PROJECT REPORT

HEALTH MONITORING AND ALERT SYSTEM

In the partial fulfillment of the requirement

for the degree of

Bachelor of Technology

in

Information Technology

PREPARED BY

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UNDER GUIDANCE OF

External Guide

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Project In-Charge,

INFOLABZS IT SERVICE PVT LTD

Internal Guide

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SUBMITTED TO

INSTITUTE OF TECHNOLOGY AND ENGINEERING

INDUS UNIVERSITY CAMPUS, RANCHARDA, VIA-THALTEJ

AHMEDABAD-382115, GUJARAT, INDIA,

APRIL 2022

PROJECT REPORT

ON

HEALTH MONITORING AND ALERT SYSTEM

Bachelor of Technology

In

Information Technology

Of

Institute of Technology & Engineering,

Indus University, Ahmedabad

Submitted To:

Prof. Jignesh Patel

Assistant Professor,

Department of C.E.

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Submitted by:

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www.indusuni.ac.in

APRIL 2022

CANDIDATE'S DECLARATION

We declare that the final semester report entitled **"Health Monitoring and Alert System"** is our own work conducted under the supervision of the industry guide **Mr. Chintan Nagrecha** and internal guide **Prof. Jignesh Patel.**

We further declare that to the best of our knowledge, the report for B.Tech final semester does not contain part of the work which has been submitted for the award of B.Tech Degree either in this university or any other university without proper citation.

_____

Candidate's Signature

Devarsh J Patel (IU1841220063)
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Het Patel (IU1841220031)

_____

Guide: Prof. Jignesh Patel
Department of Computer Engineering,
Institute of Technology & Engineering,
Indus University: Ahmedabad, Gujarat

COMPANY'S CERTIFICATE

INFOLABZ IT SERVICES
WEB DEVELOPMENT | APP DEVELOPMENT | IOT

CERTIFICATE OF COMPLETION

DATE: 15 / 04 / 2022

To,

The College Authority,

Indus University,

This is to certify that web development intern Mr. Patel Devarsh Jayeshbhai is successfully undergoing training on "IOT BASED HEALTH MONITORING AND ALERT SYSTEM". He has completed project and delivered the result as committed. He has worked as per company norms for interns at our company premises from January 2022 to Till Date. He is permitted to prepare the project report for final evaluation.

We have noticed that, during the period, he has shown keen interest in his project work, tasks provided by us and was also regular in attendance.

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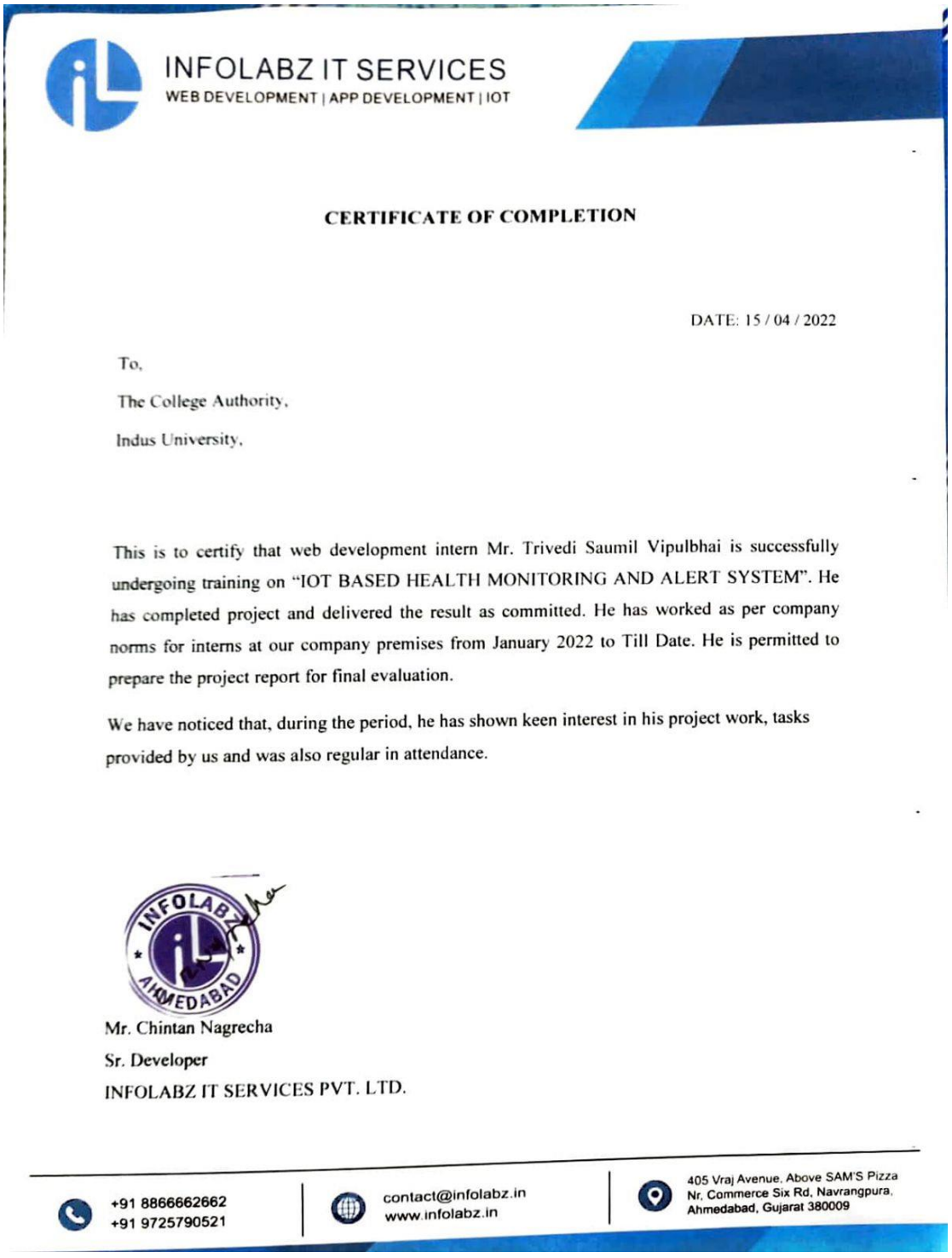

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To,

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This is to certify that web development intern Mr. Trivedi Saumil Vipulbhai is successfully undergoing training on "IOT BASED HEALTH MONITORING AND ALERT SYSTEM". He has completed project and delivered the result as committed. He has worked as per company norms for interns at our company premises from January 2022 to Till Date. He is permitted to prepare the project report for final evaluation.

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CERTIFICATE OF COMPLETION

DATE: 15 / 04 / 2022

To,

The College Authority,

Indus University,

This is to certify that web development intern Mr. Patel Het Pankajbhai is successfully undergoing training on "IOT BASED HEALTH MONITORING AND ALERT SYSTEM". He has completed project and delivered the result as committed. He has worked as per company norms for interns at our company premises from January 2022 to Till Date. He is permitted to prepare the project report for final evaluation.

We have noticed that, during the period, he has shown keen interest in his project work, tasks provided by us and was also regular in attendance.

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INDUS INSTITUTE OF TECHNOLOGY AND ENGINEERING

INDUS UNIVERSITY

AHMEDABAD

2021 – 2022

CERTIRFICATE

Date; 09TH April, 2022

This is to certify that the project work entitled **"Health Monitoring and Alert System"** has been carried out by **Devarsh Patel, Saumil Trivedi and Het Patel** under my guidance in partial fulfillment of degree of Bachelor of Technology in **Information Technology (Final Year)** of Indus University, Ahmedabad during the academic year 2021 – 2022.

Prof. Jignesh Patel	Dr. Seema Mahajan
Assistant Professor	Head of the Department,
Department of C.E.,	Department of C.E.,
I.T.E, Indus University	I.T.E, Indus University
Ahmedabad	Ahmedabad

ACKNOWLEDGEMENT

Presentation inspiration and motivation have always played a key role in the success of any venture

Final year project training is one of the most important parts of the B-Tech degree which has helped us to gain a lot experience which will be beneficial in our professional career.

We express our sincere thanks to Mr. Chintan Nagrecha, from INFOLABZ IT SERVICE PVT LTD, to encourage us to the highest peak and to provide us the opportunity to prepare the project. We are immensely obliged to our friends for their elevating inspiration, encouraging guidance and kind supervision in the completion of my project.

We are thankful to our head of department Dr. Seema Mahajan for encouraging and allowing us an opportunity to learn corporate culture during our last year of B-Tech at the same time, we want to thank all our faculty members especially Prof. Jignesh Patel, our internal project guide for continuous help and monitoring during the project.

Last, but not the least, our parents are also an important inspiration for ours. So, with due regards, we express our gratitude's to them.

-Devarsh Patel
-Saumil Trivedi
-Het Patel

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ABSTRACT

With the commencement of the COVID-19 pandemic, social distancing and quarantine are becoming essential practices in the world. IoT health monitoring systems prevent frequent visits to doctors and meetings between patients and medical professionals.

However, many individuals require regular health monitoring and observation through medical staff.

In this proposed work, we have taken advantage of the technology to make patients life easier for earlier diagnosis and treatment. A smart health monitoring system is being developed using Internet of Things (IoT) technology which is capable of monitoring pulse rate, heart rate, oxygen level, and temperature of a person.

This system is helpful for rural areas or villages where nearby clinics can be in touch with city hospitals about their patient health conditions. However, if any changes occur in a patient's health based on standard values, then the IoT system will alert the physician or doctor accordingly.

COMPANY PROFILE

Established in 2016, incorporation with our parent IT company, INFOLABZ IT SERVICES PVT. LTD. has managed to make its own position in IT Sector. We are involved in Web Development, App Development, Progressive Web Application Development, IOT solutions, Graphics & Designing, Digital Marketing, Domain & Hosting services, SMS services etc.

In the span of six years, we have managed to deliver all projects on time with utmost accuracy to our clients across the globe. We have dedicated teams of experienced and hardworking developers. Our developers who are always willing to take new challenges and looking forward to learn new things, are heart of this company. Our objective is to sustain with exponential growth in IT industry.

Our mission is to deliver the best with top notch quality every quarter and vision is to develop a product with one of its kind concepts which could be used by millions of people.

