Final Year Project

FYP Interim Report

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1. Introduction

LifeEasy, as a hospital management system. Offers a crucial solution to the clinics and hospitals struggle to run their workflow effectively. Inefficient billing procedures, jumbled patient data, missed appointments, and inadequate departmental communication are all consequences of non-streamlined processes, LifeEasy aims to improve the standard of patient care while reducing the administrative workload. These problems highlight the necessity of an all-encompassing, technologically advanced solution.

1.1. Scope of the project

Traditional hospital management system rely mostly on manual processes and outdated systems that struggle to handle increasing amount of patient data, complex billing, and the need for real-time reporting. Keeping track of medical information, scheduling visits, appropriately paying salaries to employees, and maintaining operational transparency. Long wait times, medical errors, and general staff and patient unhappiness can all be caused by inefficiencies.

To solve these inefficiencies, hospital operations are being digitalized and automated through the use of the Hospital Management System (LifeEasy). All of the hospital's operations, including patient registration, appointment scheduling, billing, inventory control, and medical records administration, are integrated into this whole platform. Data accessibility between departments is made possible by the system's centralization of these procedures, which also optimizes patient care and streamlines administrative duties. By lowering operating expenses and raising overall healthcare service quality, the HMS solution also increases patient happiness.

1.2. Aims and Objectives

Aim:

The primary aim of this project is to streamline and optimize hospital operations and enhance the overall quality of patient care by digitalizing and automate hospital processes.

Objectives:

Automate Patient Registration and Data Management:

- A digital system for patient registration that minimize paperwork.
- Ensure safe and well-organized data management, create centralized database to access easily.

Enhance Appointment Scheduling and Management:

- Implement simple appointment scheduling feature to reduce wait times.
- Integrate real-time notifications for patients regarding appointment.

Streamline salaries payment and bills manage:

- Develop billing module that generates invoices and manages and tacks payment.
- Develop simple salary payment for employees

Provide Comprehensive Reporting and Analytics:

- Generate detailed reports on patient outcomes, hospital performance.
- Incorporate analytics to provide insights that can guide in decision-making.

1.3. Resource requirements:

Software Development Tools:

- Frontend Development:
  - HTML, CSS: For building the structure and styling the user interface.
  - JavaScript: add interactivity and improve the functionality of the frontend.
  - React.js: A JavaScript library for building user interface, and making dynamic and responsive.
- Backend Development:
  - Node.js: A JavaScript runtime that is utilized for running server-side code to process server requests and oversee backend.
  - Express.js: A framework for Node.js that makes it easier to develop server-side logic and API routes.
- Database Management:
  - MySQL: A relational database management system to store and manage all data, including user data, product details, medical records, and transaction details.

- XAMPP: A open-source platform web server solution stack package develop by Apache friends. It is easier to access MySQL and easy to start or stop with the XAMPP Control panel.

- IDE software:

  Visual Studio Code: A popular code editor that supports all the languages with debugging features, and extensions to enhance productivity.

Design

Figma: A world wide used design tool that allows to design wireframe, prototype and graphic designs.

2. Background

Many healthcare institutions are turning to hospital management system. The key features of an effective HMS include:

- Appointment scheduling: automated appointment scheduling, and appointment reminders
- Patients registration: streamline patient registration.

- Billing and payment: efficient billing generating.

The key consideration that this project has are:

- User-friendliness: easy for the users
- Data security: securing patients and doctors information
- Scalability: adapting with the industry growths

