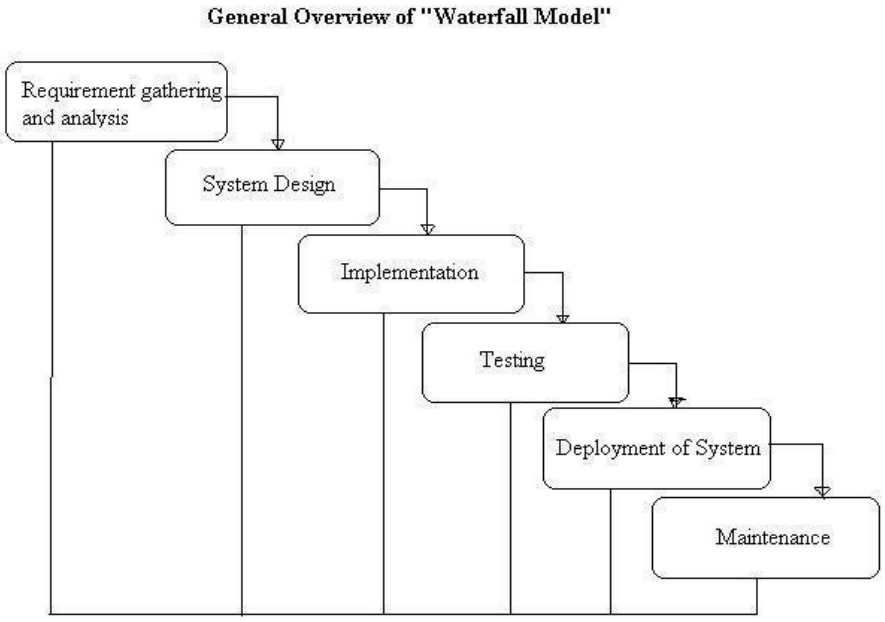

Figure 3.1 Waterfall Model

3.6.2 SYSTEM IMPLEMENTION PLAN

1. Requirement gathering:

At this type of model, we try to find out what various requirements are needed for us like the required software's, database, hardware's and workspaces and first we collect all the papers online and analyze all the papers.

2. System Design:

In this stage it designs a system that is understandable by the end operator which is easy to use. We create various UML figures and data flow figures to know system workflow and modules in system and sequences. Design a system where all web pages for example login, subscription, password forget, contact etc.

3. Implementation:

In the operational stage of the plan, we used many modules essential to effectively achieve projected result at various levels of segment. By the input after the system design, the system begins to be developed into smaller systems called units, which are integrated into the next phase. Every single unit is developed and then tested for own function called a Unit Test.

4. Testing:

The various test cases are performed to check if the project unit is giving projected outcome in vital time. Most of the parts established in the implementation stage are combined onto a system subsequently tests of individual units.

5. Deployment of System:

When the functional and nonfunctional testing remains completed, the artefact is installed in the client location or out into the marketplace.

6. Maintenance:

There are some problems at client area. To fix these problems the pegs are out. And to improve our product various new versions are released. Care is taken to bring about the variations in the client side. All of these stages descend on each other as soon as the progress appears to flow slowly downward like a waterfall between stages. It begins only after a defined set of goals has been reached in the previous phase and signed, hence the name "Waterfall Model". In this example the sections do not overlap.

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CHAPTER 4

SYSTEM DESIGN

4.1 SYSTEM ARCHITECTURE

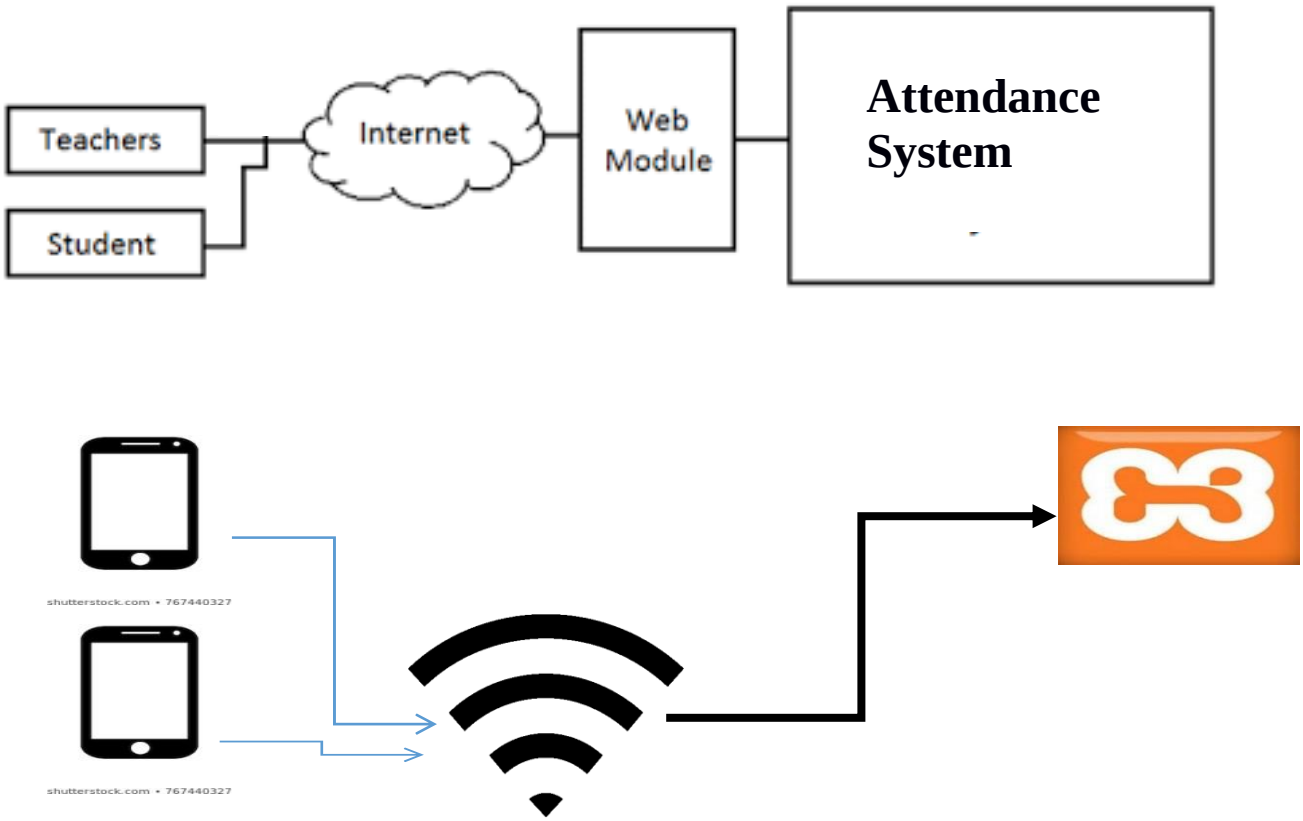


Figure 4.1 System Design

Over the years, we've observed that manual attendance has become common place in practically every institution. The procedure is not just time consuming, but it is also ineffective at times, resulting in bogus attendance records. We don't need to keep attendance registers on paper anymore. Following this line of thought, we presented a Wi-Fi-based attendance tracking system, In our project mainly a script needs to be run externally on desktop and the script will try to check for the available beacon like transmitter for purpose of attendance and will give signal to

router to transmit various devices connected to router so the script will get all MAC address of device connected to the Wi-fi and will check in the system for the presence of the device MAC address and if present then the attendance of specific user is marked.

Also, we have done a Web based GUI through which teachers can login and add students with their MAC address for first time and also can check for student reports of attendance. Also students can also check their attendance in the report.