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INTRODUCTION

1.1. Introduction of the project

Health is one of the global challenges for humanity. In the last decade the healthcare has drawn considerable amount of attention. Recently, the patient monitoring systems is one of the major advancements because of its improved technology.

In the traditional approach the healthcare professionals play the major role. They need to visit the patient's ward for necessary diagnosis and advising. There are two basic problems associated with this approach. a reliable and readily available patient monitoring system (PMS) is required. In order to improve the above condition,

We can buy variety of sensors in the market today such as ECG sensors, temperature sensors, pulse monitors etc. The cost of the sensors varies according to their size, flexibility and accuracy.

1.2. Objective

The main aim of this 'Health Monitoring System' is to build up a system fit for observing vital body signs, for example, body temperature, heart rate, pulse oximetry.

1.3. Advantages

- Real-time health monitoring systems using IoT can help doctors prioritize patients, and provide urgent care to those who are in the most danger thereby saving lives.

- More competent patient management can help utilize the resources of the hospital more wisely and save money.

- It is easy to use the system for patients and medical professionals.

- The remote health monitoring system is especially useful to monitor patients with chronic diseases. Most chronic diseases are incurable, so it is necessary to monitor the state of the patient while at home, and quickly respond if health indicators worsen.

- The HMS is convenient and portable so it is very convenient for doctors to manage patients from one app, and it is also very easy for patients to monitor their own health by wearing a lightweight device like a bracelet.

1.4. Tools & Technology

- Tools
    - PyCharm
    - Sublime
    - 000webhost
    - Google Chrome Browser
    -
- Technology
    - Frontend Technologies
        1. Html
        2. Css
        3. Js
    - Backend Technology
        1. Python
    - Database
        1. My SQL
    - Hardware
        1. IOT
    - Framework
        1. Django

1.5. Project RoadMap

Fig 1.5

2.ABOUT THE TOOLS & TECHNOLOGY

2.1. HTML
2.2. Css
2.3. Js
2.4. Python
2.5. API
2.6. My SQL
2.7. IOT
2.8. PyCharm
2.9. Sublime
2.10. 000webhost
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ABOUT THE TOOLS & TECHNOLOGY

2.1. HTML

HTML stands for Hypertext Markup Language. “Markup language” means that, rather than using a programming language to perform functions, HTML uses tags to identify different types of content and the purposes they each serve to the webpage.

2.2. CSS

CSS stands for Cascading Style Sheets. This programming language dictates how the HTML elements of a website should actually appear on the frontend of the page.

2.3. Js

JavaScript is a logic-based programming language that can be used to modify website content and make it behave in different ways in response to a user’s actions. Common uses for JavaScript include confirmation boxes, calls-to-action, and adding new identities to existing information.

2.4. Python

Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Its language constructs and object-oriented approach aim to help programmers write clear, logical code for small- and large-scale projects.

2.5. API

An application programming interface is a connection between computers or between computer programs. It is a type of software interface, offering a service to other pieces of software. A document or standard that describes how to build or use such a connection or interface is called an API specification.

2.6. My SQL

MySQL is the world's most popular open-source database. SQL is a language programmers use to create, modify and extract data from the relational database, as well as control user access to the database. With its proven performance, reliability and ease-of-use, MySQL has become the leading database choice for web-based applications, used by high profile web properties including Facebook, Twitter, YouTube, Yahoo! And many more.

2.7. IOT

The Internet of things describes physical objects with sensors, processing ability, software, and other technologies that connect and exchange data with other devices and systems over the Internet or other communications networks.

2.8. PyCharm

PyCharm is a dedicated Python Integrated Development Environment (IDE) providing a wide range of essential tools for Python developers, tightly integrated to create a convenient environment for productive Python, web, and data science development.

2.9. Sublime

Sublime Text is a shareware cross-platform source code editor. It natively supports many programming languages and markup languages. Users can expand its functionality with plugins, typically community-built and maintained under free-software licenses. To facilitate plugins, Sublime Text features a Python API.

2.10. 000webhost

000webhost is a free website hosting solution that provides an array of valuable features, including a website builder, WordPress support, and no ads.

2.11. Google Chrome Browser

Google Chrome is a cross-platform web browser developed by Google. It was first released in 2008 for Microsoft Windows built with free software components from Apple Web Kit and Mozilla Firefox. It was later ported to Linux, macOS, Ios, and Android where it is the default browser built into the OS. The browser is also the main component of Chrome OS, where it serves as the platform for web applications.

2.12. Django

Django is a high-level Python web framework that enables rapid development of secure and maintainable websites. Built by experienced developers, Django takes care of much of the hassle of web development, so you can focus on writing your app without needing to reinvent the wheel.

Other Hardware Requirements

- 4 GB RAM
- 512 GB HDD
- IOT SENSORS:
  - Contactless temperature sensor
  - ECG (Electro cardio gram) sensor
  - Oxygen sensor
  - Pulse sensor
- ARDUINO UNO
- BREADBOARD
- BUZZER
- LED
- NODE MCU (ESP8266)
- USB 2.0 cable type A/B
- JUMPER WIRES

Software Requirements:

- Windows 7 and above
- XAMPP/WAMPP server
- Web browser – Google chrome preferred
- PyCharm

3. PROJECT DESIGN PHASE

PROJECT DESIGN PHASE

3.1. Database Schema Design

3.1.1. Data Dictionary

- A Data Dictionary is a collection of names, definitions, and attributes about data elements that are being used or captured in a database, information system, or part of a research project.

- It describes the meanings and purposes of data elements within the context of a project, and provides guidance on interpretation, accepted meanings and representation.

- A Data Dictionary also provides metadata about data elements. The metadata included in a Data Dictionary can assist in defining the scope and characteristics of data elements, as well the rules for their usage and application.

1) Tbl_login.

ATTRIBUTE	CONSTRAIN	DATATYPE	SIZE
L_ID	PRIMARY_KEY	INT	5
EMAIL_ID	NOT_NULL	VARCHAR	25
PASSWORD	NOT_NULL	VARCHAR	25
CONTACT_NO	NOT_NULL	BIG INT	10
L_ROLE	NOT_NULL	INT	2
STATUS	NOT_NULL	INT	2

Fig 3.1

2) Tbl_detail.

ATTRIBUTE	CONSTRAIN	DATATYPE	SIZE
DETAIL_ID	PRIMARY_KEY	INT	5
L_ID	FOREIGN_KEY	VARCHAR	25
L_NAME	NOT_NULL	VARCHAR	25
DOB	NOT_NULL	DATE	
DISPLAY_PIC	NOT_NULL	LONG TEXT	100
ADDRESS	NOT_NULL	VARCHAR	35

Fig 3.2

3) Doctor_details

ATTRIBUTE	CONSTRAIN	DATATYPE	SIZE
DOC_ID	PRIMARY_KEY	INT	5
L_ID	FOREIGN_KEY	VARCHAR	25
HOSPITAL_NAME	NOT_NULL	VARCHAR	25
HOSPITAL_ADDRESS	NOT_NULL	VARCHAR	50

Fig 3.3

4) Device_table

ATTRIBUTE	CONSTRAIN	DATATYPE	SIZE
DEVICE_ID	PRIMARY_KEY	INT	5
L_ID	FORIENG KEY	INT	10
ADDED_TIME	NOT_NULL	DATETIME	

Fig 3.4

5) Pulse table

ATTRIBUTE	CONSTRAIN	DATATYPE	SIZE
PULSE_ID	PRIMARY_KEY	INT	5
DEVICE_ID	FORIENG KEY	INT	10
PULSE_VALUE	NOT_NULL	INT	25
ADDED_TIME	NOT_NULL	DATETIME	

Fig 3.5

6) ECG table

ATTRIBUTE	CONSTRAIN	DATATYPE	SIZE
ECG_ID	PRIMARY_KEY	INT	5
DEVICE_ID	FORIENG KEY	INT	10
ECG_VALUE	NOT_NULL	INT	25
ADDED_TIME	NOT_NULL	DATETIME	

Fig 3.6

7) Temperature table

ATTRIBUTE	CONSTRAIN	DATATYPE	SIZE
TEMP_ID	PRIMARY_KEY	INT	5
DEVICE_ID	FORIENG KEY	INT	10
TEMP_VALUE	NOT_NULL	INT	25
ADDED_TIME	NOT_NULL	DATETIME	

Fig 3.7

8) Oxygen table

ATTRIBUTE	CONSTRAIN	DATATYPE	SIZE
OXYGEN_ID	PRIMARY_KEY	INT	5
DEVICE_ID	FORIENG KEY	INT	10
OXYGEN_VALUE	NOT_NULL	INT	25
ADDED_TIME	NOT_NULL	DATETIME	

Fig 3.8

9) Warning table

ATTRIBUTE	CONSTRAIN	DATATYPE	SIZE
W_ID	PRIMARY_KEY	INT	5
DEVICE_ID	FOREIGN KEY	INT	5
TEMP_VALUE	NOT_NULL	VARCHAR	25
OXYGEN_VALUE	NOT_NULL	VARCHAR	25
ECG_VALUE	NOT_NULL	VARCHAR	25
PULSE_VALUE	NOT_NULL	VARCHAR	25
ADDED_TIME	NOT_NULL	DATETIME	

Fig 3.9

3.2. Data Modeling

3.2.1. ER Diagram

- An entity relationship model, also called an entity-relationship (ER) diagram, is a graphical representation of entities and their relationships to each other, typically used in computing in regard to the organization of data within databases or information systems**.**

- An entity is a piece of data-an object or concept about which data is stored.

- **There are three basic elements in E-R Diagram.**
  - Entities
  - Attributes
  - Relationship

- **Data Entity:**

  - A Data Entity, which will be referred to as entity flow now on, is the main symbol on an ERD.

  - An entity is anything, real or abstract, about which we went to store data.

- **Relationships:**

  A relationship is a diamond that contains its name. It touches one relationship-entity and optionally some attribute-entity connectors. It is linked with two entities.