2.2. Similar projects

- **Epic**

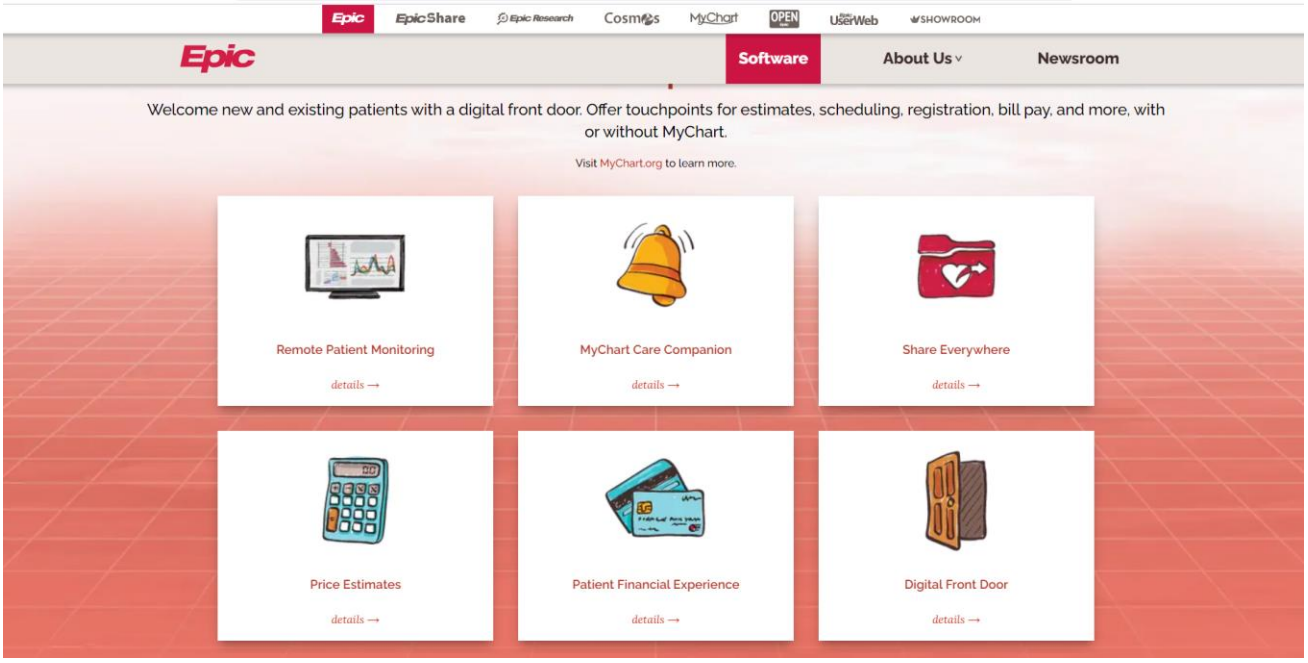


Figure 1 Epic

- **Mediteck**

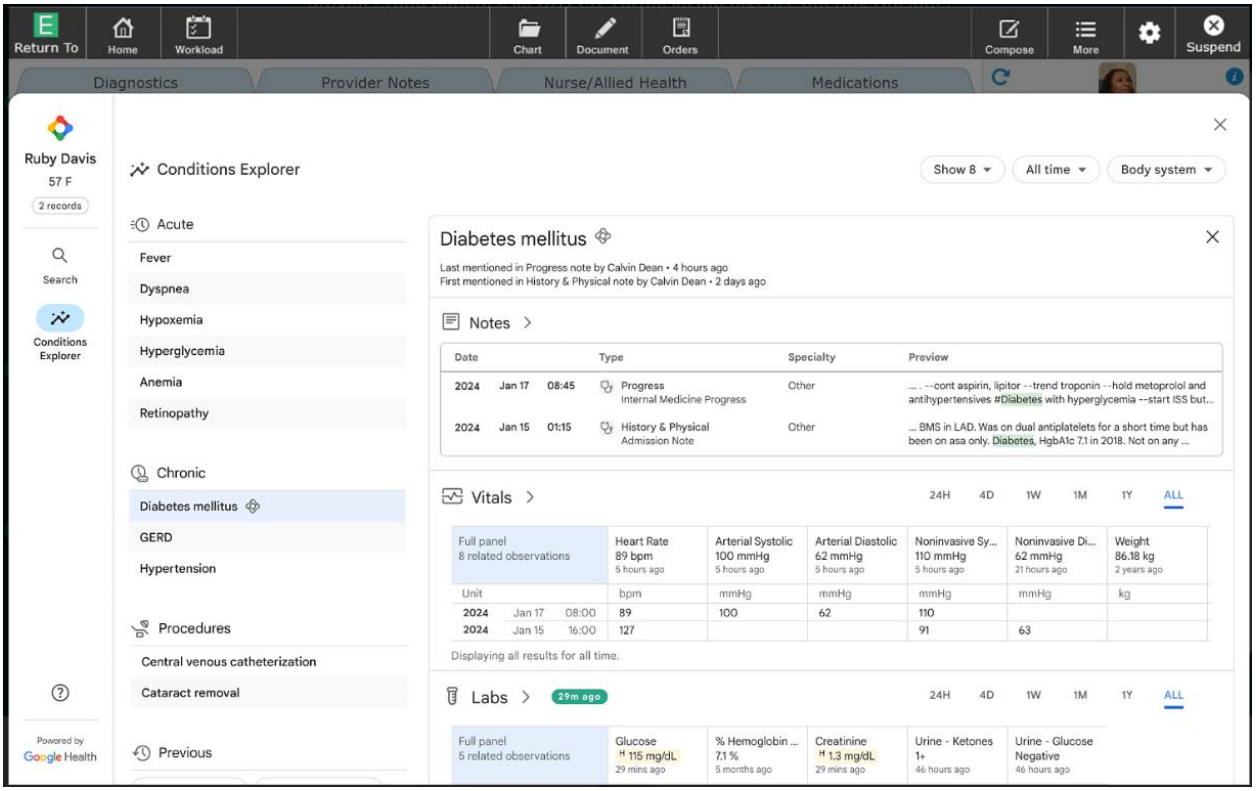


Figure 2 Mediteck

- **Hospital Management System (infaERP)**

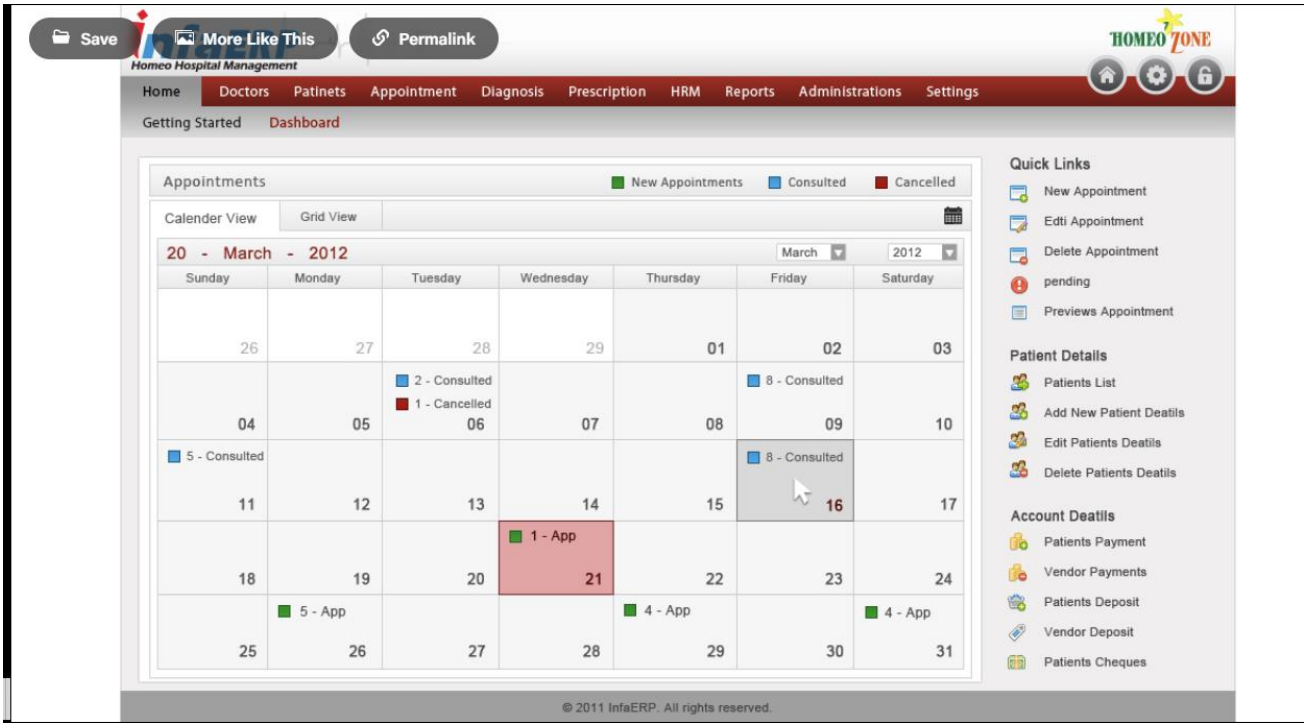
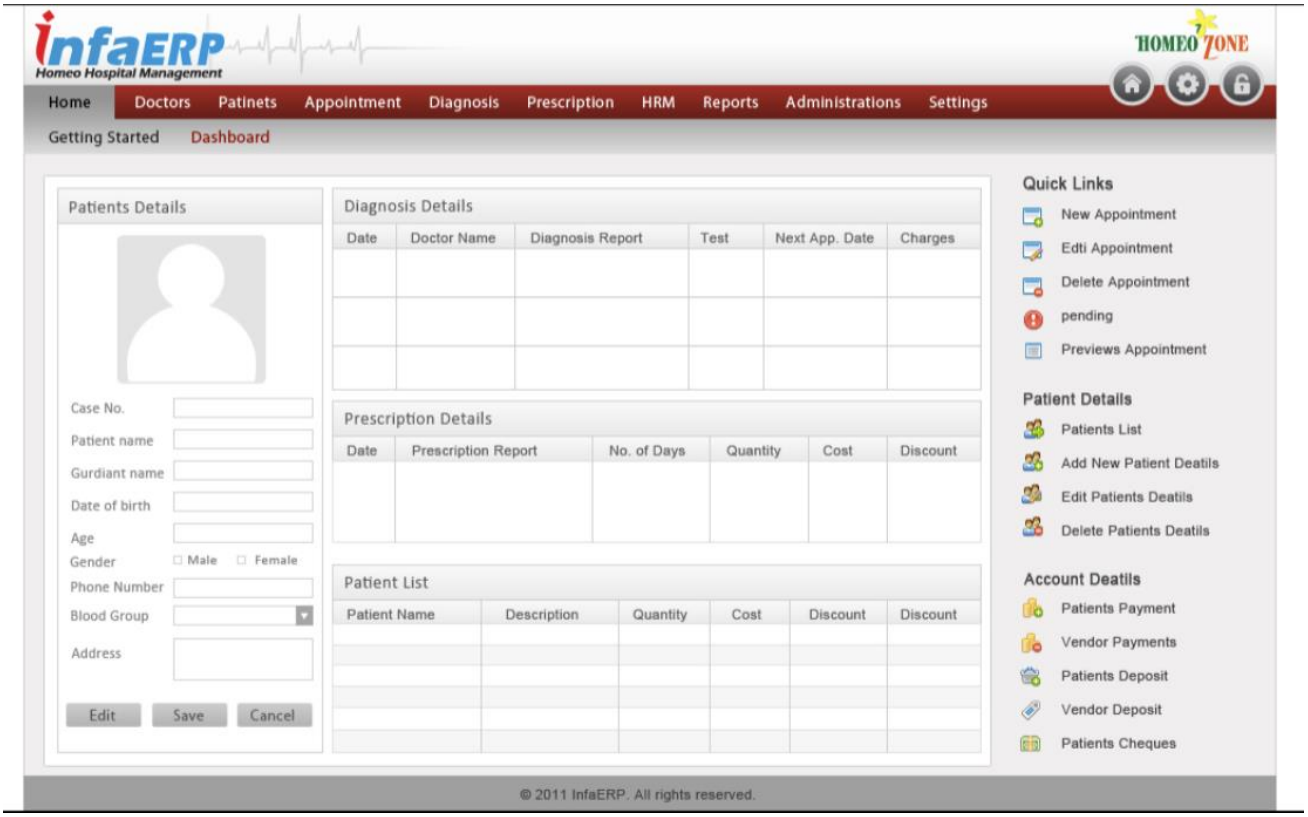
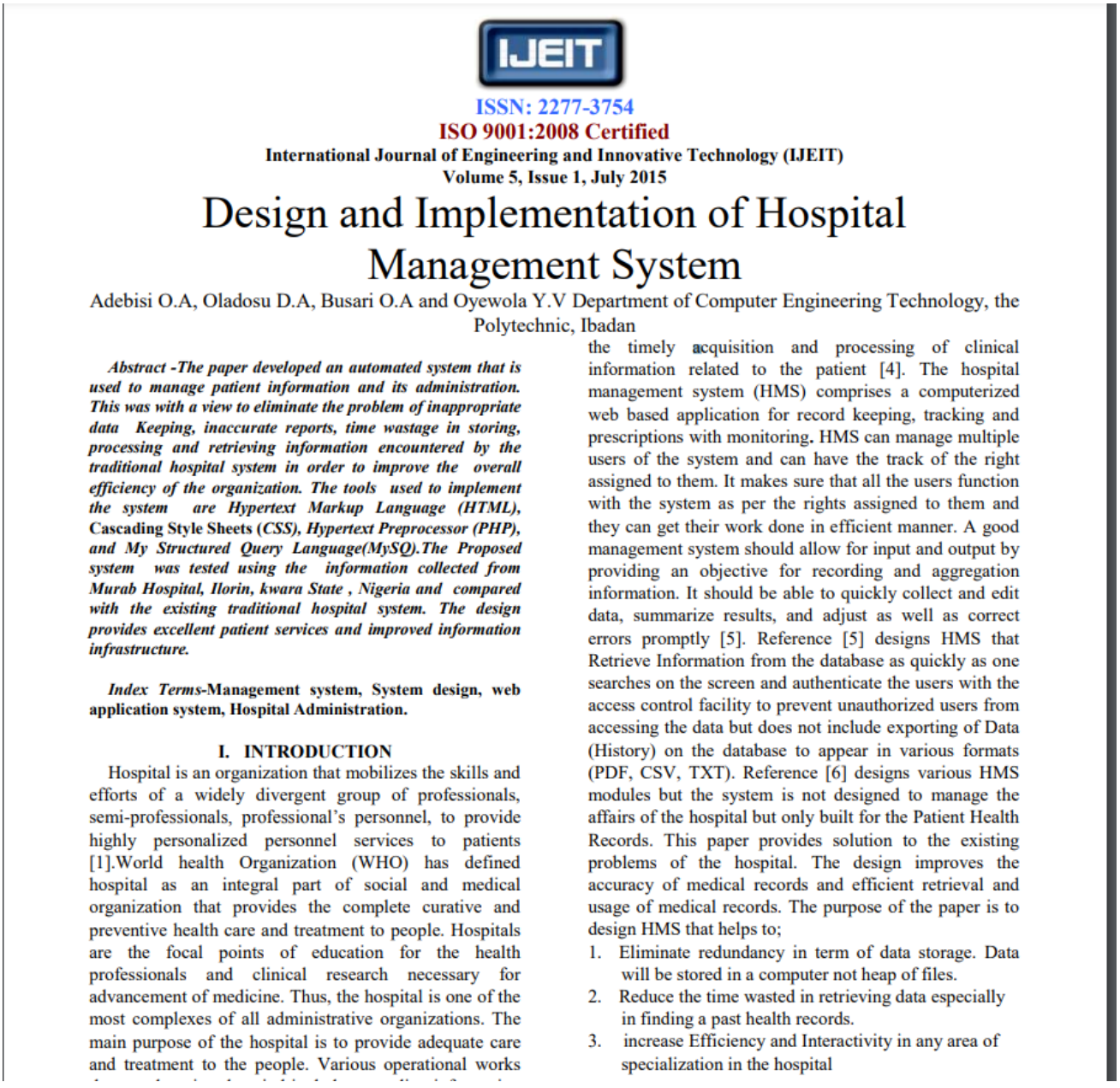


Figure 3 infaERP UI design



2.3. Review of journals/articles

1. Design and Implementation of Hospital Management System



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Design and Implementation of Hospital Management System

Adebisi O.A, Oladosu D.A, Busari O.A and Oyewola Y.V Department of Computer Engineering Technology, the Polytechnic, Ibadan

Abstract *-The paper developed an automated system that is used to manage patient information and its administration. This was with a view to eliminate the problem of inappropriate data Keeping, inaccurate reports, time wastage in storing, processing and retrieving information encountered by the traditional hospital system in order to improve the overall efficiency of the organization. The tools used to implement the system are Hypertext Markup Language (HTML),* **Cascading Style Sheets** *(CSS), Hypertext Preprocessor (PHP), and My Structured Query Language(MySQ).The Proposed system was tested using the information collected from Murab Hospital, Ilorin, kwara State , Nigeria and compared with the existing traditional hospital system. The design provides excellent patient services and improved information infrastructure.*

Index Terms**-Management system, System design, web application system, Hospital Administration.**

I. INTRODUCTION

Hospital is an organization that mobilizes the skills and efforts of a widely divergent group of professionals, semi-professionals, professional's personnel, to provide highly personalized personnel services to patients [1].World health Organization (WHO) has defined hospital as an integral part of social and medical organization that provides the complete curative and preventive health care and treatment to people. Hospitals are the focal points of education for the health professionals and clinical research necessary for advancement of medicine. Thus, the hospital is one of the most complexes of all administrative organizations. The main purpose of the hospital is to provide adequate care and treatment to the people. Various operational works the timely acquisition and processing of clinical information related to the patient [4]. The hospital management system (HMS) comprises a computerized web based application for record keeping, tracking and prescriptions with monitoring. HMS can manage multiple users of the system and can have the track of the right assigned to them. It makes sure that all the users function with the system as per the rights assigned to them and they can get their work done in efficient manner. A good management system should allow for input and output by providing an objective for recording and aggregation information. It should be able to quickly collect and edit data, summarize results, and adjust as well as correct errors promptly [5]. Reference [5] designs HMS that Retrieve Information from the database as quickly as one searches on the screen and authenticate the users with the access control facility to prevent unauthorized users from accessing the data but does not include exporting of Data (History) on the database to appear in various formats (PDF, CSV, TXT). Reference [6] designs various HMS modules but the system is not designed to manage the affairs of the hospital but only built for the Patient Health Records. This paper provides solution to the existing problems of the hospital. The design improves the accuracy of medical records and efficient retrieval and usage of medical records. The purpose of the paper is to design HMS that helps to;

1. Eliminate redundancy in term of data storage. Data will be stored in a computer not heap of files.
2. Reduce the time wasted in retrieving data especially in finding a past health records.
3. increase Efficiency and Interactivity in any area of specialization in the hospital

An automated method for managing and administering patient data was established in the paper. This was done in an effort to increase the organization's overall efficiency by resolving issues with improper data keeping, erroneous reporting, and time waste in the traditional hospital system's processing, storing, and retrieving of information. Hypertext Markup Language (HTML), Cascading Style Sheets (CSS), Hypertext Preprocessor (PHP), and My Structured Query Language (MySQL) are the tools utilized to create the system. Using data gathered from Murab Hospital in Ilorin, Kwara State, Nigeria, the proposed method was evaluated and contrasted with the current conventional hospital system (Adebisi O.A, n.d.).