WIFI Topologies:

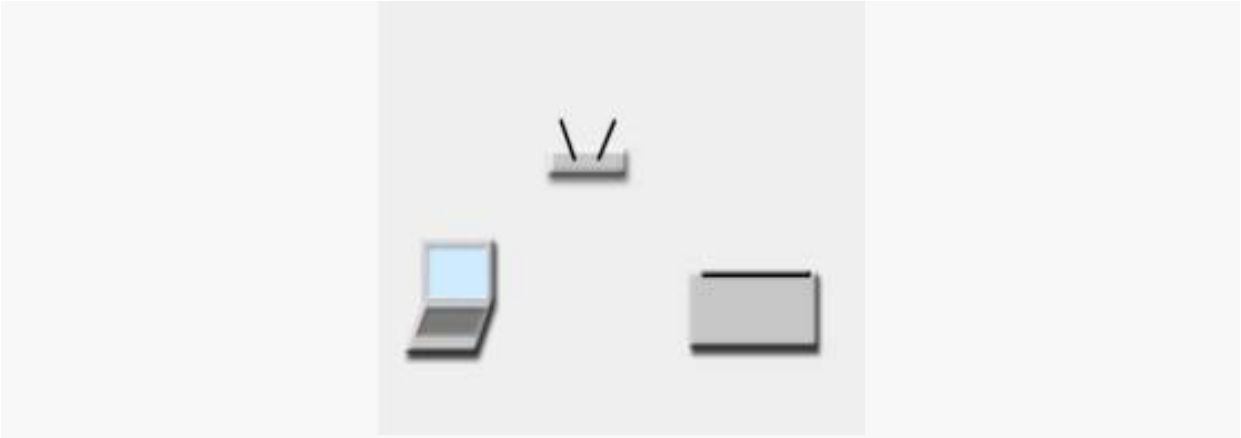
There are many distinct types of network topologies, each with its own set of advantages and disadvantages. The most basic network is a point-to-point connection. This is a connection between two nodes on a single network. In practice, except in some important or specific applications, connecting merely two nodes is becoming increasingly rare. The wireless access point (hub), which is usually, both a router for the local network and a bridge to the Internet, connects all of the nodes – phones, printers, tablets, and so on. Star networks are ideal for connecting wired and wireless nodes in a seamless manner.

- **Modes:**

Infrastructure

A Wi-Fi system in setup approach is depicted. In order to print a document, the device

Figure 4.2 Wi-Fi Model



Sends Data wirelessly towards alternative devices, both of which are linked to the local network. All communications in infrastructure mode, which is the most frequent method, pass through a base station. This requires an additional usage of the airwaves for network communications, but it takes the benefit of any two positions that can interact with the base class may also interconnect with the base class, greatly simplifying the procedures. Wi-Fi also permits direct connection between computers without the use of an access point. Ad hoc Wi-Fi transmission is what it's called. There are various categories of ad hoc systems. In the most basic example, system nodes must link directly with one another. Nodes may forward packets in more complicated protocols, and nodes keep note of how to get in range of further nodes, even if they interchange everywhere. The Wi-Fi Association, meantime, pushes the Wi-Fi Direct protocol for file transmissions via a novel discovery.

4.2 Mathematical model:

Set Theory:

Let S (be a main set of) ≡ {SDB, S, T, AL, V,G,IP}

Where,

SDB is a type of the server-based database. This database works for storing student information which gives server requests.

S is a set of registered students using the server database and server services.

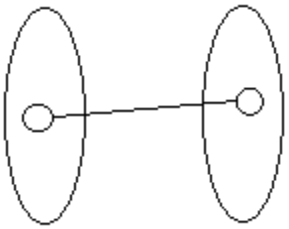
T : a collection of two databases, one containing the student's personal information and the other containing the user id and password.

AL: is a set of various algorithms that are applied to mobile data to provide the required results.

V: is a valid and unique code for all Registered and Authorized Teachers.

G: is a collection of parent users or non-registered users who do not have the ability to mark attendance but do have access to information about a specific student.

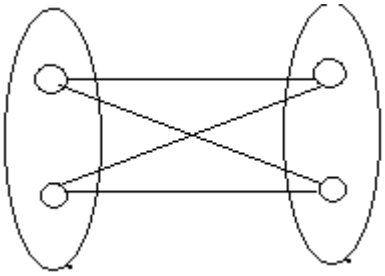
IP: refers to a student's attendance record.



F1=Register (Add information): This function has a series of activities that an administrator must do just once when registering students and teachers for the attendance system. Only the administrator has access to this information.

F2=Validate (): In this function, the user's input is cross-verified against the database based on student or teacher details saved in the database, and then further processing can be done.

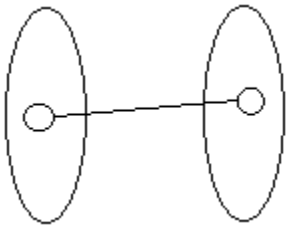
F3= Login (): The data transferred from the student's mobile device to the server, where the credentials are checked, and if the process is completed, the student can VIEW his own personal attendance data.



Every input given to this function F1, F2, F3 will only have two potential values, namely true or false Boolean values.

F4=Attendance Mark (): In this function, the student logs in using his or her registered login and password, and his or her attendance are recorded using the IEMI number.

F5= Attendance Update (): The student attendance is updated using this function.



Functions F4 and F5 have one-by-one mapping since each student can view attendance.

F6= AttendanceView ():This function is called when the student has finished marking attendance. The results can be viewed and manipulated by the staff/teachers. The attendance can also be shown to the student, but they are not permitted to change it. This will be posted throughout the portal and accessible to all users.