ER Diagram

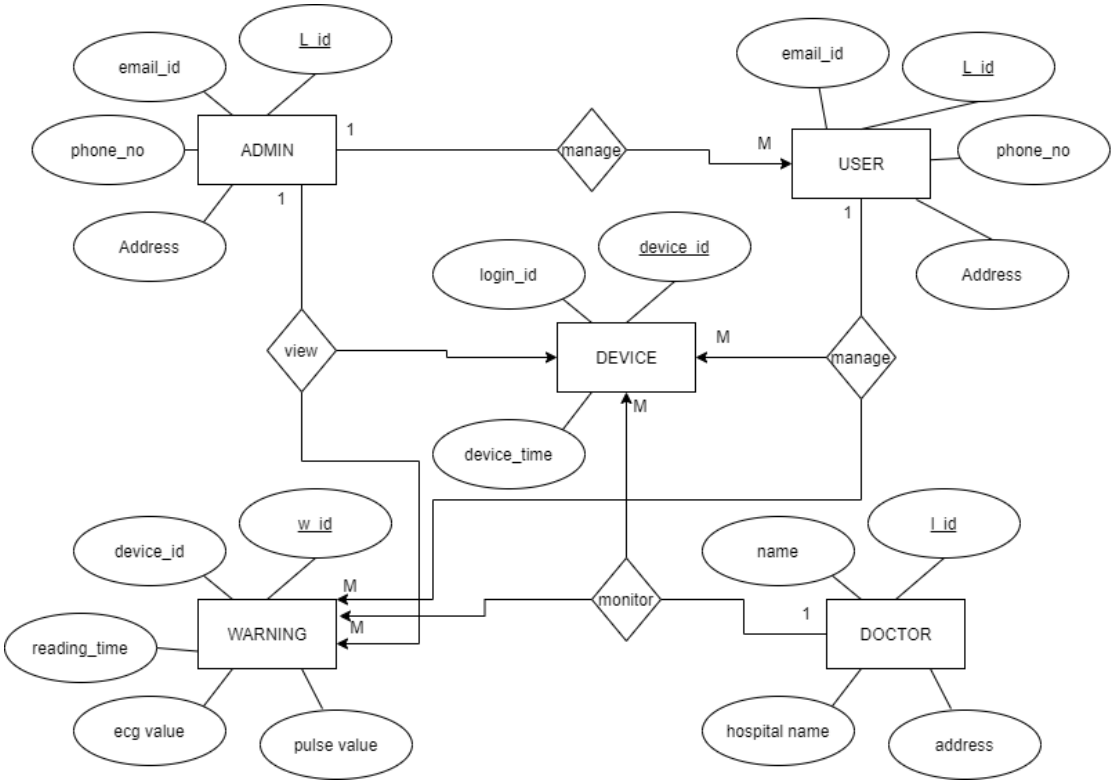

Fig 3.10

3.2.2. UML Diagram

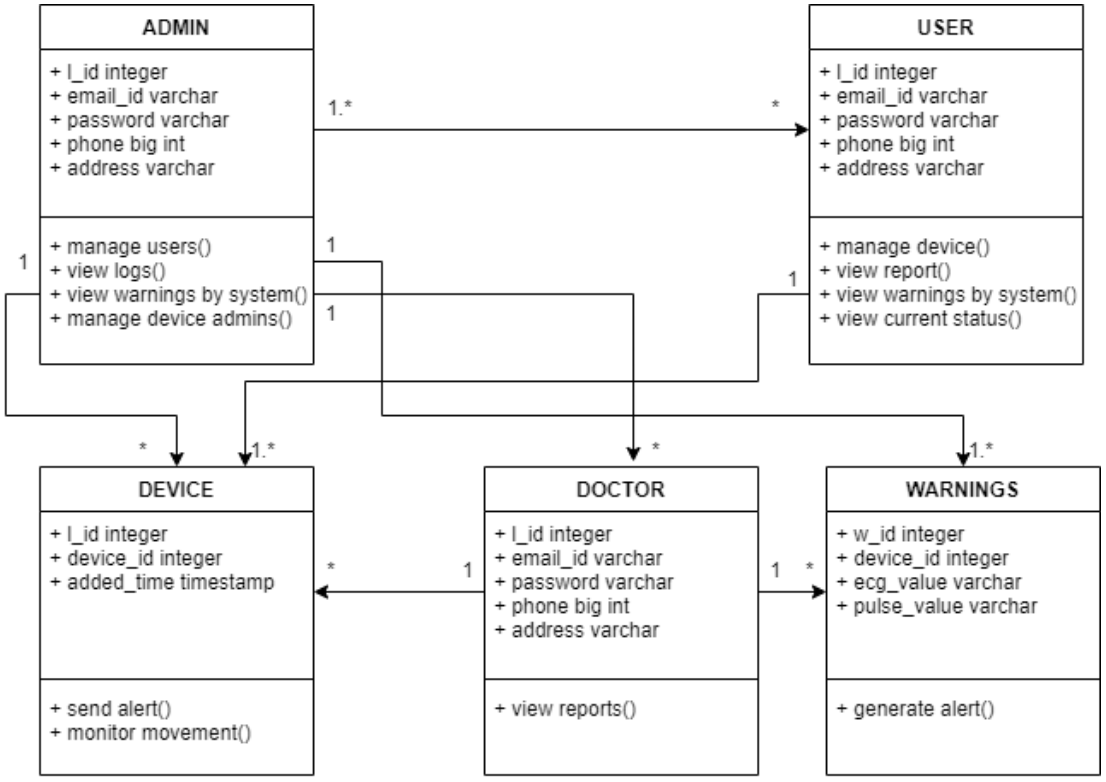

Fig 3.11

3.2.3. Activity Diagram

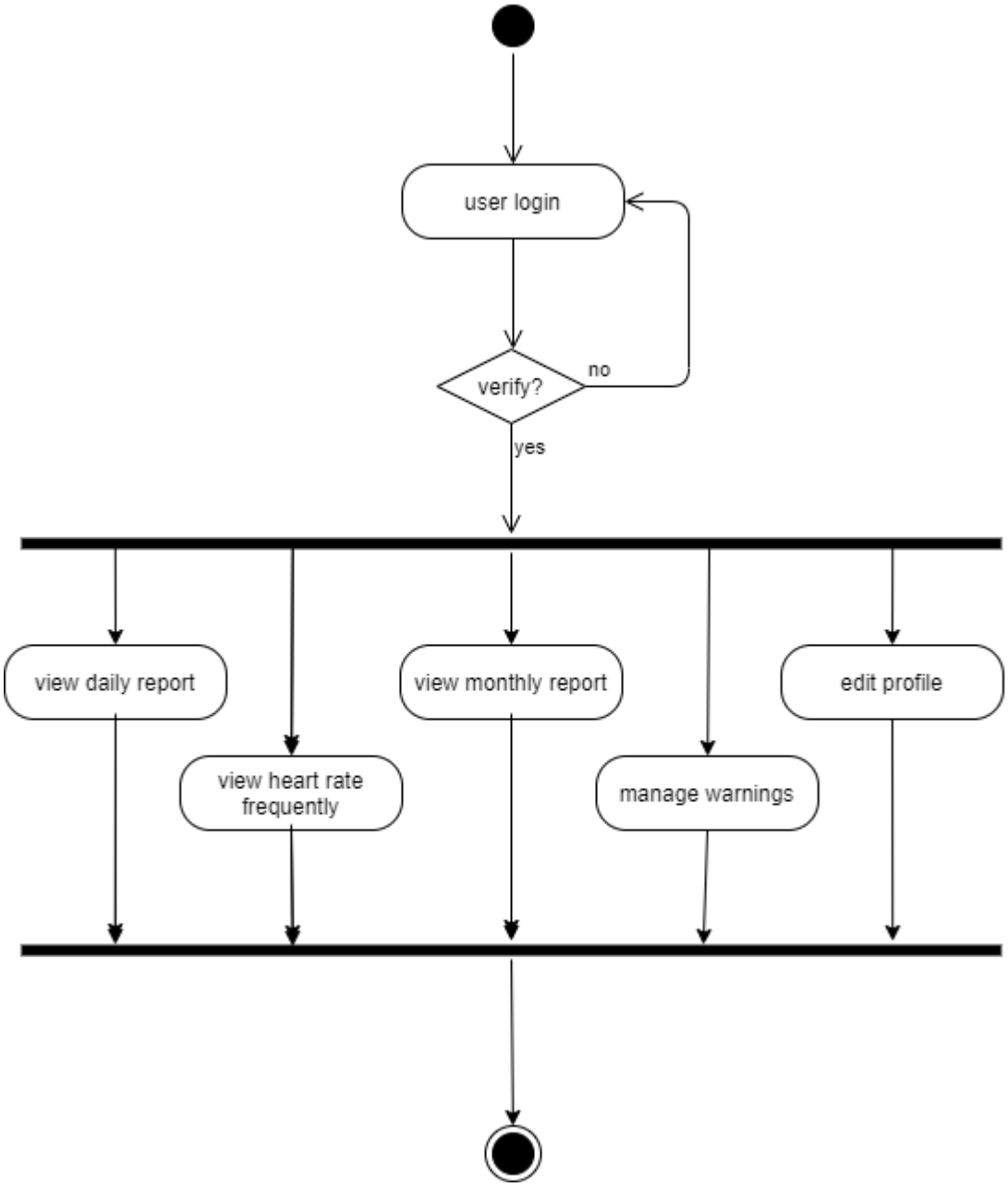

Fig 3.12

3.3. Functional and Behavioral modeling

- Diagram is a graphical representation of the flow of data through an information system.

- It differs from the system flowchart as it shows the flowchart as it shows the flow of data through processes instead of hardware.

- A data flow diagram is a logical model of the system and shows the flow of the data and the flow of logic so this all thing describes s what takes place in a proposed system, not how the activities are accomplished.