2. E –Hospital Management & Hospital Information Systems – Changing Trends

E –Hospital Management & Hospital Information Systems – Changing Trends

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Abstract — The rapid growth in Information & Communication Technology (ICT), and the power of Internet has strongly impacted the business and service delivery models of today's global environment. E-Hospital Management Systems provide the benefits of streamlined operations, enhanced administration & control, superior patient care, strict cost control and improved profitability. Globally accepted health care systems need to comply with Healthcare Insurance Portability and Accountability Act (HIPAA) standards of the US and that has become the norm of the Healthcare industry when it comes to medical records management and patient information privacy. The study is focused on understanding the performance indicators of Hospital information systems (HIS), summarizing the latest commonly agreed standards and protocols like Health Level Seven (HL7) standards for mutual message exchange, HIS components, etc… The study is qualitative and descriptive in nature and most of the data is based on secondary sources of survey data. To arrive at a conclusive idea of the larger picture on E- Hospital Management and Hospital information systems, existing survey data and specific successful case studies of HIS are considered in the study. With so many customized versions of E – hospital management solutions (E – HMS) and Hospital Information systems (HIS) available in the market, a generic module wise version of E – Hospital

Index Terms — Information & Communication Technology (ICT), Health Level Seven (HL7), Healthcare Insurance Portability and Accountability Act (HIPAA), E – hospital management solutions (E – HMS), Hospital Information systems (HIS)

I. INTRODUCTION

Hospital Information systems are in high demand to handle increasing population needs and also aids the practicing doctors and hospital service and support staff with timely service and precision. There are varied metrics available to assess the performance of services like hospital industry, and the successful implementation and usage of Hospital information system forms a crucial role. Hospital information systems are available in the software market which in most cases needs to be customized and in some cases HIS needs to be developed as a customized software based on specific hospital requirements (user requirements). The paper looks at assessing and identifying the key components of E – HMS as its needs and management varies across the globe. Also identification of the key performance indicators of E – HMS / HIS is also attempted from a benchmarking perspective.

1.1 Objective of the study

daily basis and HIS plays a crucial role. Hospital services are customer and society sensitive and the quality of HIS and service of hospital staff needs to be precise and of highest standards. Today's hi-tech Hospital services are predominantly provided by private players in the market at increased costs despite low cost competition by public sector hospitals. OECD report (2012) finds that attempts to control costs by regulatory means, such as reducing fees paid to healthcare providers and rationing user access, have typically only been temporarily successful.

E-Hospital Management System provides the benefits of streamlined operations, enhanced administration & control, superior patient care, strict cost control and improved profitability. Due to business and legal demands—like the Healthcare Insurance Portability and Accountability Act (HIPAA) of the United States as a Global norm —healthcare organizations are fully realizing the urgency to integrate their businesses. Unfortunately, most of the health information systems are still proprietary and often only serve one specific department within a healthcare business. This represents a significant obstacle to business integration.

II. RESEARCH METHODOLOGY

The study is qualitative and descriptive in nature and most of the data is based on secondary sources of survey data. Such an approach is adopted in the study as the area of research is very broad and sources of data are also spread across multiple locations. To arrive at a conclusive idea of the larger picture on E- Hospital Management and Hospital information systems, analyzing the existing survey data and specific successful case studies of HIS would give a better result in finding the answers to the research question framed.

III. DEFINITION OF HOSPITAL INFORMATION

information processing and information storage subsystem of a hospital, whereby it is not just about computer systems and networks and the computer-based application systems that are installed on them, but it is about the information in a hospital as a whole.

HIS consist of different softwares that are integrated in order to capture data in specific sections of the hospital [Garrido, Raymond, Jamieson, Liang and Wiesenthal [2004:21-22]], handle the workflow of daily medical services and also assist in managing financial, administrative and clinical data. From the various definitions of HIS, it is understood that HIS is a very broad area as it encompasses services catering to varied departments and personnel of an hospital and finally satisfying the patient care in its true sense. Hospital Information Systems (HISs) are supposed to make the right information and knowledge available to the right people, in the right place, at the right time and in the right form.

IV E – HOSPITAL MANAGEMENT / HIS STANDARDS & TECHNOLOGIES

The developments in technology and internet speed made services like Telemedicine a dream come true for today's patient care needs. Telemedicine can be referred to as the provision of medical services from a distance [Wooton, Craig and Patterson, 2006:1]. This includes diagnosis, treatment and prevention of diseases. The types of telemedicine can be categorized as real-time or pre-recorded telemedicine. Also the growing technology and varied solutions in the hospital management domain necessitated for the development of common protocols and standards at global level. Such standards and legal requirements are discussed in further sections.

According to Belgium Federal Public Service – FPS

When it comes to the management of medical records and the privacy of patient information, globally recognized health care systems must adhere to the US Healthcare Insurance Portability and Accountability Act (HIPAA) regulations, which have become the industry standard. The study's main goals are to comprehend hospital information systems' (HIS) performance metrics and to summarize the most recent widely accepted protocols and standards, such as Health Level Seven (HL7) standards for message transmission between parties and HIS components, among others. The majority of the data in this qualitative, descriptive study comes from secondary sources of survey data. Existing survey data and particular effective HIS case studies are taken into consideration in the study in order to reach a definitive understanding of the broader situation regarding E-hospital management and hospital information systems (Premkumar Balaraman, 2013).

3. E-tools for hospital management: An overview of smartphone applications for health professionals

1. Introduction

Italian hospitals are managed and organized by a hospital management unit (HMU), which consists of a General Manager, an Administration Manager and a Chief Medical Officer. The main occupation of this unit is the achievement of different goals set by the hospital administration itself and ruled by Italian law, healthcare policies and programs. In particular, HMUs must provide management, organization and arrangement of hygiene and prevention issues and of forensic medicine; promotion of scientific acknowledgements; and qualitative improvement of the provided health services. Moreover, the hospital administration is jointly responsible for the clinical governance of the structure and aims to improve the efficacy and suitability of its healthcare services. In this context, the HMU plays a crucial role in the organization and setting of hospital resources and services, such as the arrangement of ward spaces and activities, personnel shifts and timetables, beds and equipment management, and patient admissions and discharges. All the activities mentioned above are directly or indirectly regulated by this central administrative, management and supervisory body [1].

Commonly, the management of the main hospital activities is organized by different software packages that run only on desktop computers, which may not always allow fast and practical use by health operators. This problem could be overcome by combining these software packages with mobile health [2,3]. Mobile health, defined as the use of mobile and wireless technologies to support the achievement of health objectives [4], is a rapidly expanding area within e-health. Since the number of medical apps has been increasing consistently in recent years, a growing number of clinicians and health professionals have become increasingly accustomed to using smartphones and these applications, achieving successful results in different fields [5].

Recent literature reviews have evaluated the various uses of smartphones and tablet devices in many different contexts, such as health promotion interventions (smoking cessation, body weight loss, reducing alcohol consumption, sexually transmitted disease

Typically, various desktop computer software programs are used to administer the primary hospital operations; however, this may not always enable quick and useful use by medical professionals. Combining these software programs with mobile health could help with this issue. In order to assess their features and analyze them based on their content, quantity of downloads, and application area, this study aims to give a general overview of smartphone and tablet applications used for hospital management and administration (a, n.d.).

4. Key performance indicators of HSE in the hospital management system during corona virus pandemic

1- Introduction

Hospital is one of the important institutions in the modern healthcare system. Today, hospitals are important as they undertake the responsibility of large resources and capital associated with the public health as well as human resources, physical, financial, and equipment capital (Moktadir, et al, 2020). In today's society, in which complex systems are often used, failure of a system or incidence of accidents can cause impairments at different levels, and even be a threat for the public and environment(Ghasemi& Babaeinesami, 2020). Due to the existence of inherent uncertainty in natural disasters, related organizations are not able to optimally use the critical infrastructures to reduce destructive effects (Ghasemi& Babaeinesami, 2019) . For this reason, everyone is seeking a safe system with low risk probability. Here, risk means uncertainty and indicates incidence of an event with a certain severity (Apornak, 2020). The results of risk assessment determine what damage would be incurred to the system with incidence of every risk, and what would be the environmental consequences (Kejriwal, et al, 2021).

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The global standard organization defines risk to involve a probability of accident and resulting consequences. Ding (2018), defines risk as combination of the probability of incidence of any risk and its consequences.

The recent crisis that the entire world is facing caused by COVID-19 a pandemic that has forced all organizations whether public or private to rethink their mission and vision(Ghasemi, et al, 2021) Thus, the efficacy of the healthcare sector depends greatly on the rapidity to adapt to the new dramatic situation(Babaeinesami & Ghasemi. 2021). Before the World Health Organization (WHO) had declared the COVID-19, a pandemic crisis, on 11 March 2020, Algeria had the situation under control, although the first two cases were registered on 25 February 2020 (Shafipour-omran, et al, 2021). The rapid evolution of the pandemic coronavirus crisis requires that the common strategies should be oriented toward ensuring the health of the population and a continuous assessment of the events to give priority to future needs. The situation in Algeria is not far from the rest of the world, with a total of 55,081 cases and 1880 deaths recorded until 22 October 2020, with a mortality rate of 11.70%. This high rate represents a threat to the national health situation of the country that leads to making a study to understand how the healthcare sector is dealing with this crisis and what are the available and efficient managerial tools to help managers and healthcare staff to better control facilities (Ahmadi Choukolaei, et al, 2021). The international statistics of WHO place Algeria in the fourth position in Africa (with 50,914 cases) after

In order to create a strategy agenda and set of strategic decisions during the corona virus pandemic, this article analyzes the key performance indicators (KPIs) of HSE in the hospital management system. The research first focuses on choosing the useful indicators for evaluating the hospital administration's HSE management system by professionals using a bank of gathered indicators, using the various decision-making tools that are accessible based on the criteria that patients find important. The fuzzy TOPSIS approach is then used to rank the HSE KPIs. According to the findings, the TOPSIS algorithm is among the most dependable, scientific, and managerial approaches to decision-making (Mousavi, 2022).