4.3 DATA FLOW DIAGRAM

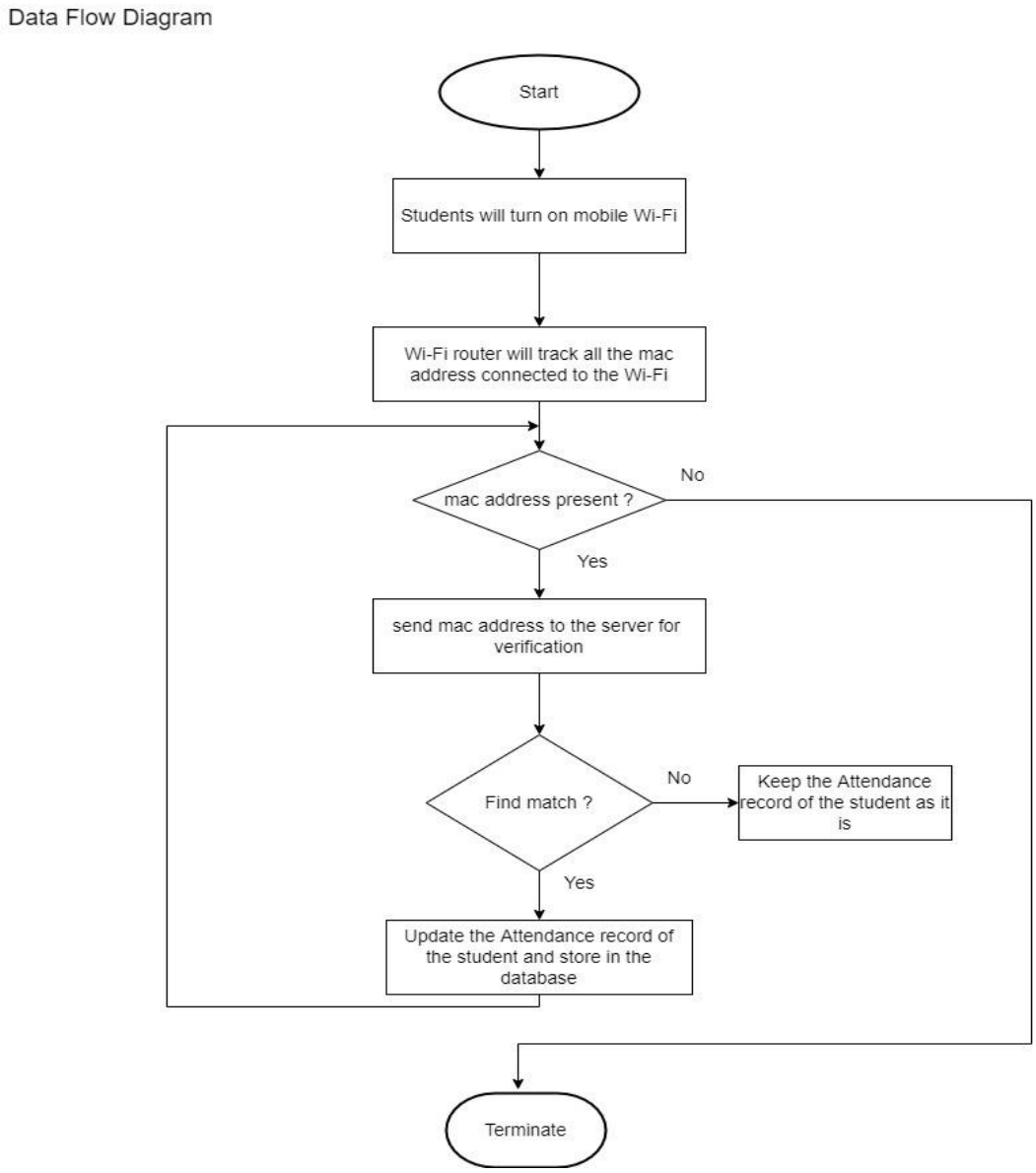


Fig 4.3. Data Flow Diagram

4.4 ENTITY RELATIONSHIP DIAGRAM.

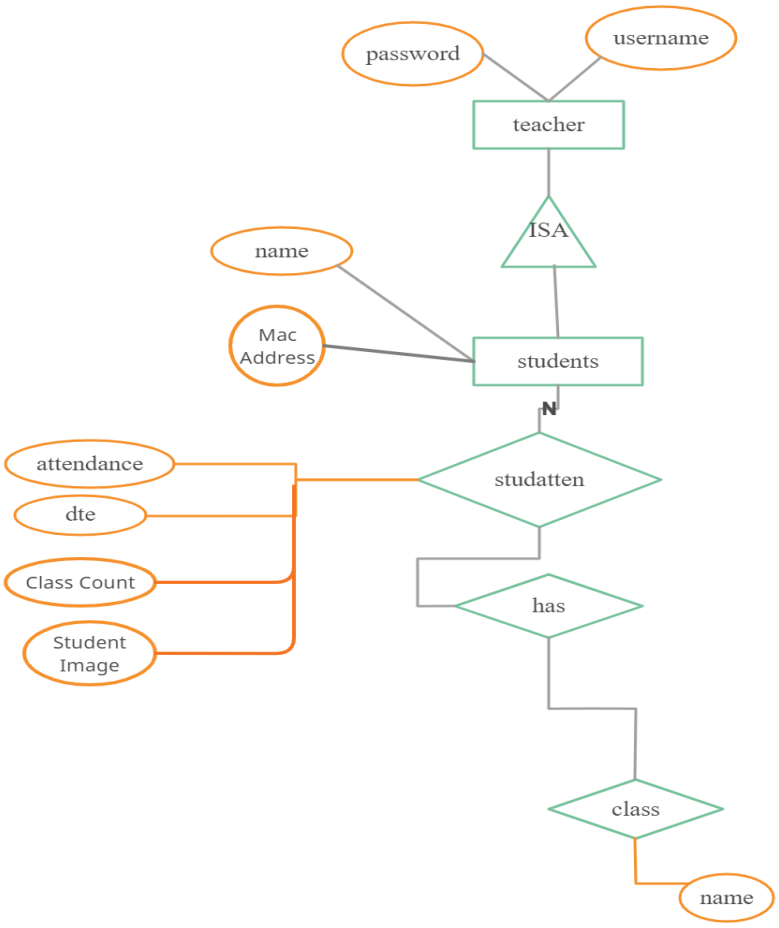


Fig 4.4. Entity relationship diagram.

4.5 UML Diagram

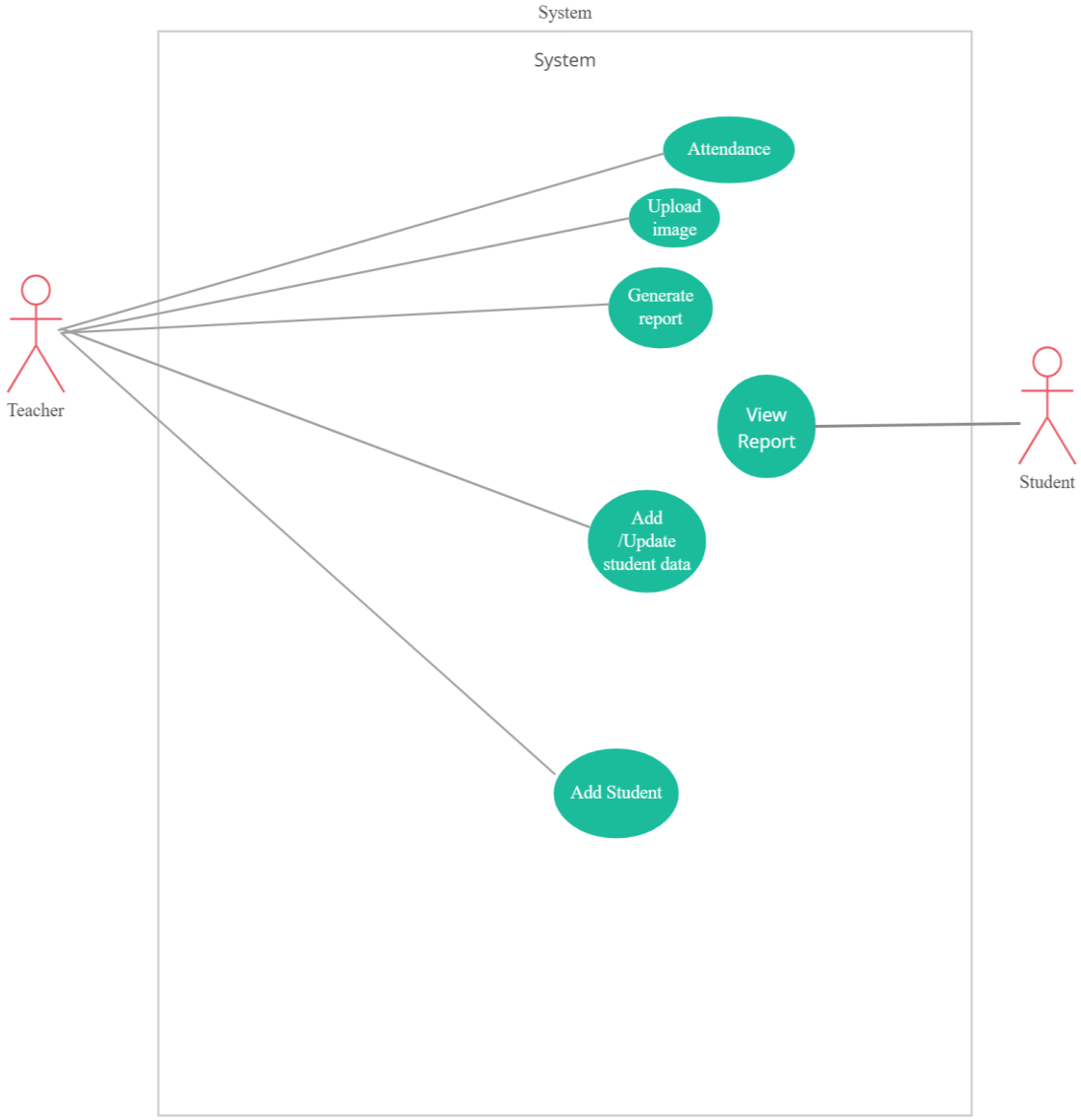


Fig4.5. UML Diagram

CHAPTER 5

PROJECT PLAN

5.1 PROJECT ESTIMATE

We have made metric of some of the factors which will be directly involved in the project, called Project metric such as cost, time. Process metrics will be helpful to measure the value of creation that is formed. This system of measurement will be examined to deliver indicators for guide supervision and practical movements.