3.3.1. Sequence diagram

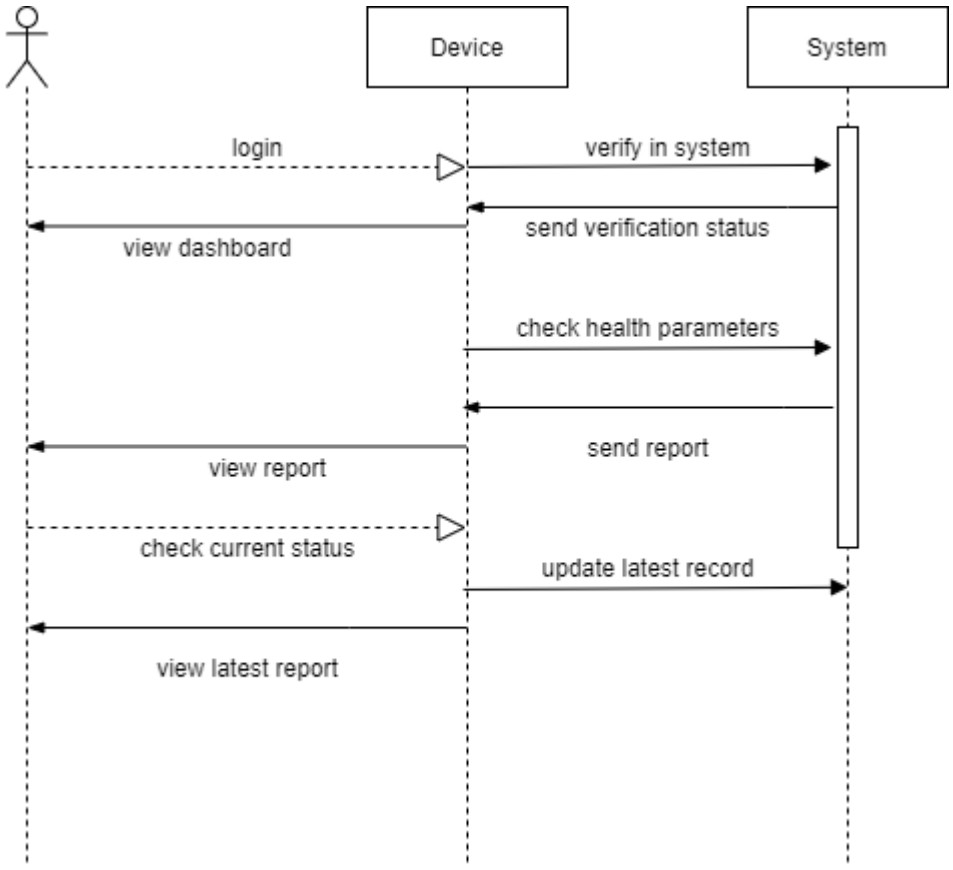

Fig 3.13

3.4. Functions Diagram

3.4.1. Use Case Diagram

- Use case diagrams are used to gather the requirements of a system including internal and external influences.

- These requirements are mostly design requirements.

- So, when a system is analyzed to gather its functionalities use cases are prepared and actors are identified.

- The use case model captures the requirements of a system.

- Use cases are a means of communicating with users and other stakeholders what the system is intended to do.

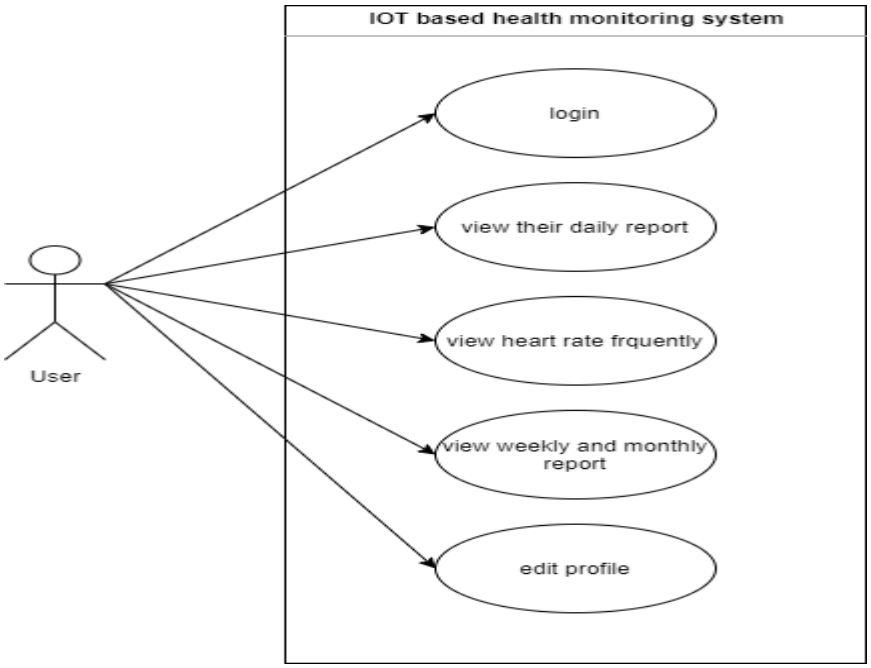

Fig 3.14

4. PROJECT MANAGEMENT

PROJECT MANAGEMENT

4.1. Feasibility Study

4.1.1. Technical Feasibility

Technical feasibility corresponds to determination of whether it is technically feasible to develop the software. It refers to the ability of the process to take advantage of the current state of the technology in pursuing further improvement. The technical capability of the available technology should be considered.

- The following technical feasibility areas were probed during the feasibility study phase:

- The necessary technology i.e. front-end development tools, back- end database technology for developing the system are already available within the organization.

- The front-end tool proposed in easily compatible with the current hardware configuration in the organization.

- The back-end tool proposed has the capacity to hold the data required for using the new system.

- The System is expandable in many dimensions with respect to addition of more functionality, featured, etc.

- The front-end and back-end technologies provide a way to preserve the accuracy, reliability and ease of access and data security.

4.1.2. Implementation Feasibility

This project can easily be made available online without much consideration of the hardware and software. The only required thing at the applicant's side is the Internet connection and a web browser, which are a no difficult issue these days. A database server and application server are required to set up at the admin side. After setting up the project online, even the administrator can access the system from anywhere.

4.1.3. Operational Feasibility

- The system has been developed for any user who wants to use this system. We have given a demo of our project and the users found the system friendly and easy to use.

- The interoperability with the existing system is also checked. So, they may face certain problems in using the user interface. So, keeping this consideration in mind we have provided field for each and every field on the forms.

- The administrator also may be non-technical, so the user interface is designed in such a way that it gets comfortable for the non-technical person to operate easily.

4.2. Project Planning

- Project planning is part of project management, which relates to the use of schedules such as Gantt charts to plan and subsequently report progress within the project environment. Initially, the project scope is defined and the appropriate methods for completing the project are determined.

- Following this step, the durations for the various tasks necessary to complete the work are listed and grouped into a work breakdown structure. The logical dependencies between tasks are defined using an activity diagram that enables identification of the activity. At this stage, the project plan may be optimized to achieve the appropriate balance between resource usage and project duration to comply with the project objectives. Once established and agreed, the plan becomes what is known as the baseline.

- Progress will be measured against the baseline throughout the life of the project. Analyzing progress compared to the baseline is known as earned value management.

4.2.1. Development Approach

Process development approach we adopted was incremental process model wherein the system development is broken down into mini development modules and later on they are integrated to develop the final model**.**

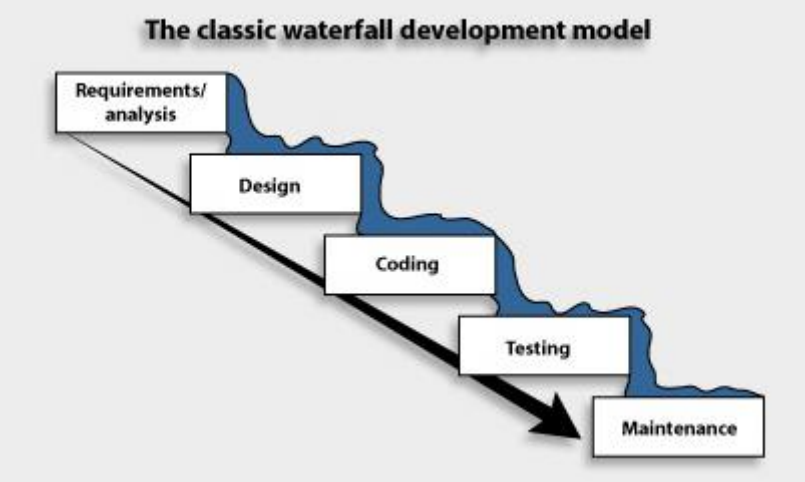

Fig 4.1

4.3. Schedule Representation

- Software project scheduling is an activity that distributes estimated effort across the planned project duration by allocating the effort to specific software engineering tasks.

- First, a macroscopic schedule is developed. A detailed schedule is redefined for each entry in the macroscopic schedule. A schedule evolves over time.

4.3.1. Basic Principle

- Compartmentalization
- Interdependency
- Time allocation
- Effort allocation
- Effort validation
- Defined responsibilities
- Defined outcomes
- Defined milestones

4.3.2. Compartmentalization

Compartmentalization is a subconscious psychological defense mechanism used to avoid cognitive dissonance or the mental discomfort and anxiety caused by a person's having conflicting values, cognitions, emotions, beliefs, etc. within themselves. Compartmentalization allows these conflicting ideas to co-exist by inhibiting direct or explicit acknowledgment and interaction between separate compartmentalized self- states**.**

4.3.3. Work Breakdown Structure

Creating a work breakdown structure for any plan or set of tasks helps you get granular about the work that needs to be done on any given project. If you estimate your projects based on units—whether it's weeks, days, or hours—using a work breakdown structure will help you understand very quickly if your estimate will exceed the intended budget or deadline**.**

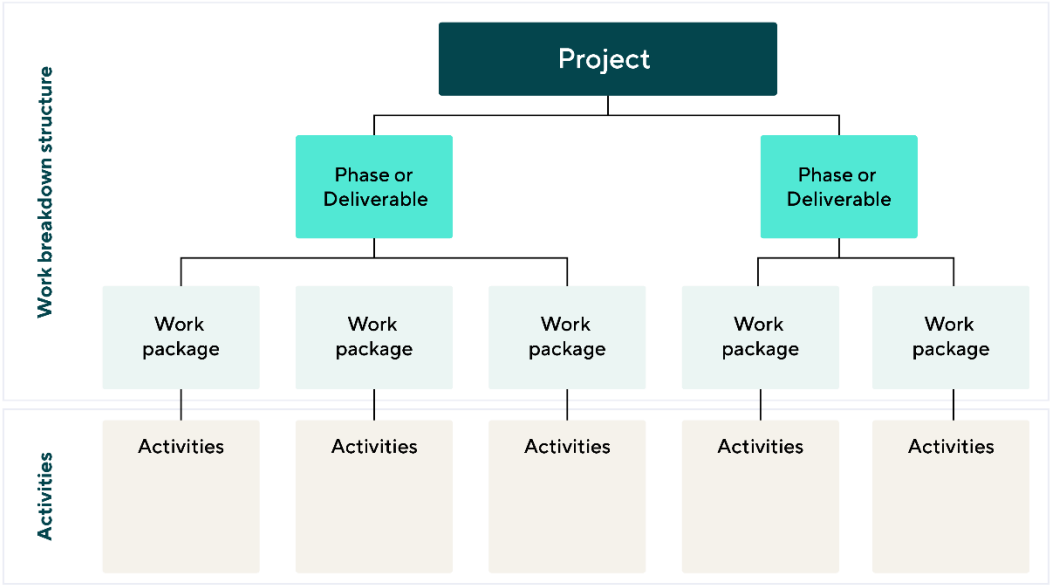

Fig 4.2

4.3.4. Project Organization

- A project operates in with people, process and technology of an organization. Projects have an impact on the culture, policies, procedures and other aspects of an organization. The organizational structure has a major influence on the execution of the project. The organizational structure decides the resources, communication methods and other aspects of project management.