2.4. Comparison chart

Features	LifeEasy	Epic	Meditech	Cerner Health
Platform	Web-based	Web, app	Web	Web, App
Payment	Free	Subscription	Subscription	Subscription
Appointment scheduling	Yes	Yes	Yes	Yes
Patient management	Registration, medical records	Mychart portal	Patient portal	Centralized records
Billing & payment	Invoice, salaries	Integrated billing	Financial integration	Comprehensive billing system
Offline access	No	No	No	No
Reporting and analytics	Operational and financial reports	Limited patient recommendations	Clinical decision insights	Advanced reporting tools

Table 1 comparison table

3. Methodology:

3.1. Different methodology

- **Waterfall methodology**

Waterfall methodology uses a linear and structured approach. Projects are divided into distinct phases, each of which must be completed before moving on to the next. Waterfall model excels in situations where requirements are well defined and not changed (Vanitha Sivasankaran Balasubramaniam, n.d.).

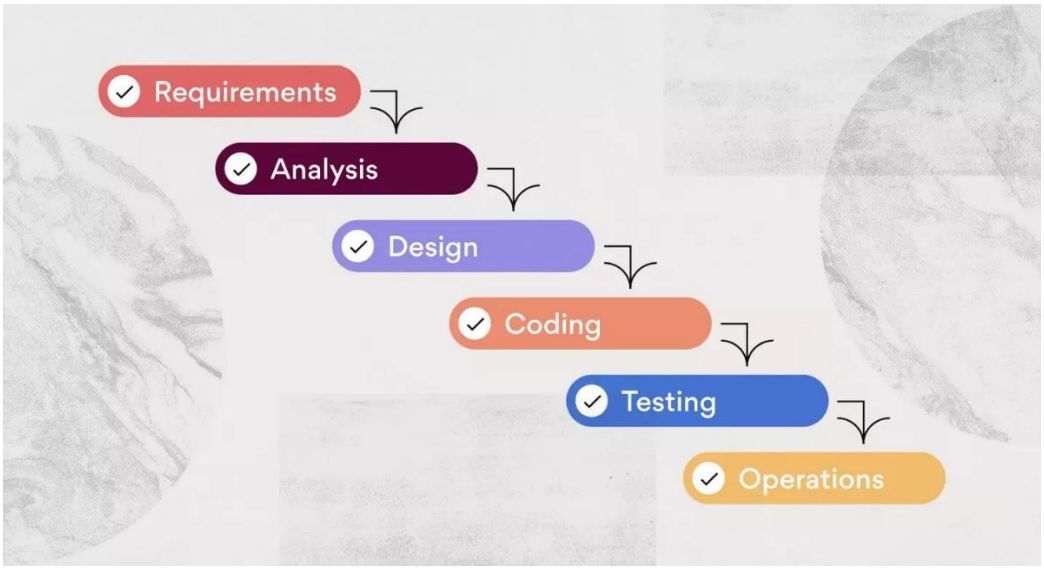


Figure 4 waterfall methodology

- **Agile methodology**

Agile methodology is a project management framework that breaks projects down into several dynamic phases, it is also known as sprints (laoyan, 2024).

Figure 5 agile methodology

- **Incremental software development**

Incremental model is a process of software development where requirements are broken down into multiple increments is done in steps from analysis design, implementation, testing, maintains (Bennett, 2024).

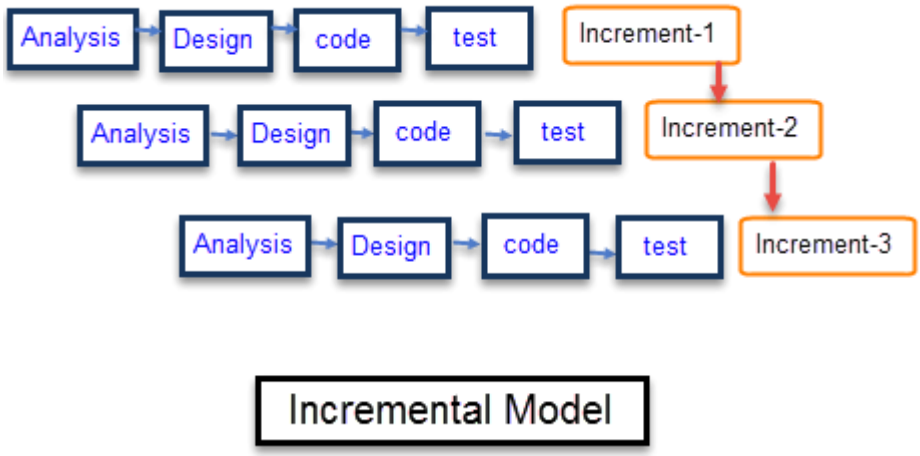


Figure 6 incremental methodology

3.2. Incremental software development life cycle (SDLC)

To develop this project effectively and efficiently, Incremental methodology will be used. The incremental model is a software development process in which requirements are split up into several independent software development cycle modules. Every module in this paradigm goes through the phases of requirements, design, implementation, and testing. The module's functionality is increased with each new release. (roger, 2021)

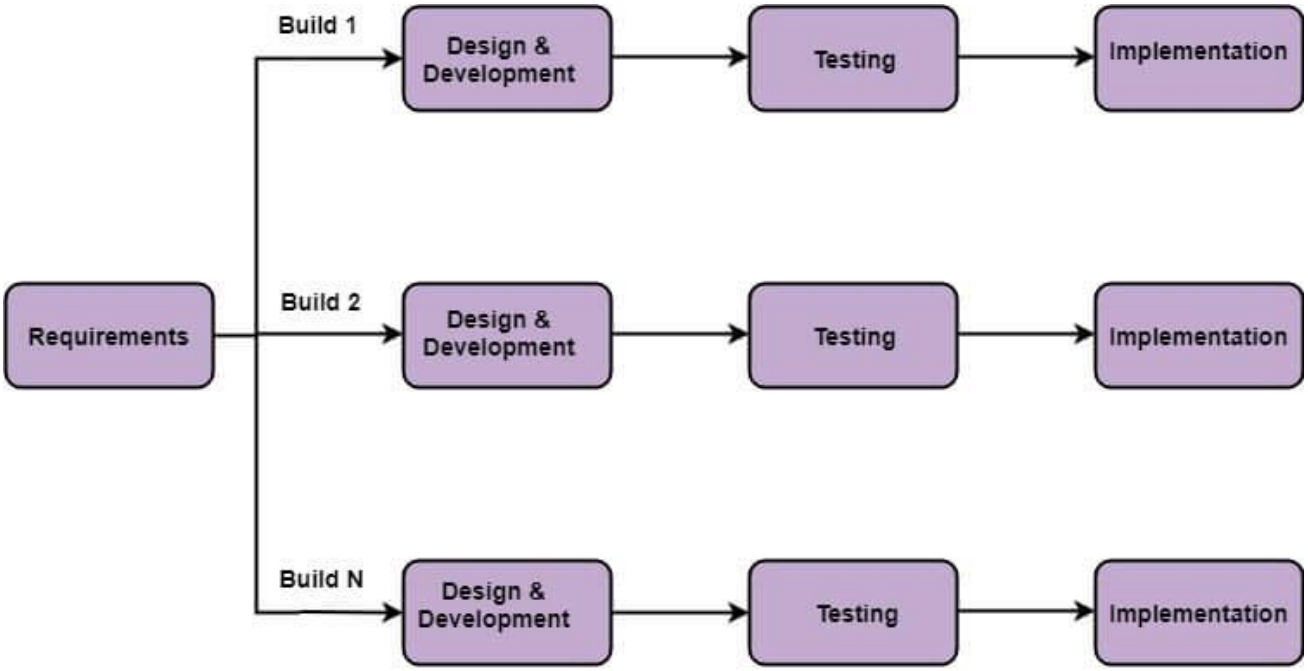


Fig: Incremental Model

- Software development life cycle (SDLC):

  The SDLC is a structured process that guides the development of software.

1. Requirement Analysis:

   In this phase, the projects general plan and resources required are defined. Documenting the feature required as well as system performance and security requirements. Defining scope of the project and finding inspirations like design, features.

2. Design and Development:

   After gathering all the requirements, In this phase system architecture design, database design, user interface, wireframe, high-level design, and prototype design are designed based on gathered requirements.

   After system designing phase, development of project begins. Code is developed according to the specifications and developing efficient code for better performance. It includes frontend, backend, database.

3. Testing:

   In this phase, the objective is to test functionality and performance of the code and project. It determines whether it works as expected and if we get any errors or bugs it will be fixed before deployment. Several types of testing will be done such as unit testing, system testing and user acceptance testing.

4. Implementation:

   In this final phase of incremental methodology, it is the full and final updates to the software. software is fully tested and is errors free, client expectation and requirements are approved the software is deployed to the real world environment.