5.1.1 Reconciled Estimates

5.1.1.1 Cost Estimate

Sr No	Hardware/Software	Quantity	Cost
1.	Python IDE/ Google Colab Notebook	1	Open Source
2.	Windows 10 OS	1	-
3.	Wi-Fi	Total	0.0/-

Table 5.1.1.1 Cost Estimates

Month	Activity
July 2021	Searching and selection of domain and topic
August 2021	Literature survey, problem definition
September 2021	Requirement gathering & planning for the project
October 2021	Planning of the project
November 2021	Analysis and design the GUI of the project
December 2021	Construction/implementation of first project module
January 2022	Construction/implementation of second project module
February 2022	Construction/implementation of third project module
March 2022	Testing of all modules to meet the requirement of project
April 2022	Project report making in Word and Submission of project report

Table 5.1.1.2: Time estimation

5.2 RISK MANAGEMENT

5.2.1 Risk Identification

Risk is an inextricable and inevitable aspect of the software development process, which changes continuously throughout the duration of a project, influencing both the project and the product. As a result, it becomes necessary to deal with and manage these risks in a timely and effective manner. When something goes wrong with a deep learning application, the difficulties and risks it causes frequently cause greater concern than the cause. Risks should be identified and addressed as early in the project as practicable. Risk assessment takes place throughout the project life cycle, with a focus on major milestones. One of the main issues discussed at frequent project status and reporting meetings is risk identification. Some risks are obvious to the project team—known risks; others require more investigation but are nonetheless predictable.

The risk register, which is kept on the central project server, is used to keep track of all recognized risks during the project.

5.2.2 Risk Analysis

Risk analysis entails determining how the risk event's influence will affect project outcomes and objectives. Once the dangers have remained recognized, they are inspected to regulate the risk's qualitative and quantitative effect on the plan so that appropriate moderation actions can be accomplished.

5.2.3 Overview of Risk Mitigation, Monitoring, Management

Risk mitigation is a strategy for a data center to prepare for and mitigate the effects of risks. Risk mitigation, like risk reduction, aims to mitigate the negative effects of risks and disasters on business continuity. Cyber-attacks, weather occurrences, and other causes of physical or virtual harm to a data center are examples of threats that could put a corporation at danger. Risks must be examined at regular intervals so that the team may re-evaluate each risk to see whether new

Conditions have changed its probability and/or impact. Individuals own and oversee proactive activities, which is a32 essential to successful risk management. Key to successful risk management is that proactive actions are owned by individuals and are monitored.

5.3 PROJECT SCHEDULE

5.3.1 Project Task Set

Project stages are:

Task 1: Requirement Analysis (Base Paper Explanation). Task 2: Project Specification (Paperwork).

Task 3: Technology Study and Design.

Task 4: Coding and Implementation (Module Development).

5.3.2 Task Network

Individual tasks and subtasks have interdependencies based on their sequence. A task net-work is a graphic representation of the task flow for project. Project tasks and their dependencies are noted

5.3.3 Timeline Chart

Schedule		Project Activity
July	1st week	Formation of Project Group
	2nd week	Project Topic Selection
	3rd week	Synopsis Submission
August	1st week	Presentation on Project Ideas
	2nd week	Submission of Literature Survey
	3rd week	Feasibility Assessment
September	1st week	Mid Sem Presentation
	2nd week	Mathematical model finalization
	4th week	End Sem Presentation
October	1st week	Report Preparation and Submission
December	4th week	1st Module presentation
January	1st week	Discussion about further strategy of developing Prototype
	2nd week	2nd Module Implementation followed by presentation
February	3rd week	Design test cases for module
	4th week	Developing User Interface
March	2nd week	Integration all modules including interactive GUI

Table 5.3.3 Timeline Chart

5.4 TEAM ORGANIZATION

5.4.1 Team Structure

Guide name: Prof. Shailaja Pede**.**

Members: Harshal Chaudhary.

Satyavardhan Kakade.

Aniket Kamble.

Aditya Karjule.

5.4.1 Management and communication

The first five weeks were spent searching for and selecting domain and project ideas, then doing a literature review and developing a problem definition. We were able to determine various techniques used today for taking attendance and also we found out that most of the techniques are quite expensive and require maintenance every time. So we came across concept of beacon which was very rarely used concept but for using beacons also we require hardware so we thought of implementing some different type of beacons that is virtual beacons which indirectly use Wi-Fi for the processes. We used router as external access point to get users connected to the network and get attendance of those users in system. We thought we might have to give some different proxy prevention measures so we thought of using MAC address of devices to capture attendance.

CHAPTER 6

PROJECT IMPLEMENTATION.

6. PROJECT IMPLEMENTATION.

6.1 OVERVIEW OF PROJECT MODULES.

Teacher Module: The teacher can add a specific student using their name and mac address as a mandatory field for the purpose of taking attendance of students.

- The teacher can upload image for the specific student for the first-time student registration.
- The teacher can view the report of students attending a class for a subject over a week.

Student Module: The student can view his/her attendance using their mac address of device and their name.

6.2 TOOLS AND TECHNOLOGIES USED

6.2.1 Python

Python is a useful tool with numerous advantages. It is adaptable and always improving because it is open source. Python's intrinsic simplicity and readability, which makes it a beginner-friendly language, is one of its best advantages. It has a simple and clear grammar, making it easier to learn than most other languages. Python is widely used for data analysis, statistical analysis, web development, text processing, and a variety of other applications. There are so many libraries to choose from that you're likely to find one that's perfect for your Data Science requirements. NumPy was one of the first Python libraries to gain a place in the Data Science world. It is ideal for scientific computing because it includes high-level mathematical functions that operate on multi-dimensional arrays and matrices. NumPy was used to create Pandas.

6.2.2 HTML

HTML (Hypertext Markup Language) is the utmost fundamental component of the Internet. It establishes the structure and meaning of web content. Other technologies are commonly used to describe a web page's entrance/appearance (CSS) or functionality/conduct (JS) in addition to HTML (JavaScript). The term "hypertext" refers to links that join online pages inside a solo website or among websites. Links are an important part of the Internet. You become an dynamic contributor in the World Wide Web by uploading content to the Internet and linking it to other people's pages.

6.3 ALGORITHMIC DETAILS

Algorithm Steps:

1) Open Web application
2) Add Student Name and MAC address from admin login
3) Connect to router which is configured for marking the attendance
4) The MAC address of the device will be matched for the MAC address stored in the system.
5) The person associated with MAC address will be marked as present.
6) One can view his/her attendance by accessing the student portal by using name and MAC address.

CHAPTER 7

SOFTWARE TESTING

7. SOFTWARE TESTING

7.1 TYPES OF TESTING

1) Unit Testing

The testing of a single unit or a group of related units is known as unit testing. It belongs to the category of white box testing. It is frequently used by programmers to ensure that the unit they have created is producing expected output from supplied input.

2) Integration testing

Integration testing occurs when a set of components is combined to achieve a result. In addition, if software and hardware components have any relationship, integration testing is used to examine the interaction between them. It might be classified as both white box and black box testing. Underneath it, there are two tests. (a) From the top to the bottom. (b) From the bottom to the top. From top to bottom, the system is separated into various modules. Each module is thoroughly tested from beginning to end. From bottom to top: In this form of testing, each module is tested separately before being combined.

3) Functional Testing

It is a type of testing to ensure whether the functionality in system works. It is type of black-box testing.

4) Stress Testing.

Stress testing is a method of determining how a system performs under adverse situations. Testing is carried out beyond the standards' boundaries. It belongs to the category of black box testing.