Different types of organizational structures include:

- Functional
- Projectile
- Matrix
- Smart study

4.3.5. Timeline Chart

4.3.5.1. Time Allocation

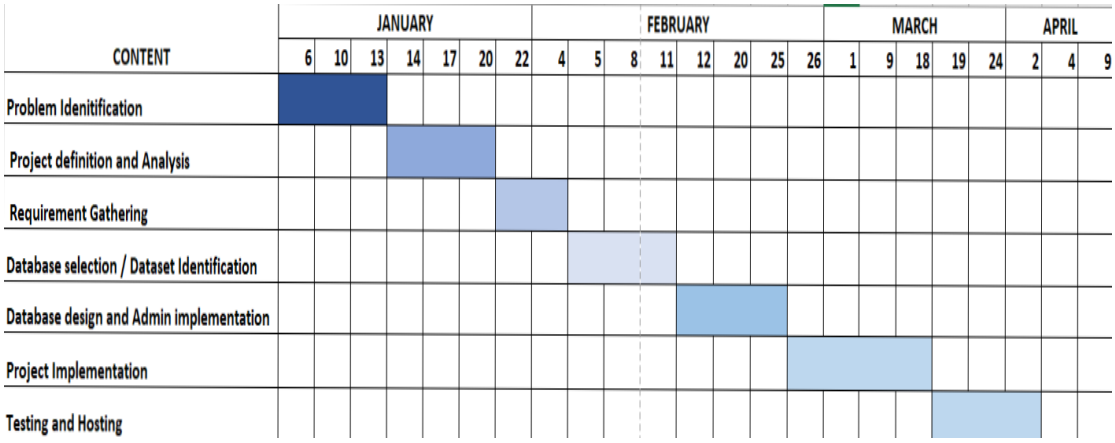

Fig 4.3

4.3.5.2. Task Sets

Planning – Define the development cycle and Development model

Design – Create the front-end design

Coding – Creating back-end coding to create project dynamic

Testing – Test the application with various types of input

Delivery – Deliver the final product

4.4. Risk Management

Risk management is the human activity which integrates recognition of risk (Identification), risk assessment (Analysis), developing strategies to manage it (Planning) and mitigation of risk using managerial resources. Some categories of risk include product size, business impact, and customer-related process, Technology, Development Environment, Staffing, Schedule, and cost.

4.4.1. Risk Identification

- Understanding the words “if you do not actively attack the risk, they will attack you”, we tried to find all possible risks.
- Risk means a danger to the project. By developing an application or a project there are many risks so the risk should have been calculated before the whole application can be accomplished. Risk must be calculated before it spoils the whole system.
- Risk Management is a process to determining risk and thinking about it before it comes so before risk, we have to think over the steps to overcome risks or to regain the original data which are affected by some or risks like electric power loss or internet connection failure.
- The following table includes the risk for this e-voting project and risk type and its description.

4.4.2. Risk Analysis

Risk Analysis is developing and documenting organized, comprehensive, and interactive strategies and methods for identifying risks. The risk planning process considers each of the key risks which have been identified and identifies strategies to manage the risk. Again, there is no simple process which can be followed to established risk management plans. It relies on the judgment and experience of the project development team. Below table describes the risk and the strategies identified.

These strategies fall into three categories:

- Avoidance strategies: The probability that the risk will arise, will be reduced

- Minimization strategies: Impact of the risk will be reduced.

- Contingency plans: If the worst happens, you are prepared for it and have a strategy in place to deal with it.

5. SYSTEM ANALYSIS

5.1. Limitation of Current System

5.2. Requirements of the New system

5.3. Feasibility Study

5.3.1. Operational Feasibility

5.3.2. Technical Feasibility

5.3.3. Economical Feasibility

5.3.4. Implementation Feasibility

SYSTEM ANALYSIS

5.1. Limitations of Current System

- Limited Accessibility
- Lack of Patient and Provider “Buy-in”
- Lack of Provider Engagement.
- Error Rates of Existing RPM Utilities.
- Not Being Real-Time Monitoring
- A New Generation in Remote Care

5.2. Requirement of the New System

Accordingly, the time and speed of monitoring these patients in ambulance under emergency conditions are highly critical. On the other hand, connecting different devices in the ambulance to the patient's body is time-consuming. In such conditions, time is highly important. Furthermore, using different monitoring systems for recording the symptoms occupies the whole space of ambulance due to its small space. Some of these current monitoring systems have limited measurement accuracy. Further, recording the accurate data are regarded as one of the main fundamental parameters of monitoring. Sometimes, such systems make errors in recording the data. Thus, using these systems in ambulance leads to some problems such as difficult installment, reliability, energy consumption, installment time, and vital data transfer. Thus, the present study aimed to seek for the tools to monitor the vital signs in the emergency conditions due to the development of medical technologies. Portable smart monitoring tools should involve specific features. An accurate needs assessment should be conducted for designing wearable smart blanket system appropriately to monitor the vital signs of patients in ambulance. The fundamental capabilities should be extracted, along with all key features. Therefore, the present study seeks to monitor the vital signs of patients in emergency conditions with an integrated and wearable sensor-based system.

5.3. Feasibility Study

The aim of the feasibility study activity is to determine whether it would be financially and technically feasible to develop the system or not. A feasibility study is carried out from following different aspects:

5.3.1. Operational Feasibility

The system has been developed for any user who wants to use this system. We have given a demo of our project and the users found the system friendly and easy to use. The interoperability with the existing system is also checked after uploading the website. So they may face certain problems in using the user interface. So, keeping this consideration in mind we have provided field for each and every field on the forms. The administrator also may be non-technical, so the user interface is designed in such a way that it gets comfortable for the non-technical person to operate easily**.**

5.3.2. Technical Feasibility

It determines if the system can be implemented using the current technology. This system has been developed using WordPress using MySQL as database.

5.3.3. Economical Feasibility

The company being a well-to-do company didn't have any problem in buying any software that was required in developing the application. The software's we used were readily available. So as such we didn't face any economical constrains.

5.3.4. Implementation Feasibility

This project can easily be made available online without much consideration of the hardware and software. The only required thing at the applicant's side is the Internet connection and a web browser, which are a no difficult issue these days. A database server and application server are required to set up at the admin side. After setting up the project online, even the administrator can access the system from anywhere**.**

6. IMPLEMENTATION

6.1. Front End

6.2. Back End

IMPLEMENTATION

6.1. Front End

Signup:

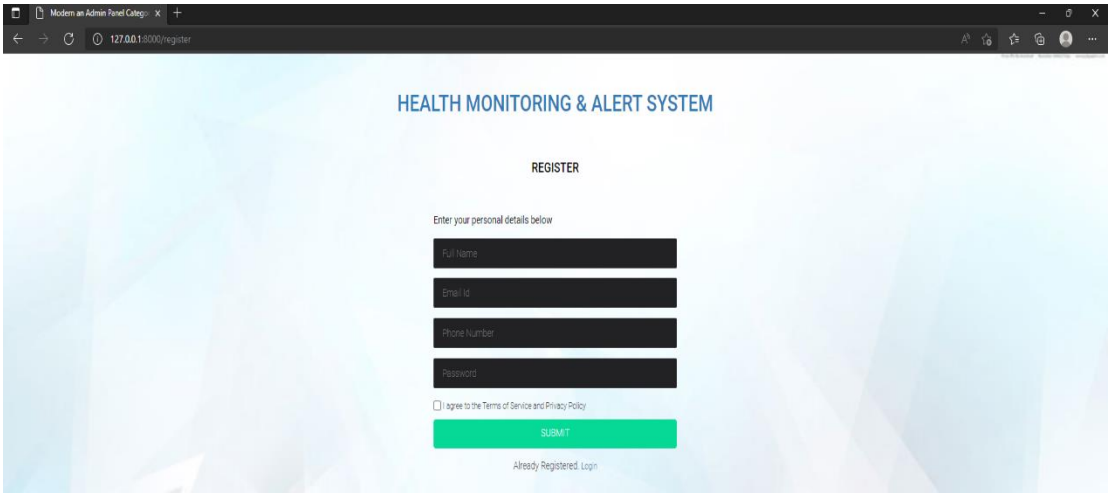

Fig 6.1.1

In this page a user can register by adding his personal details and press submit to create his account.

Login:

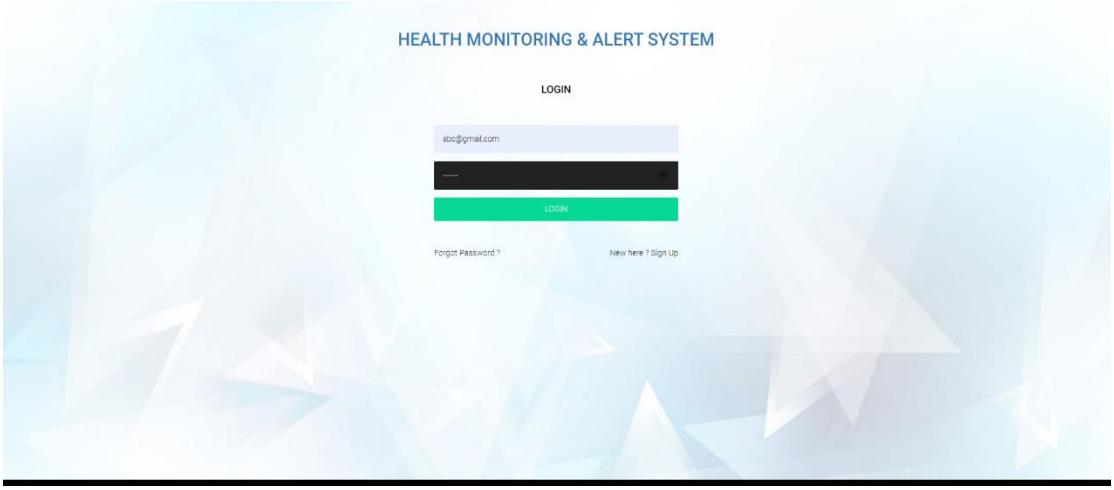

Fig 6.1.2

After user has register now, they can log in by entering email id and password.