4. Work breakdown structure:

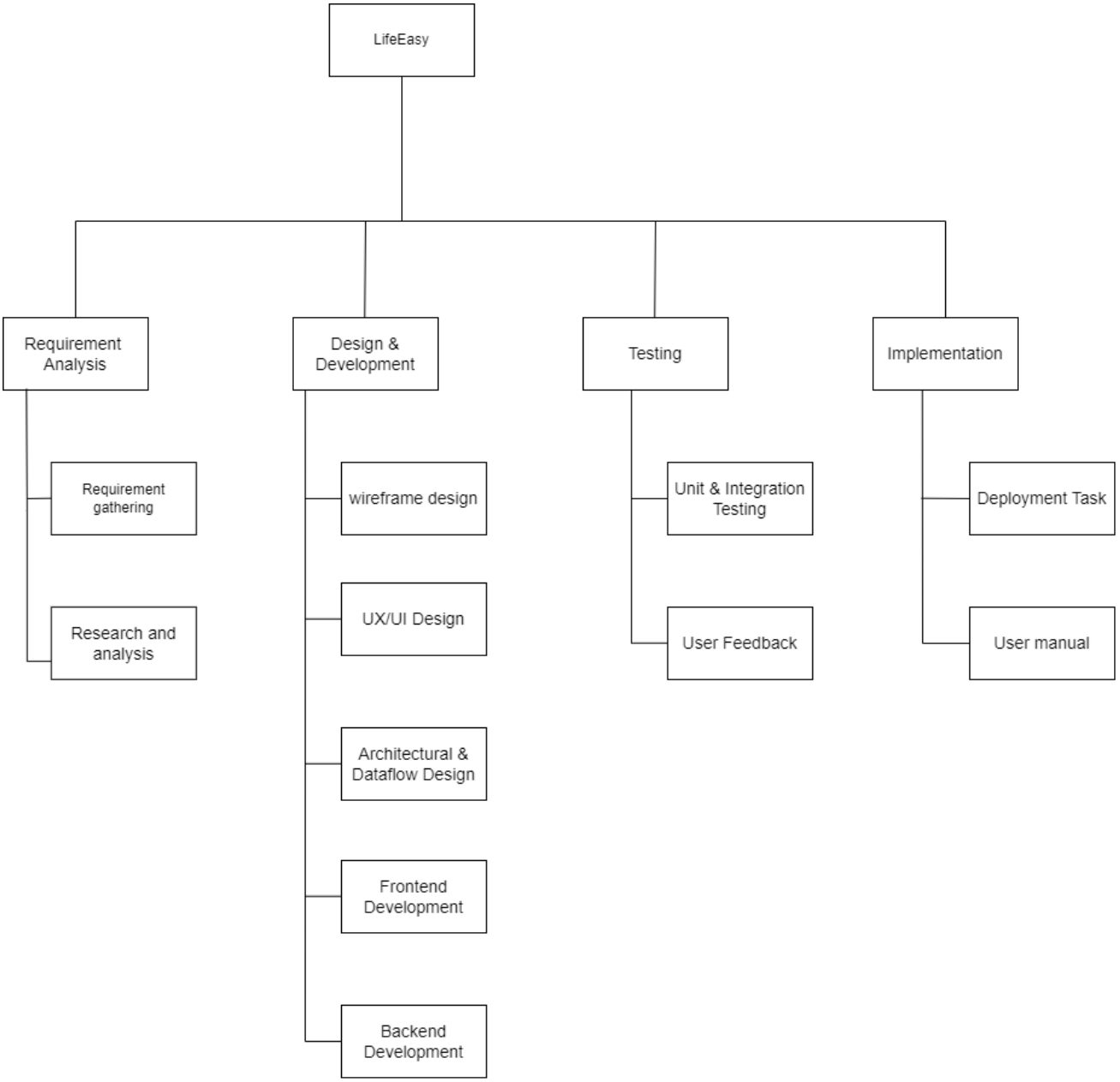


Figure 7 work breakdown

4.1. Work breakdown structure revised

- First increment

In first increment register and login features are completed.

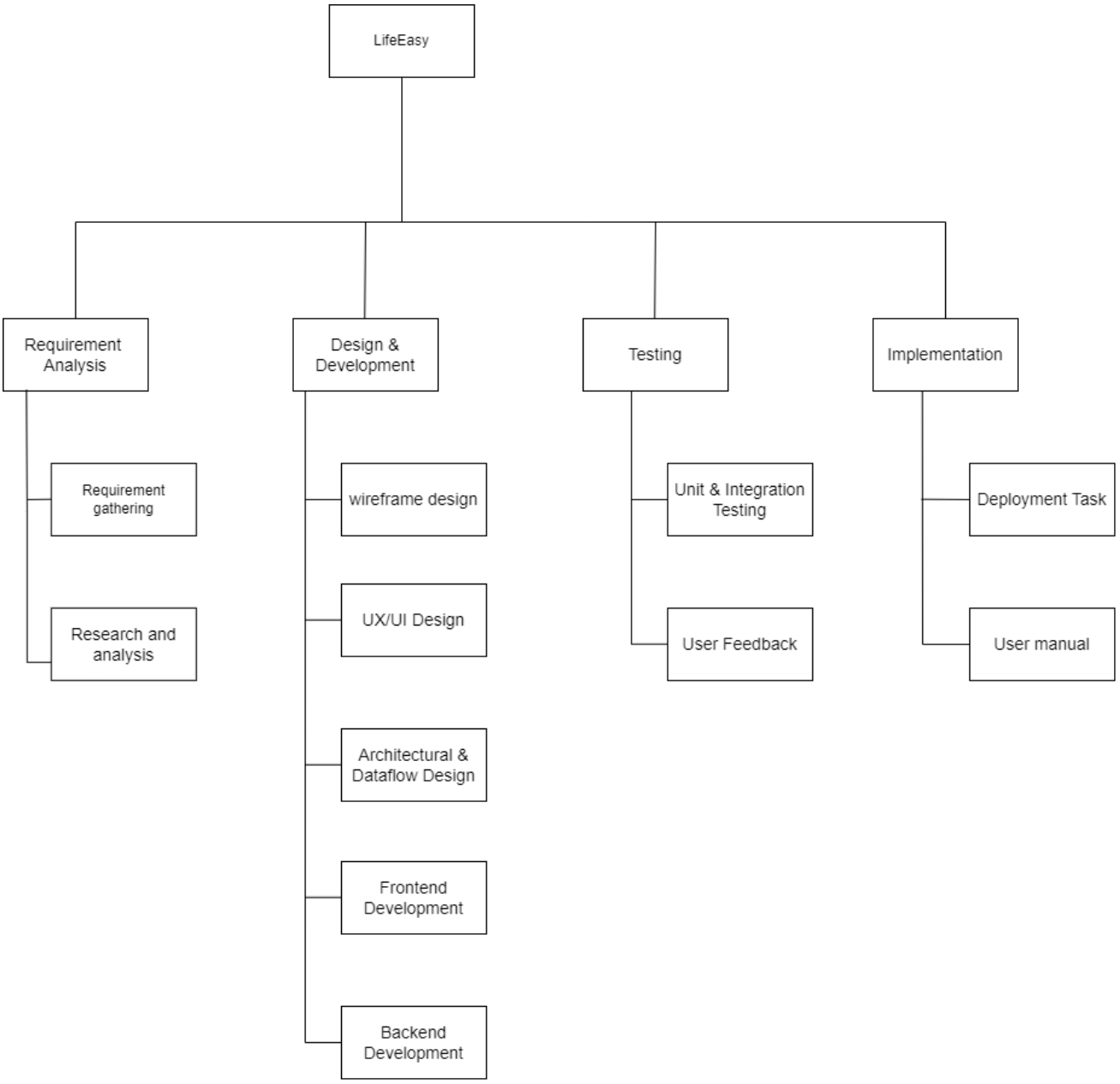


Figure 8 first increment WBS

- Second increment

In second increment appointment and admin are focused.

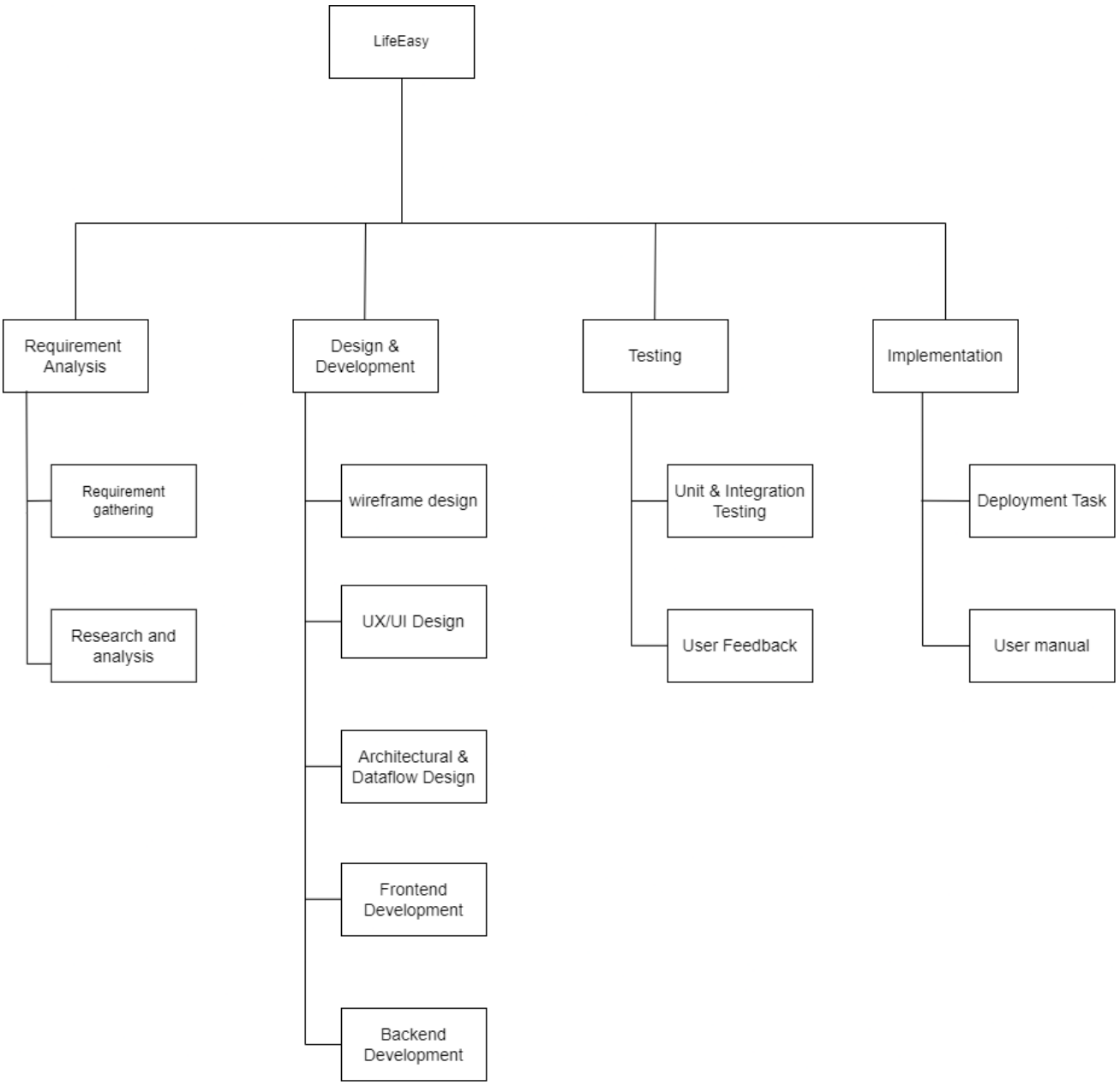


Figure 9 Second increment WBS

- Third increment

In the third increments we focus on medical records, admit patient, bed manage and system notification. In the medical record we can store patients reports safe.