5) Performance Testing

Performance testing is used to evaluate a system's speed and efficacy, as well as to ensure that it produces results within a set time frame, as defined by performance requirements. It belongs to the category of black box testing.

6) Usability Evaluation

Usability testing is done from the client's perspective to see how user-friendly the interface is. How easy is it for the client to learn? How well can the customer perform after learning how to use? How enjoyable is it to utilize the design? This is referred to as black box testing.

7.2 TEST CASES AND RESULTS.

Test case id	Component	Test Case	Expected Result	Actual Result	Status
1	Front end	Header of the web page	Present	Present	Passed
		Upload button available	Present	Present	Passed
		Submit button available	Present	Present	Passed

Table 7.2.1 Functional Testing

Test case id	Test Case	Expected Result	Actual Result	Status
1	Upload button clicked	Upload window opens	Upload window opens	Passed
	Choose File	Open window to choose file from system	Open window to choose file from system	
2	Report generation after attendance.	All Students attendance is displayed according to their roll no and mac address	All Students attendance is displayed according to their roll no and mac address	Passed
3	MAC address verify.	MAC address is check for presence in system and then attendance is marked	The MAC address is being checked while taking attendance for student	Passed
4	Submit button is clicked with a picture uploaded	Entry of student is created in database	Entry of student is created in database	Passed
	Submit button is clicked without a picture uploaded	Entry of student is created in database without image	Entry of student is created in database without image	Passed
5	User uploads his picture	It is stored in database	It is stored in database	Passed
	User uploads a different picture	It is stored in database	It is stored in database	Passed
	User click on submit without uploading a picture	Return back to main page	Return back to main page	Passed
	User click on upload button	Image is uploaded	Image is uploaded	Passed
	Image upload	Image uploaded is displayed	Image uploaded is displayed	Passed

Table 7.2.2 Non-Functional Testing

CHAPTER 8

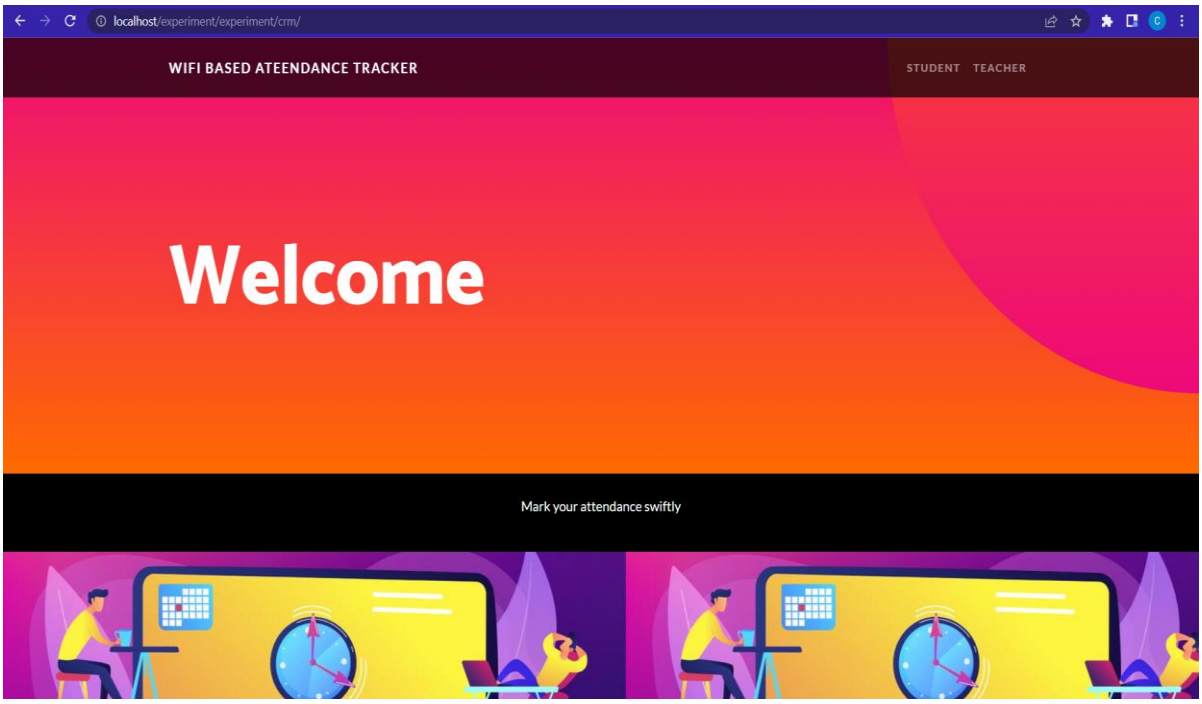
RESULT

8. RESULT

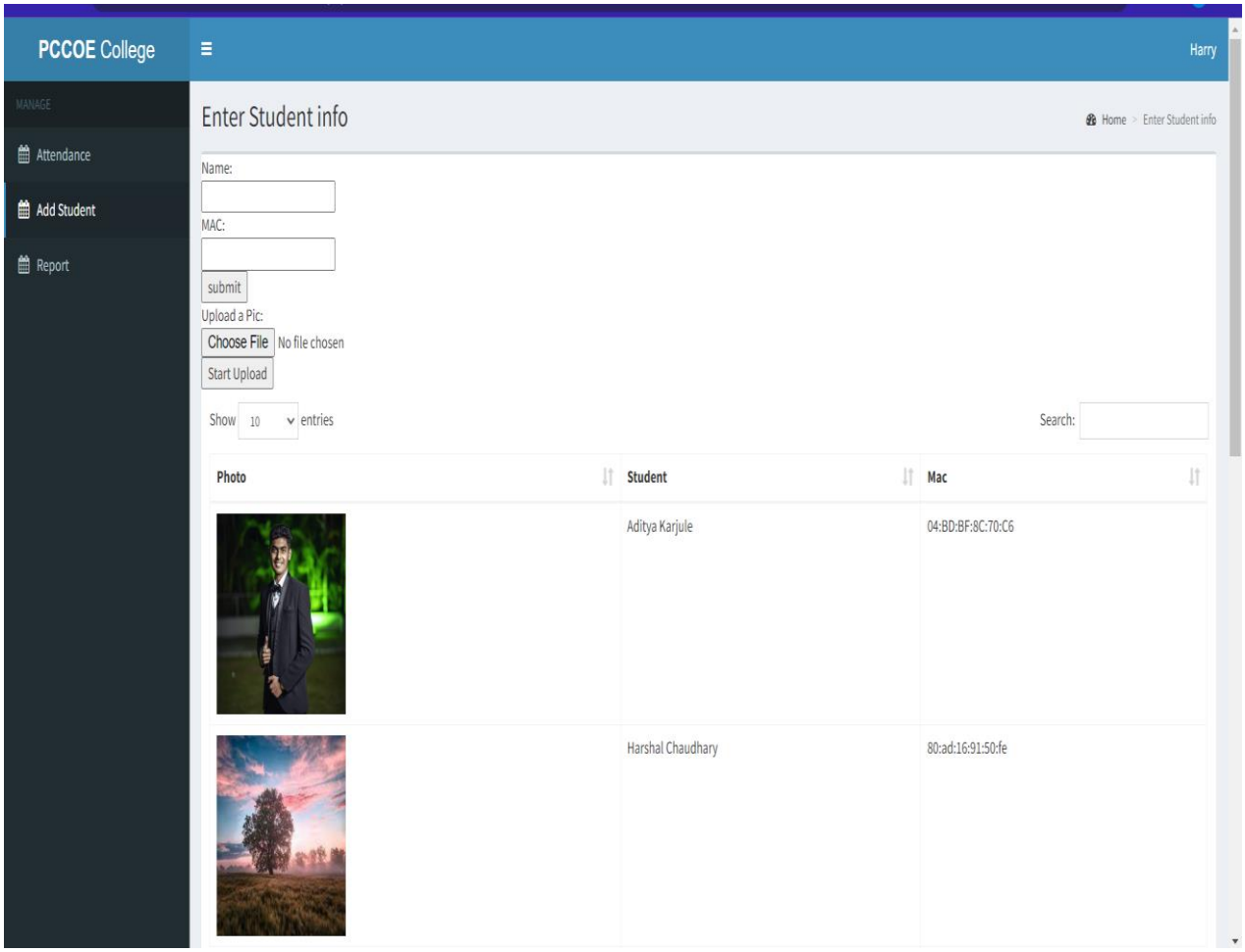
8.1 SCREENSHOTS:

GUI:

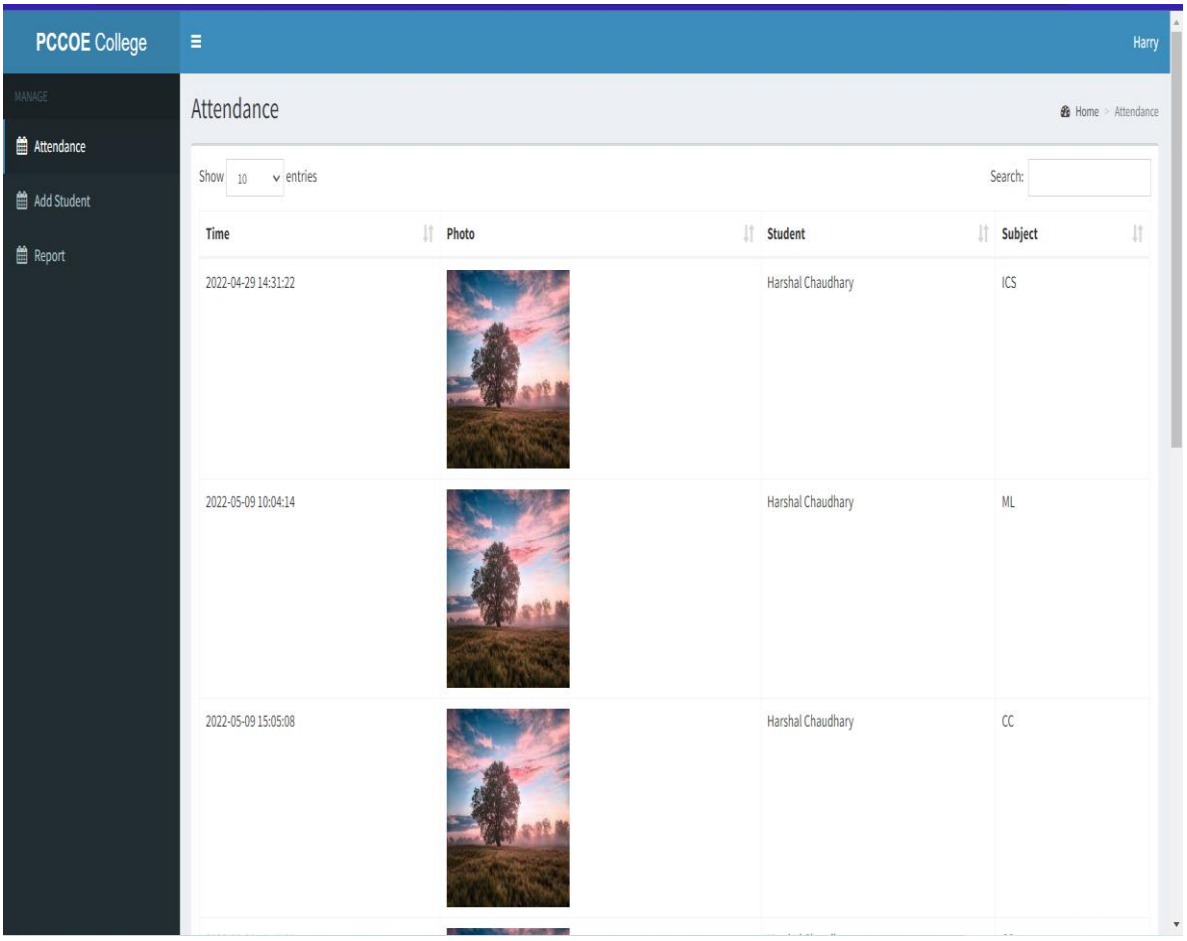
1) Home Page:



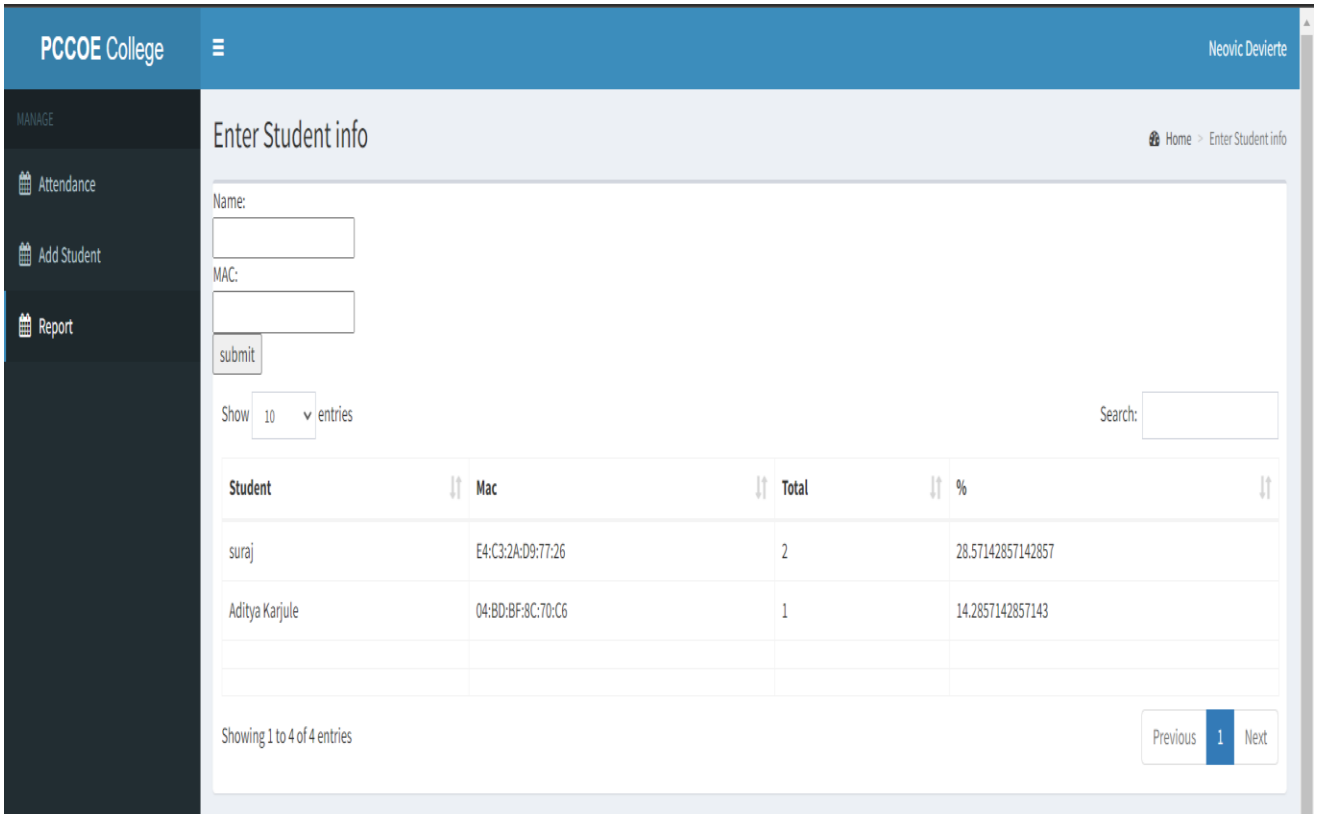
Add Student:


PCCOE College
Harry
MANAGE
Attendance
Add Student
Report
Enter Student info
Home > Enter Student info
Name:
MAC:
submit
Upload a Pic:
Choose File
No file chosen
Start Upload
Show 10 entries
Search:
Photo
Student
Mac
Aditya Karjule
04:BD:BF:8C:70:C6
Harshal Chaudhary
80:ad:16:91:50:fe

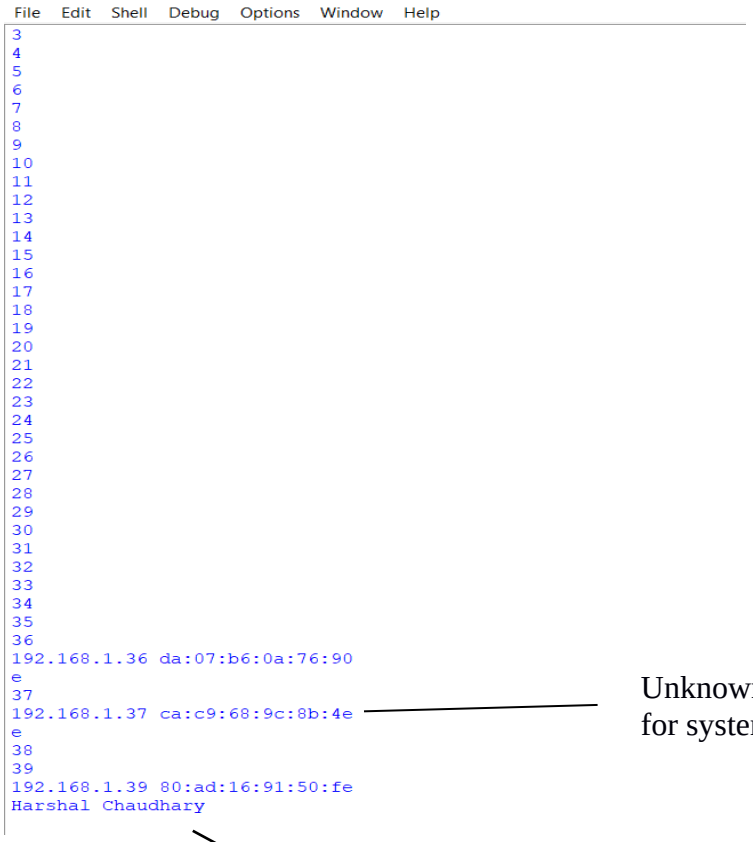
Student Attendance with Time:



Student Report:



Implementation of Attendance Tracking:



Unknown MAC addresses for system

Found user registered on system and attendance is registered for this user

CHAPTER 9

CONCLUSION

9. CONCLUSION

9.1 CONCLUSION

This work is done with the help of Xampp server and Android mobile. Its aim is to detect Students with in the classroom and mark their attendance. It displays the students roll numbers who were present in the classroom. Thus, it automatically marks the attendance of the students with in the classroom. It can be extended for implementation in Schools, Organization etc. In this world of Automation, this automatic attendance management system plays a major role in various fields. This system is quite a large project we have just tried to demonstrate some unique way to track attendance which has not been used in any system as far as our research says.

9.2 FUTURE WORK.

Automate attendance management with mobile devices to lessen reliance on natural resources while also providing a method for parents and instructors to communicate. Integrating the student's mobile phones with the application so that it detects the pupils who are present automatically is a nice feature to add in the future. We will make every effort to compile a daily report that will be sent to the centralized server for storage. Wi-Fi technology can also be used for communication between the device and the central server. Calculating the in-time and out-time of students entering the class can easily yield the overall attendance for the class. The technology automatically generates a personalized attendance report, allowing staff to save time when taking attendance in the classroom. In the future, this work may be turned into web services that could be used across all domains. In addition, 3-D photos could be used in the future to improve accuracy.

9.3 APPLICATION

1. School.
2. Companies.
3. Colleges.
4. Seminars.

Schools: In various schools where managing lectures attendance for every class is not possible manually can use such systems for their usage.

Companies: In various MNC companies we can see there are so many employees and we cannot get to track each employee manually, so by this system over 60 people can connect together and mark their attendance easily.

Colleges: This is the main area where our application proves to be very good since most of the colleges take attendance manually or using some face recognition software our system is easy enough as compared to other systems.

Seminars: For various industrial seminars where there is no time for attendance since the seminars have short durations our systems can be used to easily record anyone's attendance who is obviously in the seminar by their device MAC addresses.

APPENDIX A:

RISK MANAGEMENT W.R.T. NP HARD ANALYSIS

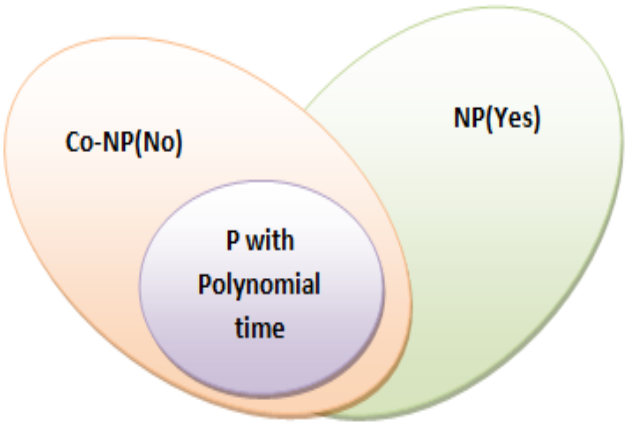
Risk is inevitable in a business organization when undertaking projects. However, the project manager needs to ensure that risks are kept to a minimal. Risks can be mainly divided between two types, negative impact risk and positive impact risk. Not all the time would project managers be facing negative impact risks as there are positive impact risks too Once the risk has been identified, project managers need to come up with a mitigation plan or any other solution to counter attack the risk.

What is P?

P is set of all decision problems which can be solved in polynomial time by a deterministic.
Since it can be solved in polynomial time, it can be verified in polynomial time.
Therefore, P is a subset of NP.

P:

Handling of large data and deploying data on cloud by VMs.



What is NP?

"NP" means "we can solve it in polynomial time if we can break the normal rules of step-by-step computing".

What is NP Hard?

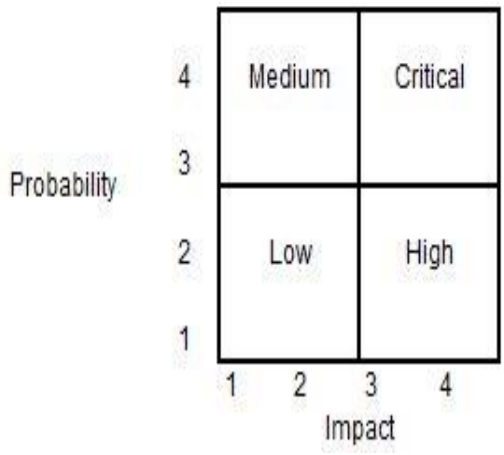
A problem is NP-hard if an algorithm for solving it can be translated into one for solving any NP-problem (nondeterministic polynomial time) problem. NP-hard therefore means "at least as hard as any NP-problem," although it might, in fact, be harder.

Risk Identification

Any unauthorized user should be prevented from accessing the system. Password authentication can be introduced. To ensure the safety of the system, perform regular monitoring of the system so as to trace the proper working of the system. An internal staff has to be trained to ensure the safety of the system. He has to be trained to handle extreme error cases.

Risk Analysis

Risks can be evaluated based on quantity. Project managers need to analyze the likely chances of a risk occurring with the help of a matrix.



Using the matrix, the project manager can categorize the risk into four categories as Low, Medium, High and Critical. The probability of occurrence and the impact on the project are the two parameters used for placing the risk in the matrix categories. As an example, if a risk for it. Occurrence is low (probability = 2) and it has the highest impact (impact = 4), the risk can be categorized as 'High'.