Dashboard:

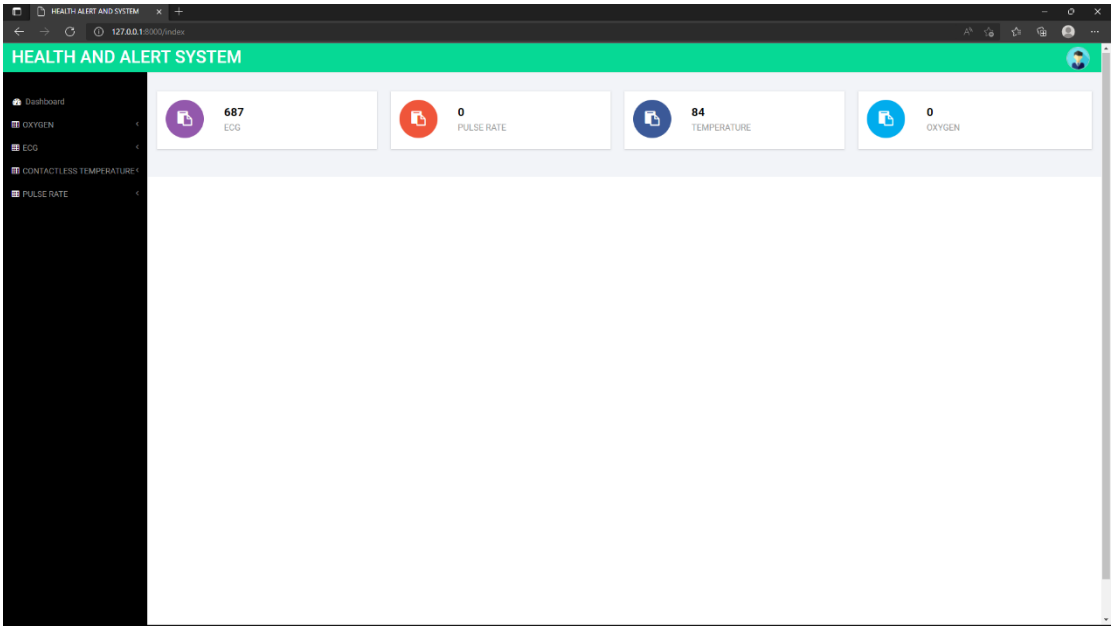

Fig 6.1.3

This is the dashboard page where a user can monitor his/her live data.

Logout:

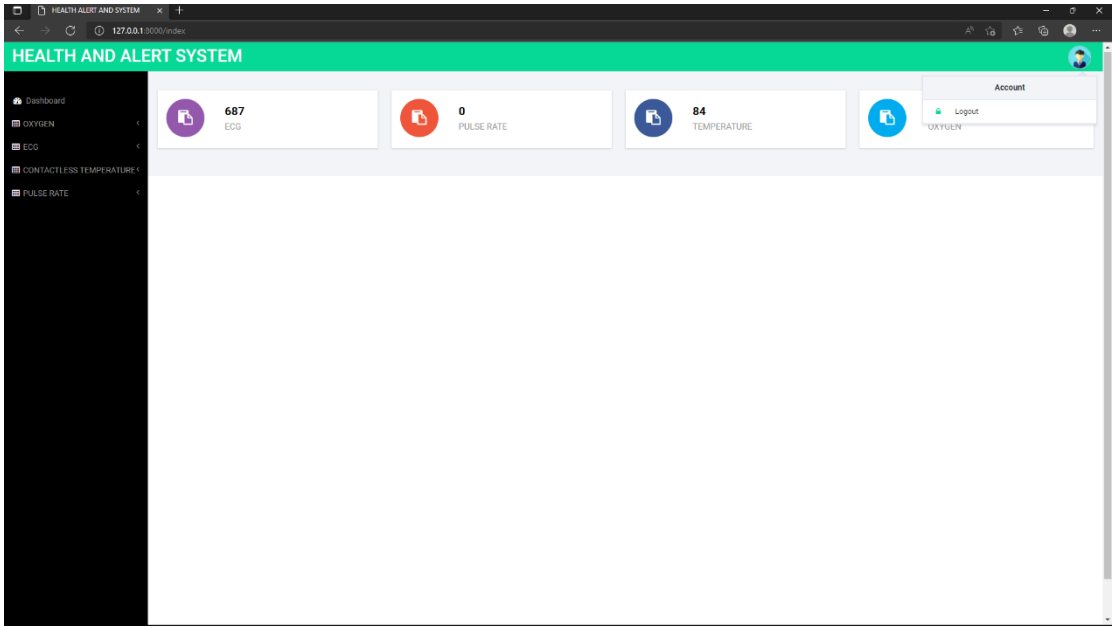

Fig 6.1.4

A user can logout when he/she is done monitoring.

Oxygen Data History:

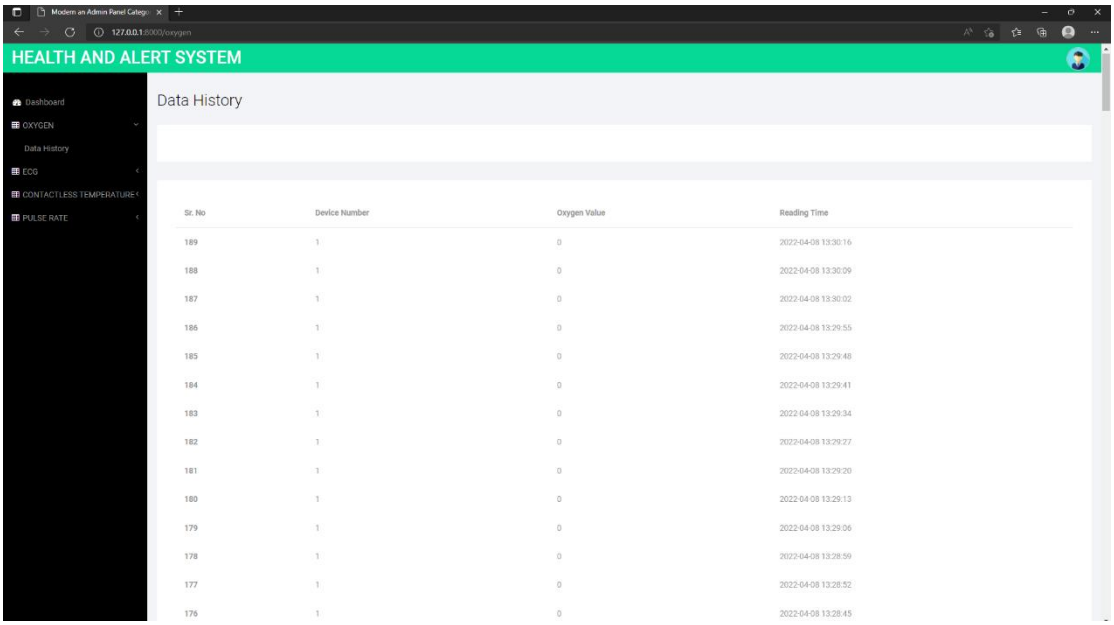

Fig 6.1.5

In this page a user can see his/her oxygen data history.

ECG Data History

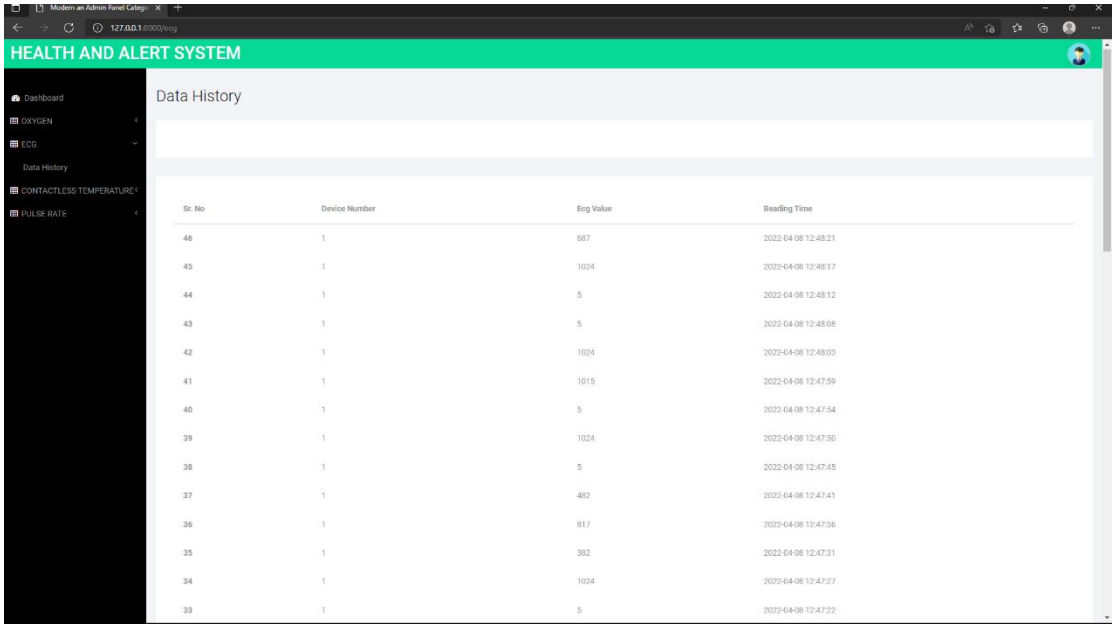

Fig 6.1.6

In this page a user can see his/her ECG data history.