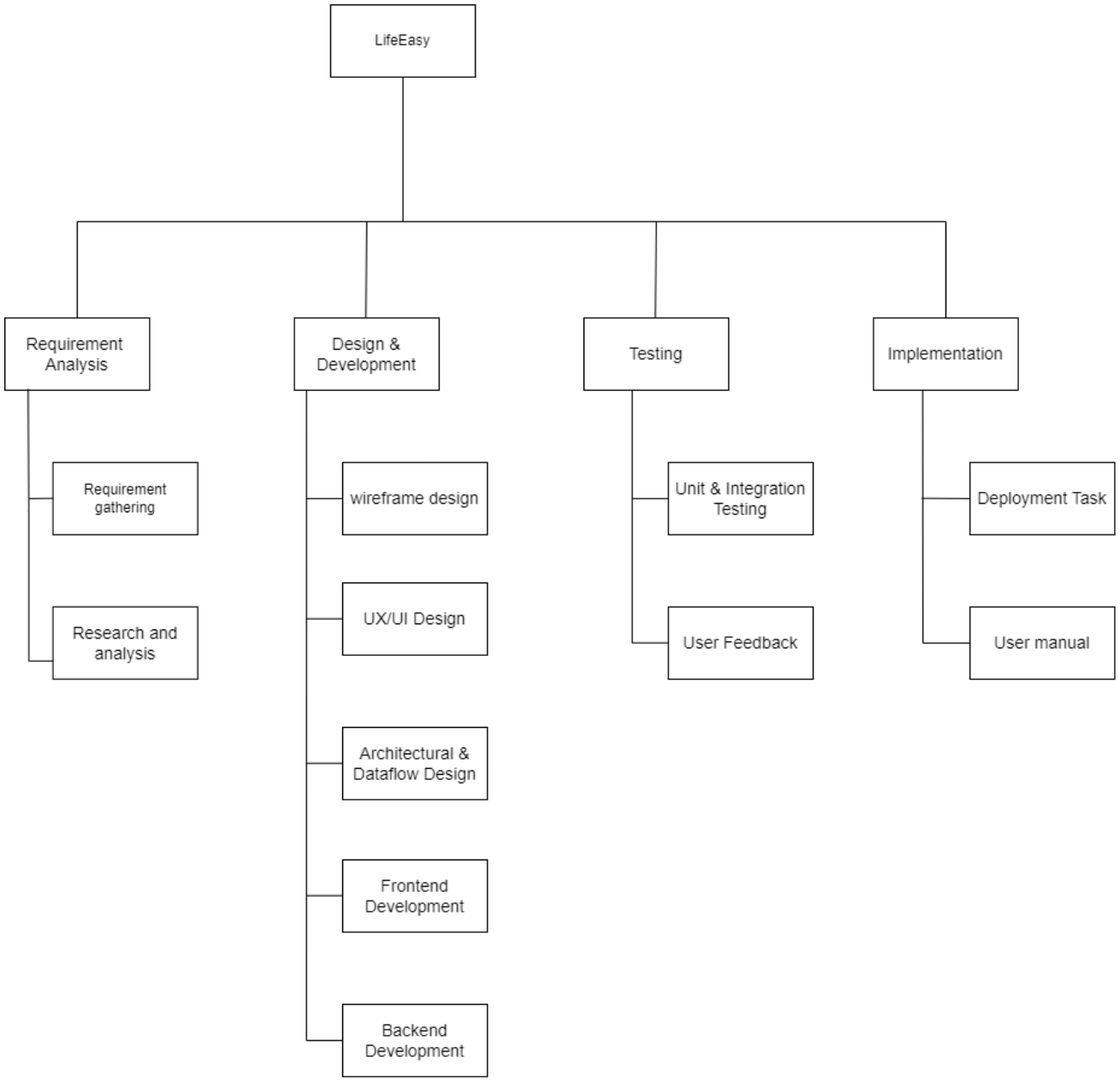


Figure 10 third increment WBS

- Fourth increment

In the fourth increment bed manage, billing and reporting are more focused.

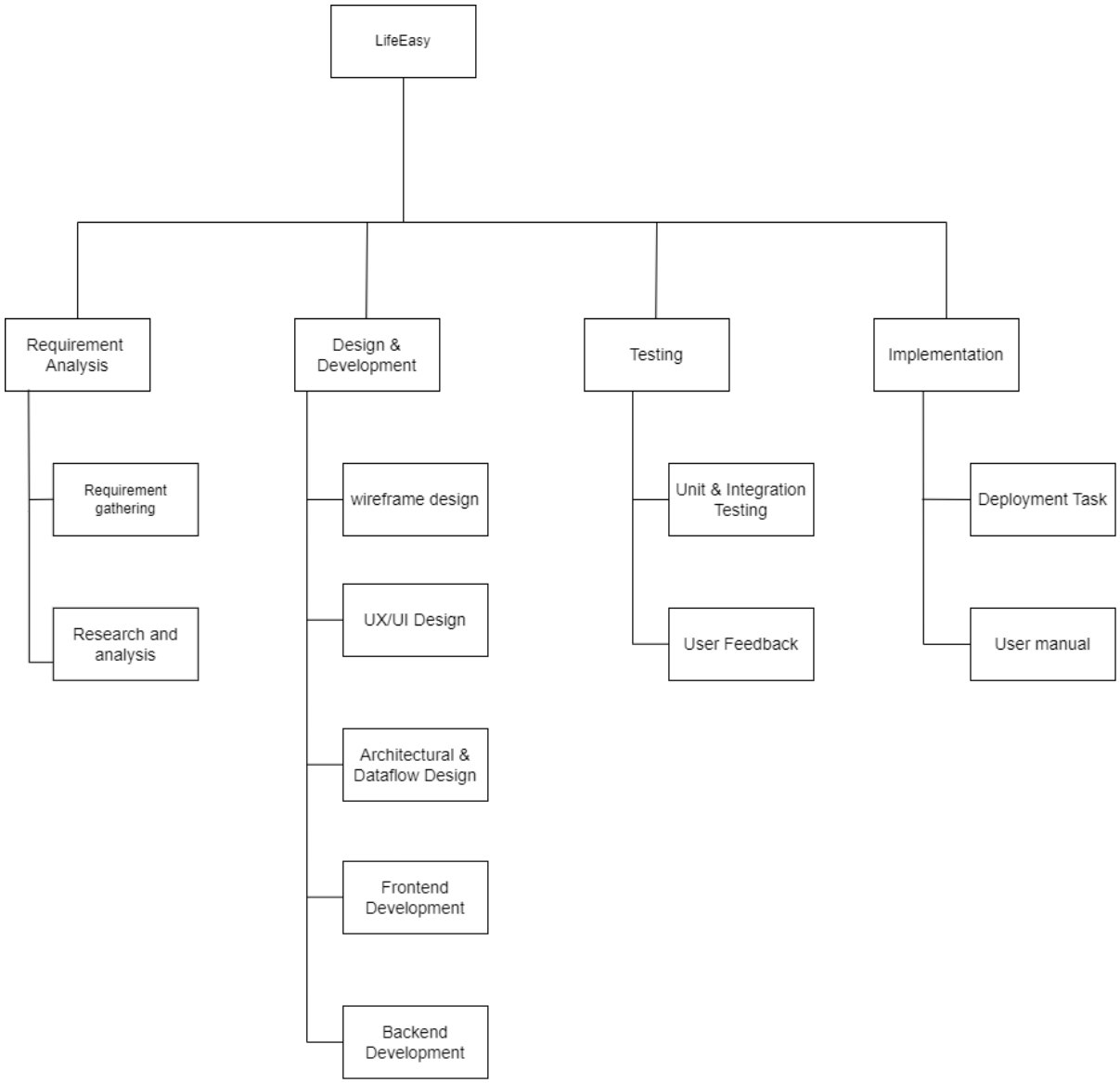


Figure 11 Fourth increment WBS

Milestone:

Milestone	Increment	Features	Time	Objectives
Requirement Analysis	-	Requirements gathering, scope definition, and planning	Week 1	Identify core functionalities, user roles (admin, doctor, patient), and research about the project journals.
Increment 1	Login/Signup	- User registration and login system	Week 4	Implement basic user authentication (login/signup) for admin, doctor, and patient
		- Role-based access controls		Ensure secure access based on user roles
Increment 2	Booking & DB	- Appointment booking system	Week 4	Allow patients, doctor, and receptionist to book appointments with doctors and manage schedules
		- Database integration		Set up database to store patient, doctor, and all data
Increment 3	Medical Record & Notification	- Medical record management	Week 4	Enable doctors to add/update patient medical history and access health records by doctor and patient.
		- Notification system		Implement notifications/reminders for appointments, follow-ups.
Increment 4	Billing, Payment & Reporting	- Billing and payment system	Week 5	Automate billing, generate invoice and enable secure payment options. Easy and secure salary payment.
		- Reporting system		Generate financial reports, patient treatment summaries, and operational analytics

5. Milestone revised

- **First increment**

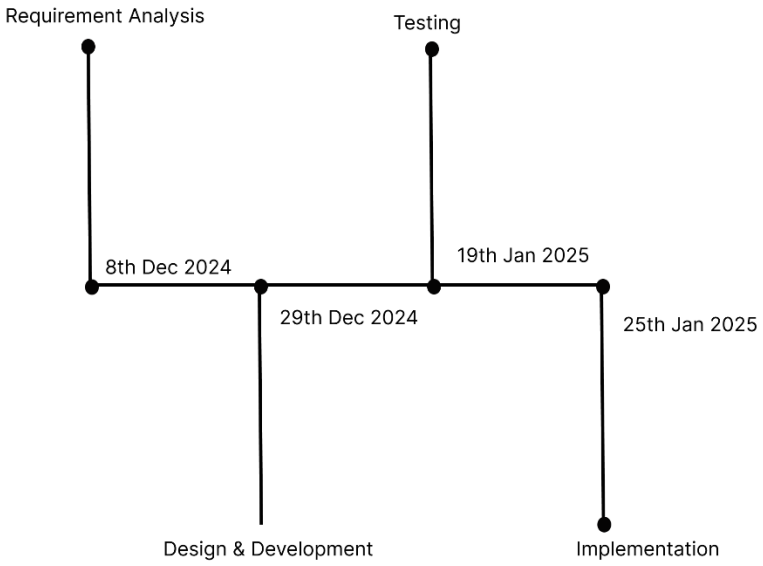


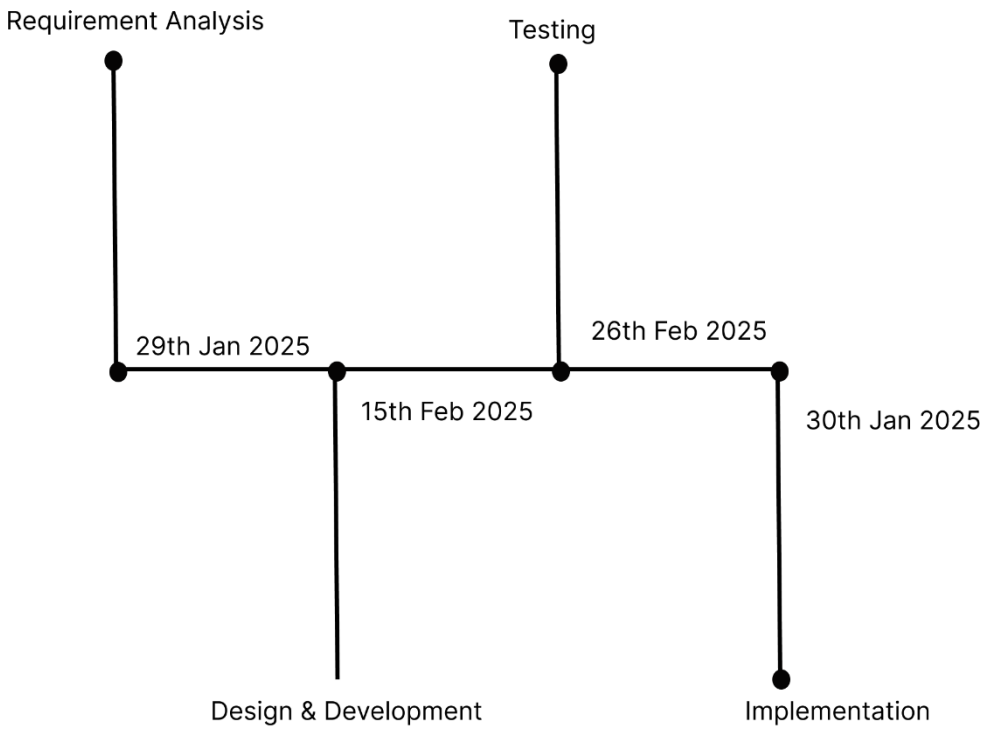
Figure 12 First milestone increment

- Milestone review for first increment

  - ✓ Milestone 1 : Requirement Analysis
  - ✓ Status : Completed
  - ✓ Milestone 2 : Design & development
  - ✓ Status : Completed
  - ✓ Milestone 3 : testing
  - ✓ Status : Ongoing
  - ✓ Milestone 4 : implementation
  - ✓ Status : Incomplete