Overview of Risk Mitigation, Monitoring, Management.

Risk Response

When it comes to risk management, it depends on the project manager to choose strategies that will reduce the risk to minimal. Project managers can choose between the four risk response strategies, which are outlined below.

Risks can be avoided by:

- Pass on the risk
- Take corrective measures to reduce the impact of risks
- Acknowledge the risk

Risk Monitoring and Control

Risks can be monitored on a continuous basis to check if any change is made. New risks can be identified through the constant monitoring and assessing mechanisms.

Risk Management Process

Following are the considerations when it comes to risk management process:

- Each person involved in the process of planning needs to identify and understand the risks pertaining to the project.
- Once the team members have given their list of risks, the risks should be consolidated to a single list in order to remove the duplications.
- Assessing the probability and impact of the risks involved with the help of a matrix.
- Split the team into subgroups where each group will identify the triggers that lead to project risks.
- The teams need to come up with a contingency plan whereby to strategically eliminate the risks involved or identified.
- Plan the risk management process. Each person involved in the project is assigned a risk in which he/she looks out for any triggers and then finds a suitable solution

Risk Register

Often project managers will compile a document, which outlines the risks involved and the strategies in place. This document is vital as it provides a huge deal of information. Risk register will often consist of diagrams to aid the reader as to the types of risks that are dealt by the organization and the course of action taken. The risk register should be freely accessible for all the members of the project team.

Project Risk; an Opportunity or a Threat?

As mentioned above, risks contain two sides. It can be either viewed as a negative element or a positive element. Negative risks can be detrimental factors that can haphazard situations for a project. Therefore, these should be curbed once identified. On the other hand, positive risks can bring about acknowledgements from both the customer and the management. All the risks need to be addressed by the project manager.

APPENDIX B:

Paper published in **IJRDT**:

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ISSN NO: - 2349-3585 (Open Access peer Review Journal)

CERTIFICATE *of* PUBLICATION

THIS IS TO CERTIFY THAT

Prof. Shailaja Pede

HAS PUBLISHED RESEARCH PAPER ENTITLED

Attendance Tracking System Using Wi-Fi.

For Volume-17, Issue-4, Apr-2022 in IJRDT.

No. IJRDTCERT I1704026

VOL-17, ISSUE-4
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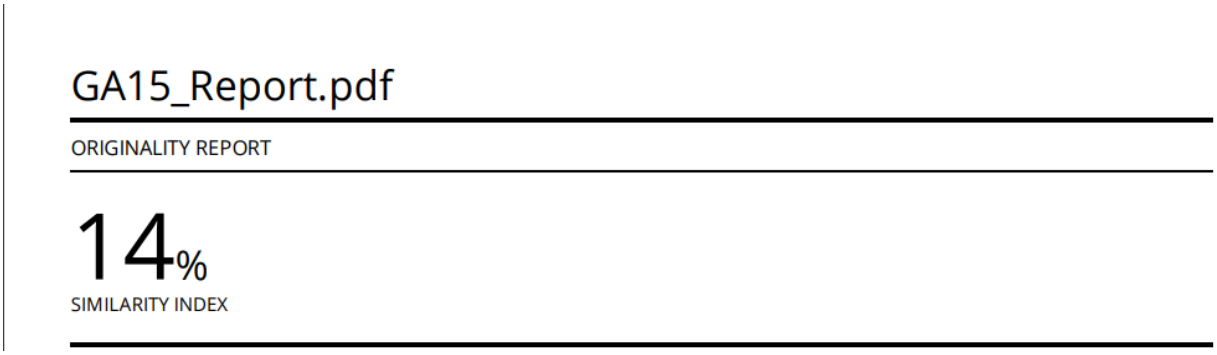
APPENDIX C:

Report Plagiarism:



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[1] Mahadi Hasan, Dipto Saha, jannatul Ferdosh, Fernaz Narin Nu, Nazmun Nessa Moon, Mohd. Saifuzzaman, BSSID based Monitoring Class Attendance System Using Wi-Fi Proceedings of the Third International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC 2019) IEEE Xplore Part Number:CFP19OSV-ART;

Wireless technology improvements have accelerated the use of smart systems in everyday life. People nowadays use Wi-Fi connectivity to access the Internet or a local hub within their house or office. This study develops a smart phone-based verification system for tracking class attendance via Wi-Fi signal. The application must be installed by students, teachers, and administrators**.**

[2] Neil Sharma, Behara Manoj Kumar, Ajay Patil, Abhilash Kale, Nikhil Lambe, Attendance Tracking System Using Wi-Fi International Journal of Engineering and Technical Research (IJETR) ISSN: 2321-0869, Volume-3, Issue-4, April 2015.

The typical approach to attendance tracking is a time-consuming process. Using pen and paper, the individual must keep track of his or her attendance in registers and files. The problem with this strategy is that it necessitates a large amount of paper, which is a nonrenewable natural resource. We are living in an era where we must consider long-term development. Using mobile phones to manage attendance is an alternate option to go in this route.

[3] Xiao Xiao Liu & Jun Steed Huang, Zujue Chen The Human Positioning System Based on the Wi-Fi Direct and Precision Time Protocol. 2011 International Conference on Transportation, Mechanical, and Electrical Engineering (TMEE) December 16-18, Changchun, China.

Due to the severe environment and unique geological conditions, current technology on the domestic market, when utilized in a coal mine, is unable to adequately meet the need for accurate miner positioning and tracking. RFID technology, for example, which is widely used in most

Chinese colliery industry monitoring and positioning systems, merely serves as an attendance system. When the catastrophe occurs, the technology is unable to pinpoint the miners trapped underneath. And the use of Wi-Fi in an underground site has its own set of limitations due to the lack of precision.

[4] Huimin Zhang, Xinlei Feng, Hongyu Liu, Ping Guo, Sujatha Krishnamurthy, Changing Zhang. cloud-based class attendance record system Eran Tromer2 (2005-11-20). "Cache Attacks and Countermeasures: the Case of AES" (PDF). Retrieved 2008-11-02.

Communicate with one another and obtain information about ourselves and the world around us. Smart Transportation, Smart Energy, Smart Healthcare, and Smart Waste Management are just a few of the domains where iot has been shown to be cost-effective and efficient in addressing underlying issues and flaws. The Internet of Things has seen steady expansion and interest as the cost of computing devices, sensors, and internet has decreased.

[5] Neil Sharma, Behara Manoj Kumar,Attendance Tracking System Using Wi-Fi International Journal of Engineering and Technical Research (IJETR) ISSN: 2321-0869, Volume-3, Issue-4, April 2019

Neil Sharma, Behara Manoj Kumar The typical approach to attendance tracking is a time-consuming process. Using pen and paper, the individual must keep track of his or her attendance in registers and files. It tracks attendance with help of mobile application by access point setup to connect users to register attendance. It is good for those who want to setup for large infrastructure with less cost.It helps in maintaining attendance without manually doing entry into database.

[6] Purvaja Pradip Godbole; Anubhav Tomar,IoT Based Secured Online Attendance Management System 2020 IEEE 7th International Conference on Engineering Technologies and Applied Sciences (ICETAS)

This paper focuses on a Wi-Fi attendance system framework using IoT devices. Design a system that can dial in attendance using only Wi-Fi. This means that traditional assistive systems, such as biometrics and piercing, can be replaced by this system due to its lack of progress and capacity for human intervention

[7] Jawad Rasheed; Erdal Alimovski,mManagement: Wi-Fi Hotspot based Attendance Application using Android Smartphone 2019 1st International Informatics and Software Engineering Conference (UBMYK)

It proposed and developed a fully automated android smartphone application. It marks and tracks attendance as mManagement solution with an additional Wi-Fi hotspot feature. The objective of our application is to optimize the performance of taking attendance in an efficient and effective way