Pulse Data History

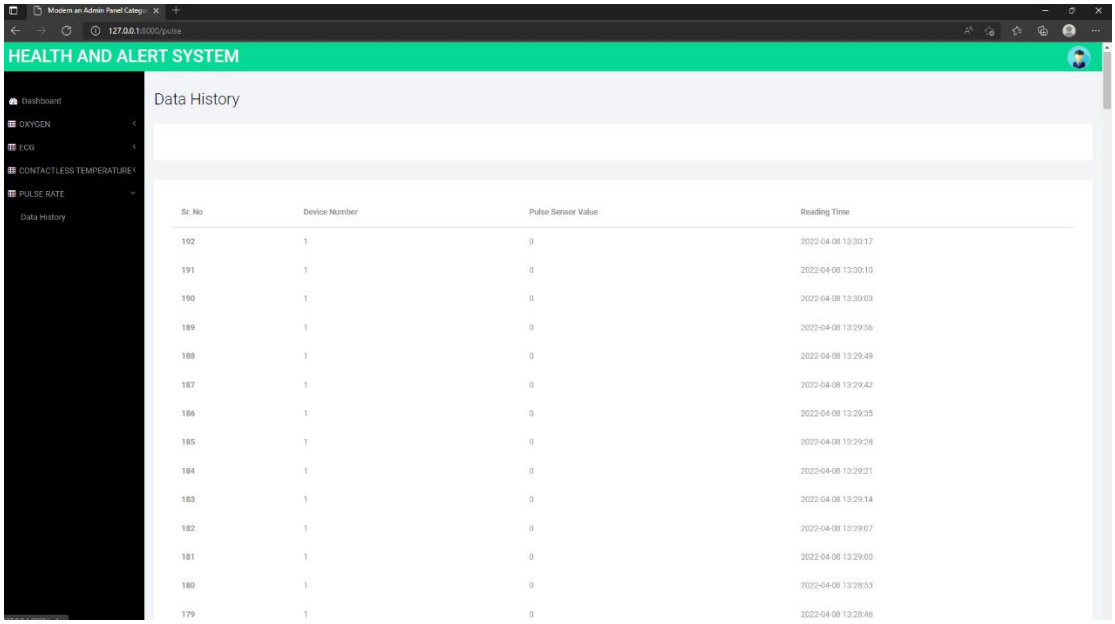

Fig 6.1.7

In this page a user can see his/her pulse data history.

Temperature Data History

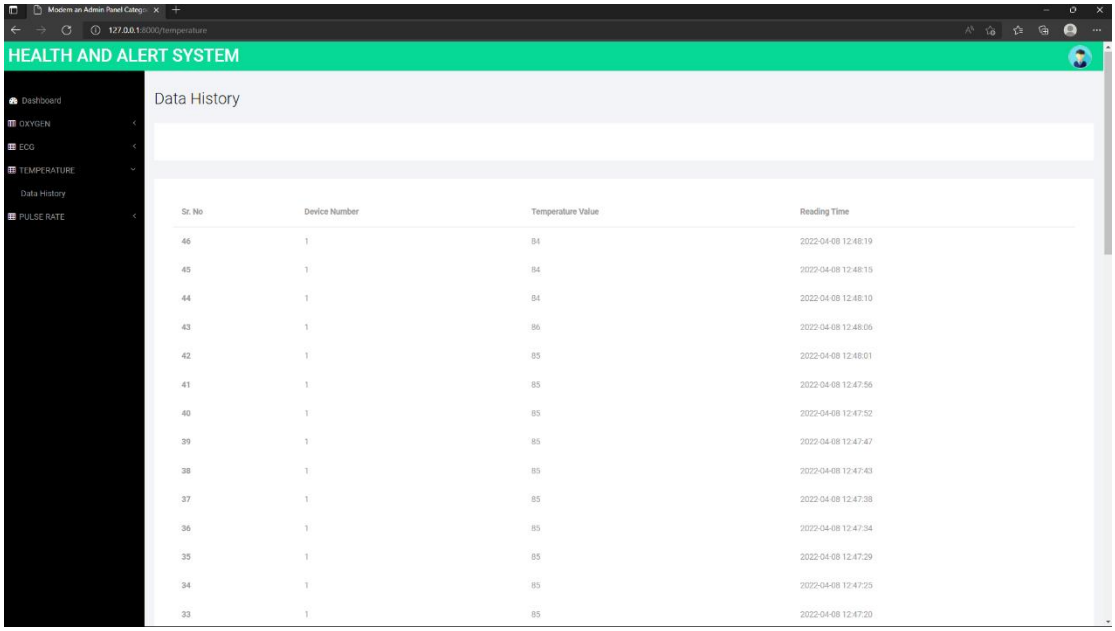

Fig 6.1.8

In this page a user can see his/her temperature data history.

6.2. Back End

Domain:

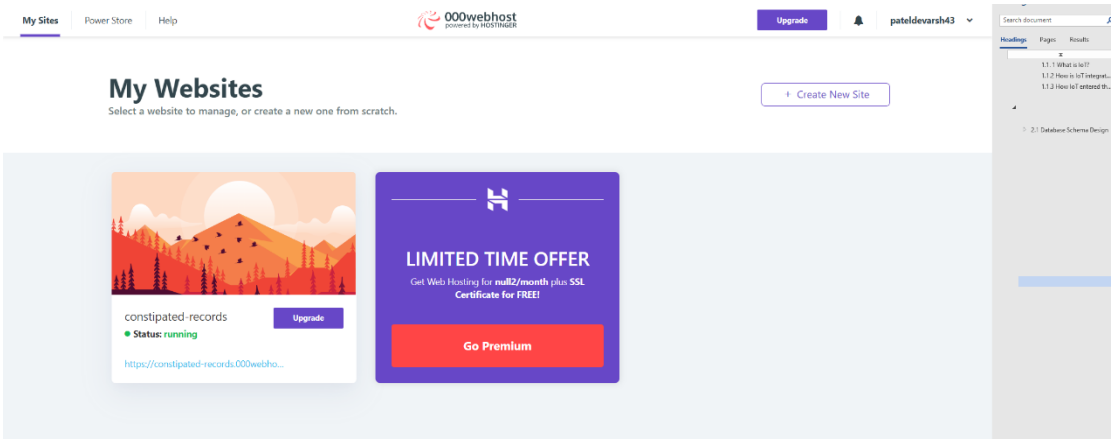

Fig 6.2.1

000webhost is to create database tables and insert APIs.

Database Manager:

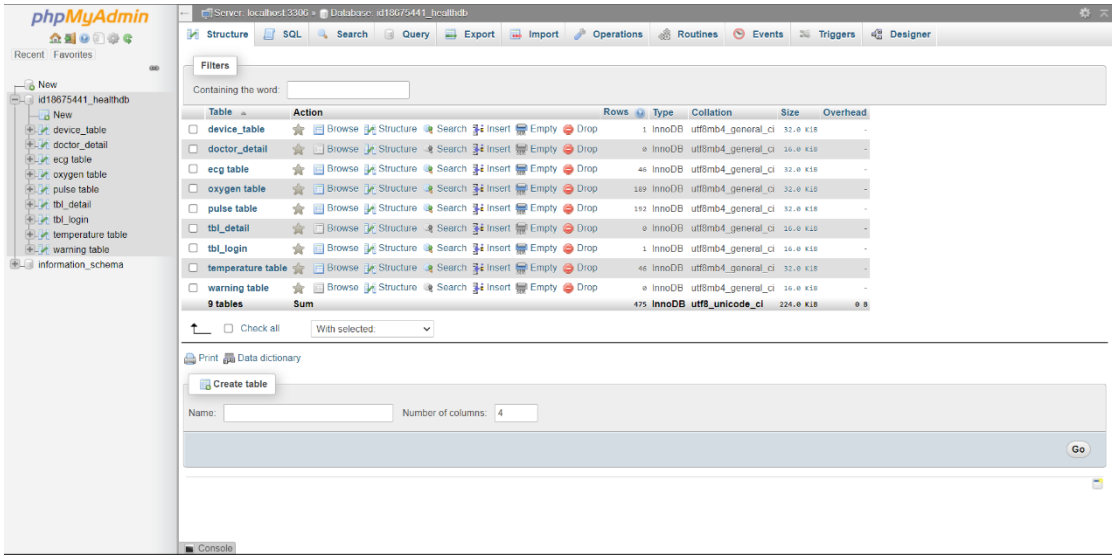

Fig 6.2.2

Database Table

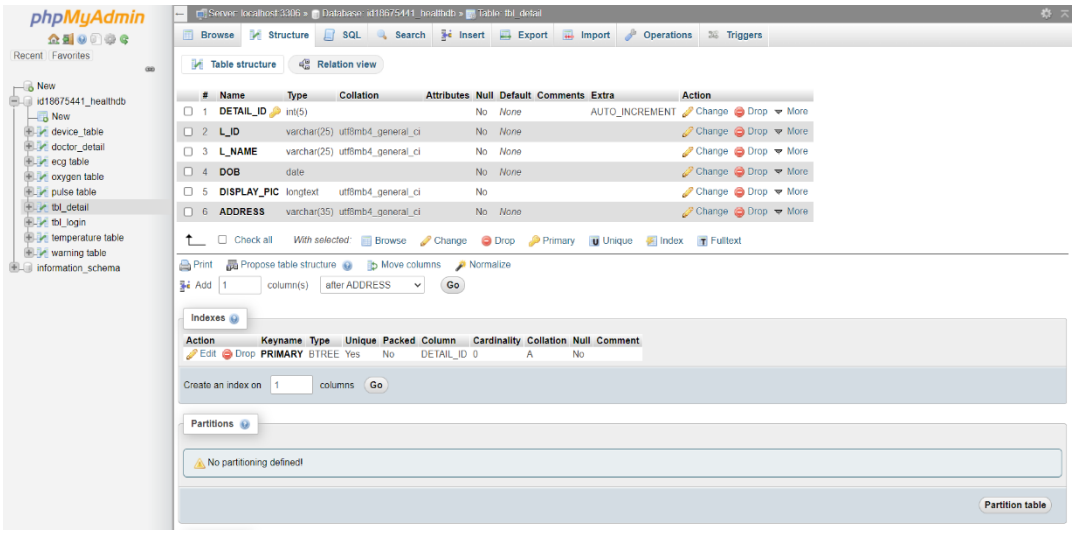

Fig 6.2.3

Insert API

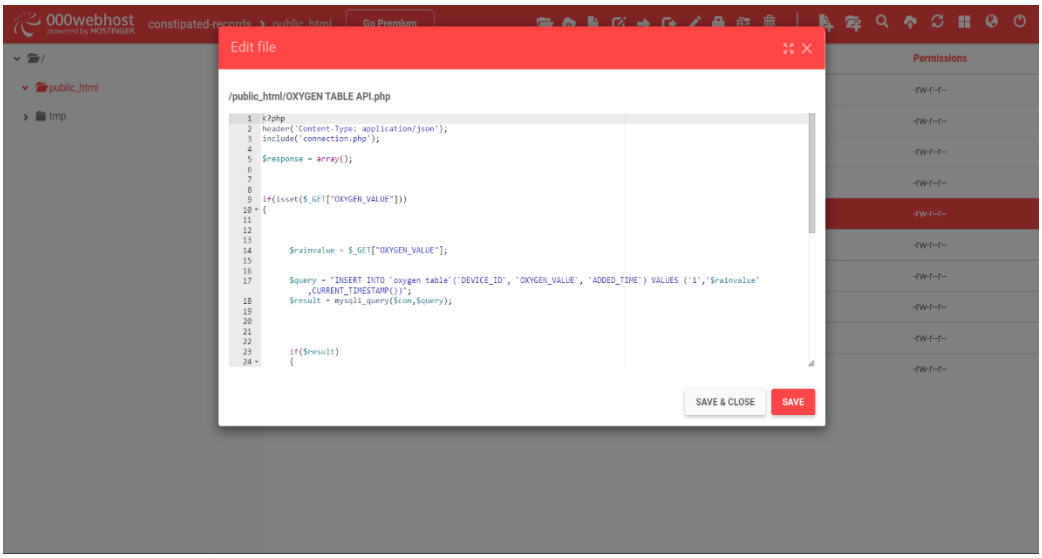

Fig 6.2.4

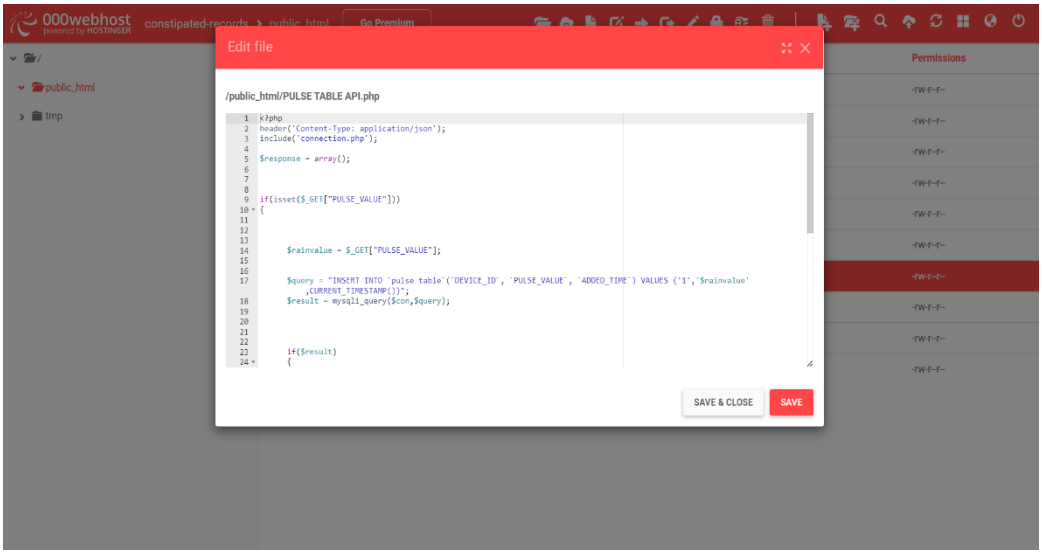

Fig 6.2.5

PyCharm

Login page code

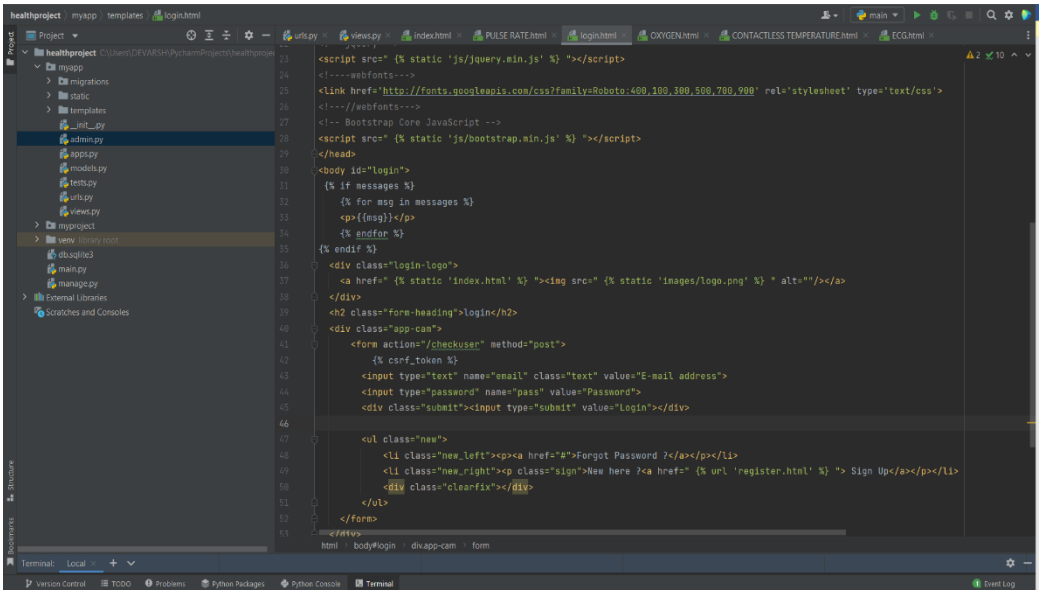

Fig 6.2.6

Oxygen Sensor Code

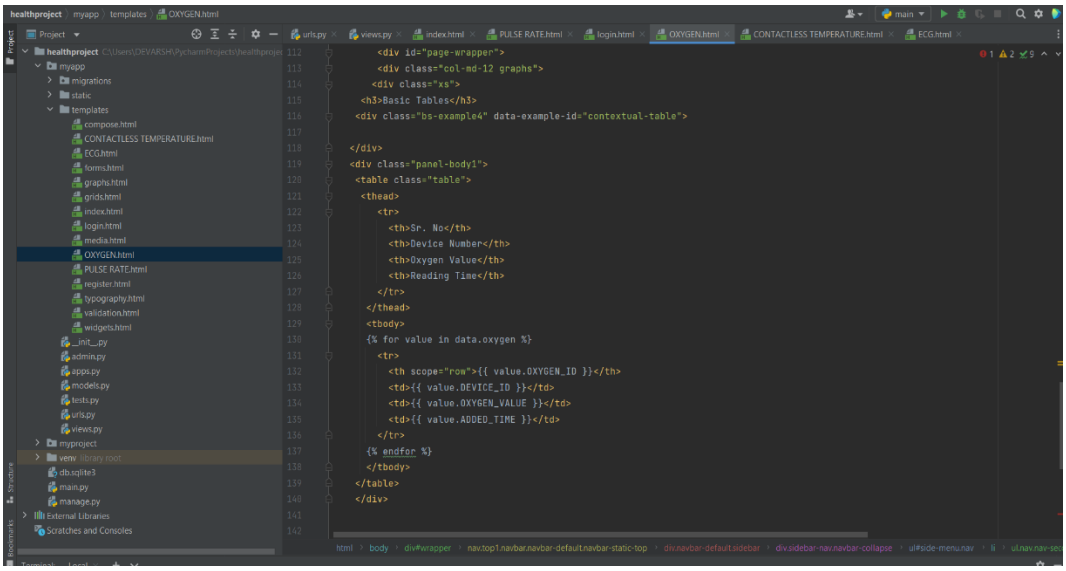

Fig 6.2.7

7. TESTING

7.1. User Login Testing

TESTING

7.1. User Login Testing

Test Case	Test Case Description	Test Data	Expected Result
1	Check response when valid email and password is entered	Email: abc@gmail.com Password: mitmit	Login should be successful

Test Case	Test Case Description	Test Data	Expected Result
2	Check Response when invalid email and password is entered	Email: 123@gmail.com Password: 123123	Login should be Failed

8. Conclusion and Future Work

8.1. Future Work

8.2. Conclusion

CONCLUSION AND FUTURE WORK

8.1. Future Work

- The IoT adoption in India is expected to grow across industries.

- In the future, IoT health monitoring will provide increased independence and mobility for elderly, sick, and physically or mentally disabled patients and reduce stress for family and doctors who can be alerted and react immediately as soon as issues arise.

- The device is boon for those who are alone. Seeing how beneficial these IOT monitoring devices are in future, the number of homes will have a sensor network. These networks will monitor each and every activity of patient with the sensor of sending in alerts in an emergency.

8.2. Conclusion

- It concludes that the human health monitoring system based on the Internet of Things can provide people with daily health management, instrumental in heightening health service quality and level.
- Health Monitoring is a set of activities undertaken to maintain a system in operable condition and may be limited to an observation of current system states, with maintenance and repair being promoted by this observation.

9. References

9.1. List of Web References

REFERENCES

9.1. List of refences

1. https://www.blog.oxitone.com/2020/10/29/remote-patient-monitoring/

2. https://www.aeris.com/news-press/#:~:text=In%20the%20future%2C%20IoT%20health,as%20soon%20as%20issues%20arise

3. https://cprimestudios.com/blog/5-reasons-build-health-monitoring-system-hospital

4. https://www.sciencedirect.com/topics/engineering/health-monitoring-system#:~:text=System%20Assessment&text=Monitoring%20and%20assessment%20activities%20are,appropriate%20maintenance%20and%20repair%20operations

5. W3Schools Online Web Tutorials

6. How to Write Test Cases: Sample Template with Examples (guru99.com)

7. Health Monitoring System - an overview | ScienceDirect Topics

8. ER diagrams format - Bing images

9. Activity diagram format - Bing images

10. CSS Tutorial (w3schools.com)