- **Second increment**

s



Milestone Review for Second Increment

- ✓ Milestone 1 : requirement analysis

  Status : Incomplete

- ✓ Milestone 2 : Design & Development

  Status : Incomplete

- ✓ Milestone 3 : Testing

  Status : Incomplete

- ✓ Milestone 4 : Implementation

  Status : Incomplete

- **Third increment**

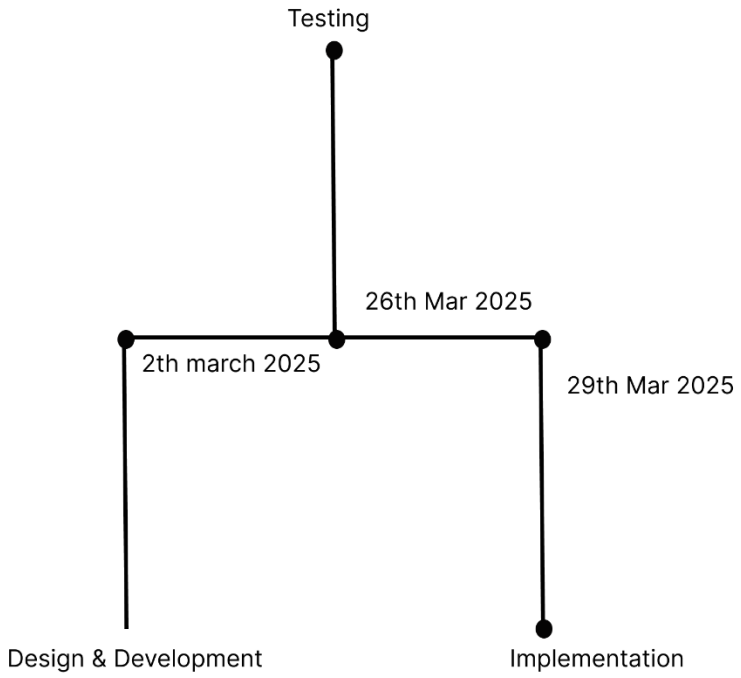


Figure 13 Third milestone increment

Milestone Review for third Increment

- ✓ Milestone 1 : Design & Development

  Status : Incomplete

- ✓ Milestone 2 : testing

  Status : Incomplete

- ✓ Milestone 3 : implementation

  Status : Incomplete

- **Forth increment**

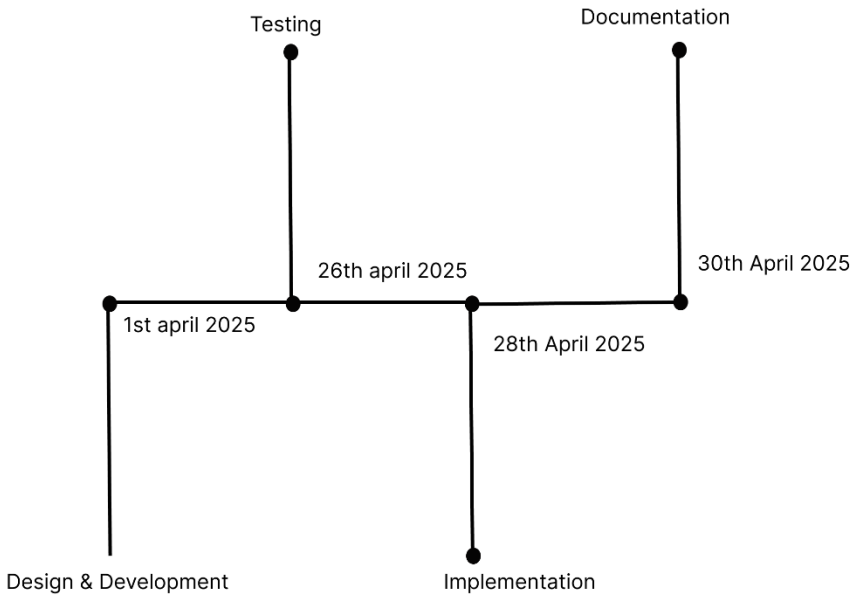


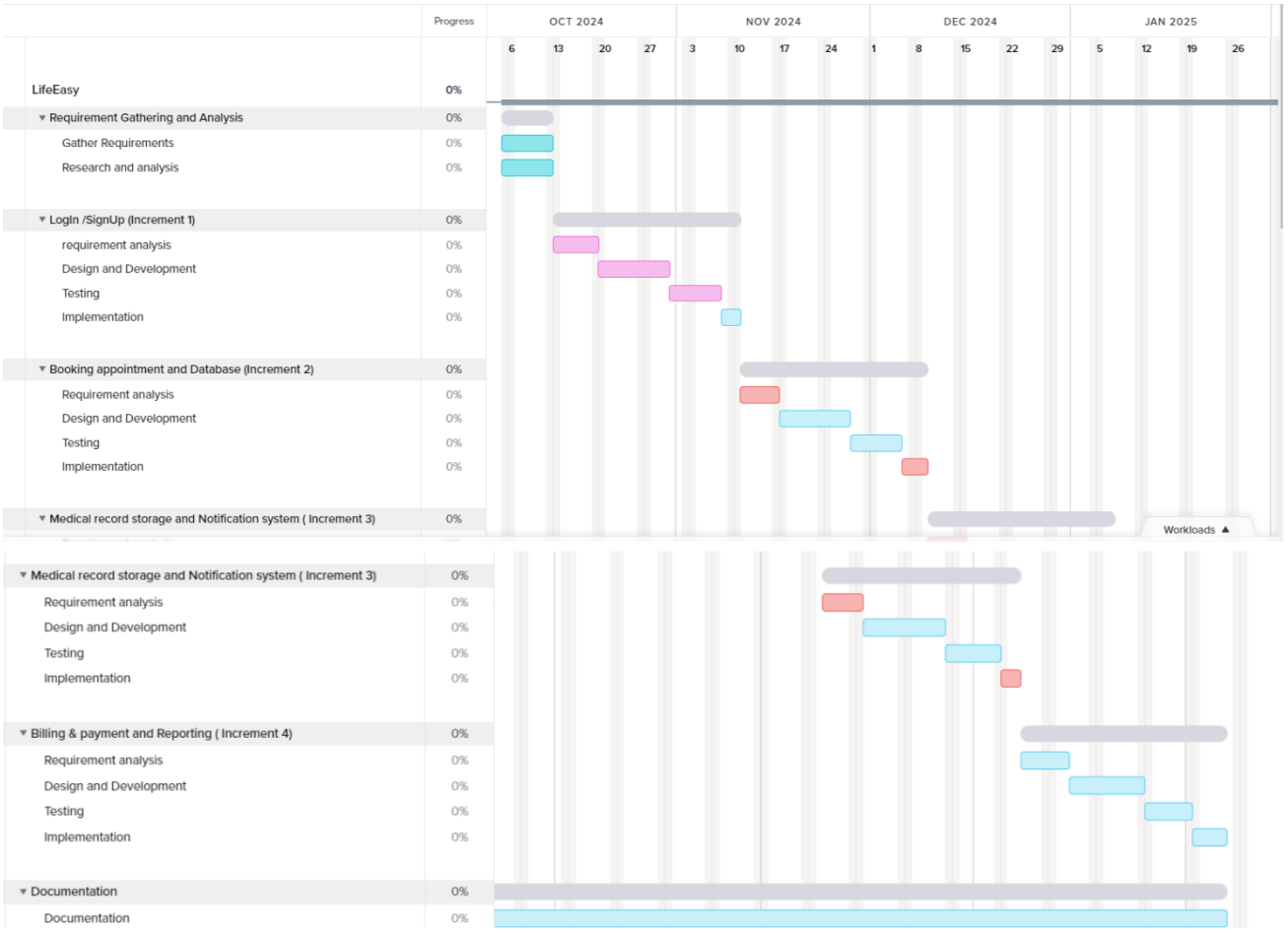
Figure 14 fourth milestone increment

Milestone Review for fourth Increment

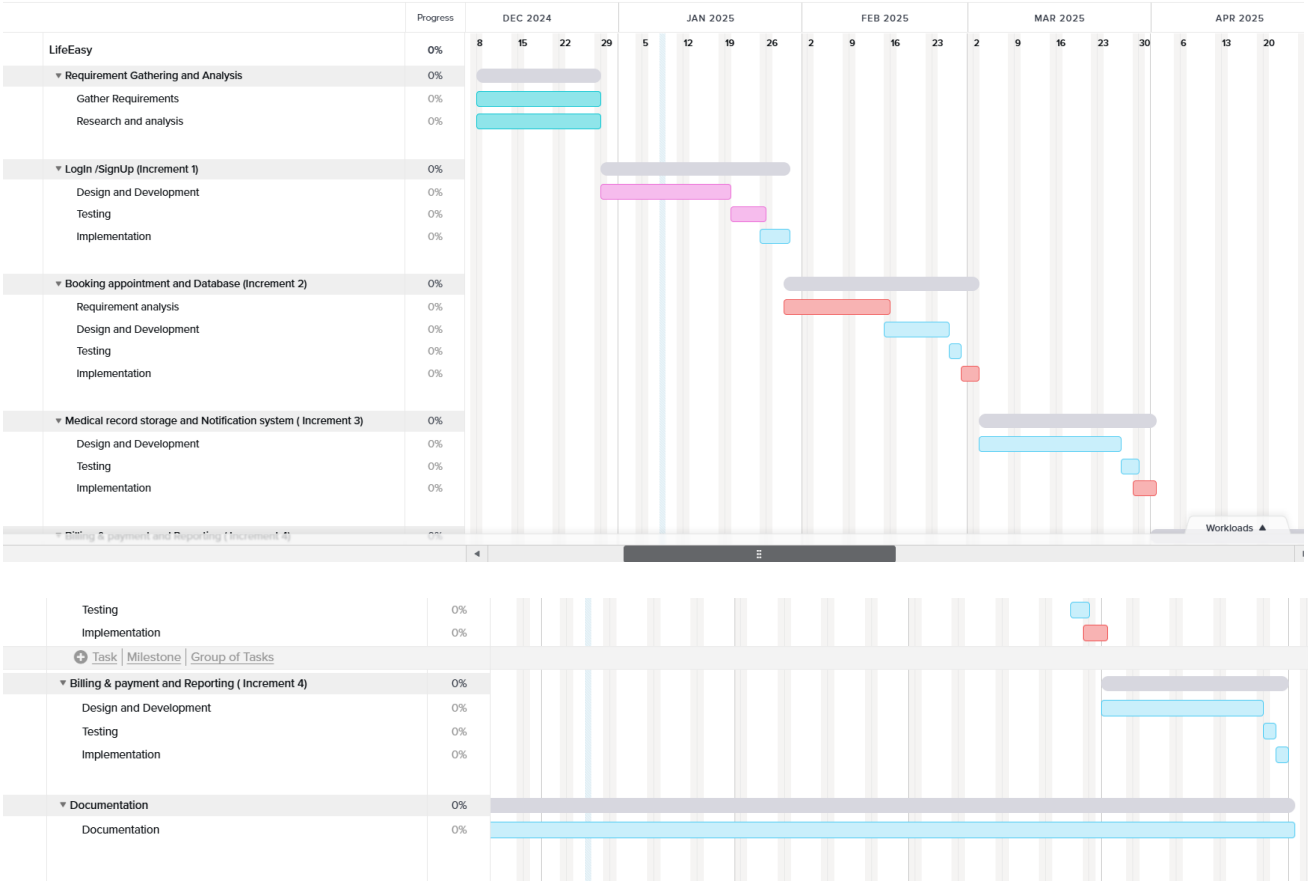
- ✓ Milestone 1 : Design & Development
- ✓ Status : Incomplete
- ✓ Milestone 2 : Testing
- ✓ Status : Incomplete
- ✓ Milestone 3 : Implementation
- ✓ Status : Incomplete
- ✓ Milestone 4 : Documentation
- ✓ Status : Incomplete

Gantt chart previous:

Gantt chart of the project management.



6. Gantt chart revised



7. Work Done

7.1. Software requirement specification

Software requirement specification is a document that details the features and functions of a software. It outline the functional and non functional requirements.

- **Functional requirements**

1. Registration

- Patient registers and data are stored secured.
- Provide medical records.
- Opt verification should be implement

2. User management

- Role based access control like admin patient doctor.
- Should have secured login

3. Book an appointment

- Allow patient to book and appointment, reschedule and cancel the appointment
- Notify patient for the appointment status or reminder.

4. Billing and payment

- Generate invoice based on services.
- Track and save payment patients bills.

5. Login

- Patient should only login after registration
- Should be secured login.

- **Non functional requirements**

1. User friendly : website should be user friendly easy to navigate and easy to learn.

2. Security: data should be encrypted and users must have secured login and register data.

3. Reliability : the system should be reliable most of the time it should be available to the user. It should have auto backup.

4. Code readability : code should be well maintain which will help developer to understand easyly.

7.2. Entity relation diagram (ERD)

Entity relation diagram is a diagram that shows the structure of a database.

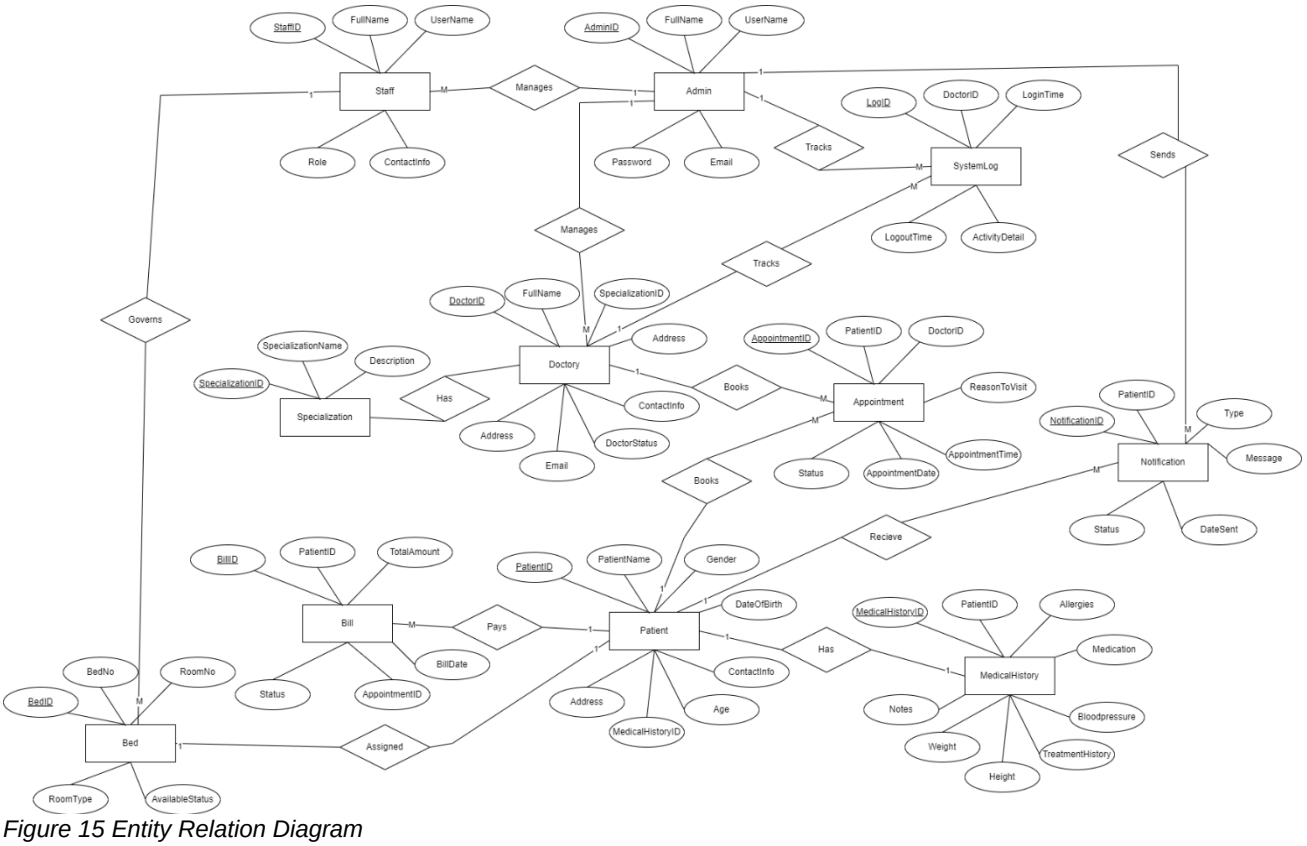


Figure 15 Entity Relation Diagram

7.3. Relation diagram

Relation diagram help to show actual table and there relationships in a database, it shows all the attributes with the primary key and foreign keys.

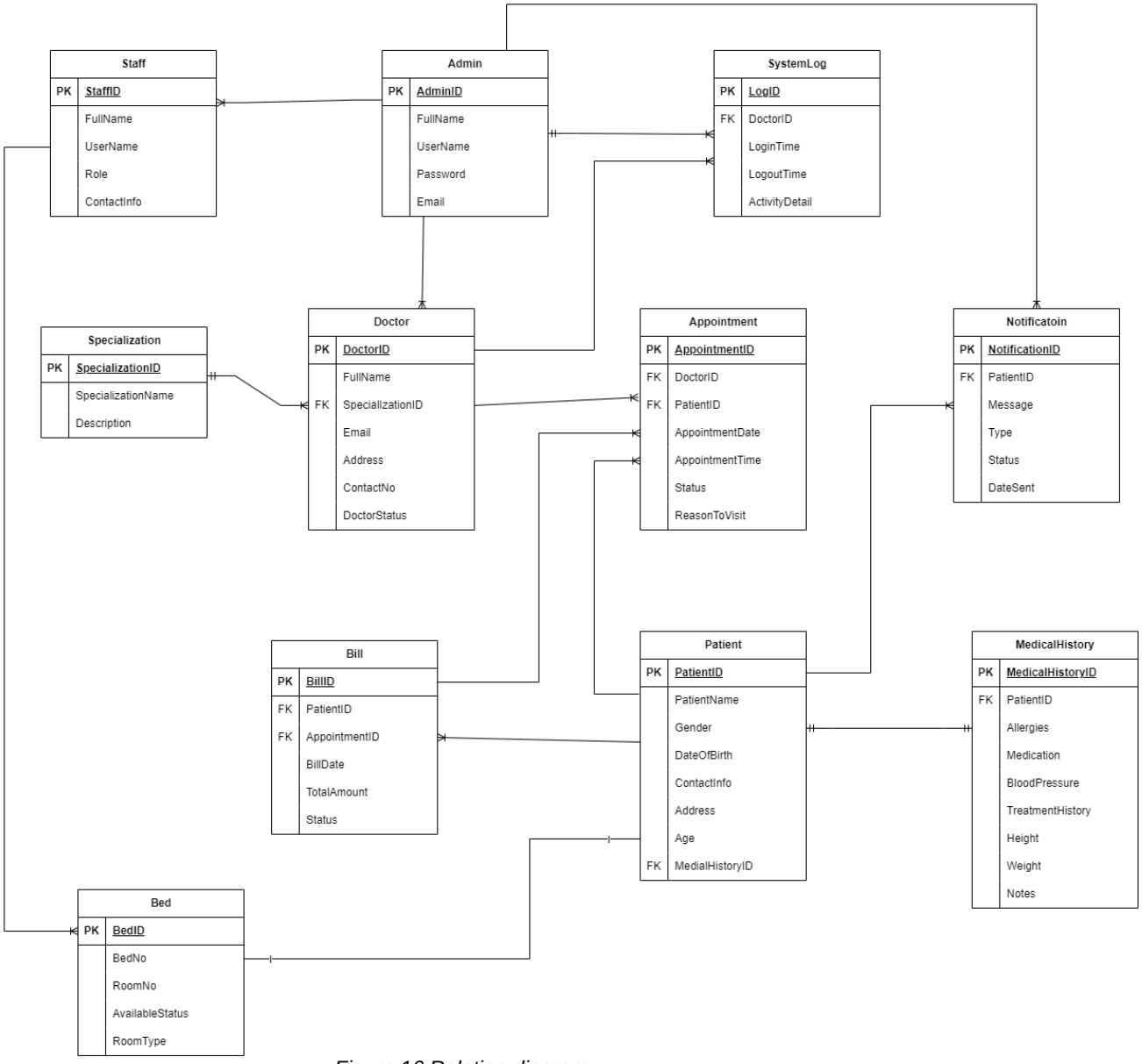


Figure 16 Relation diagram

7.4. Usecase diagram

In the usecase diagram it visualize the interactions between user and system. Use case provides high level overview of the system.

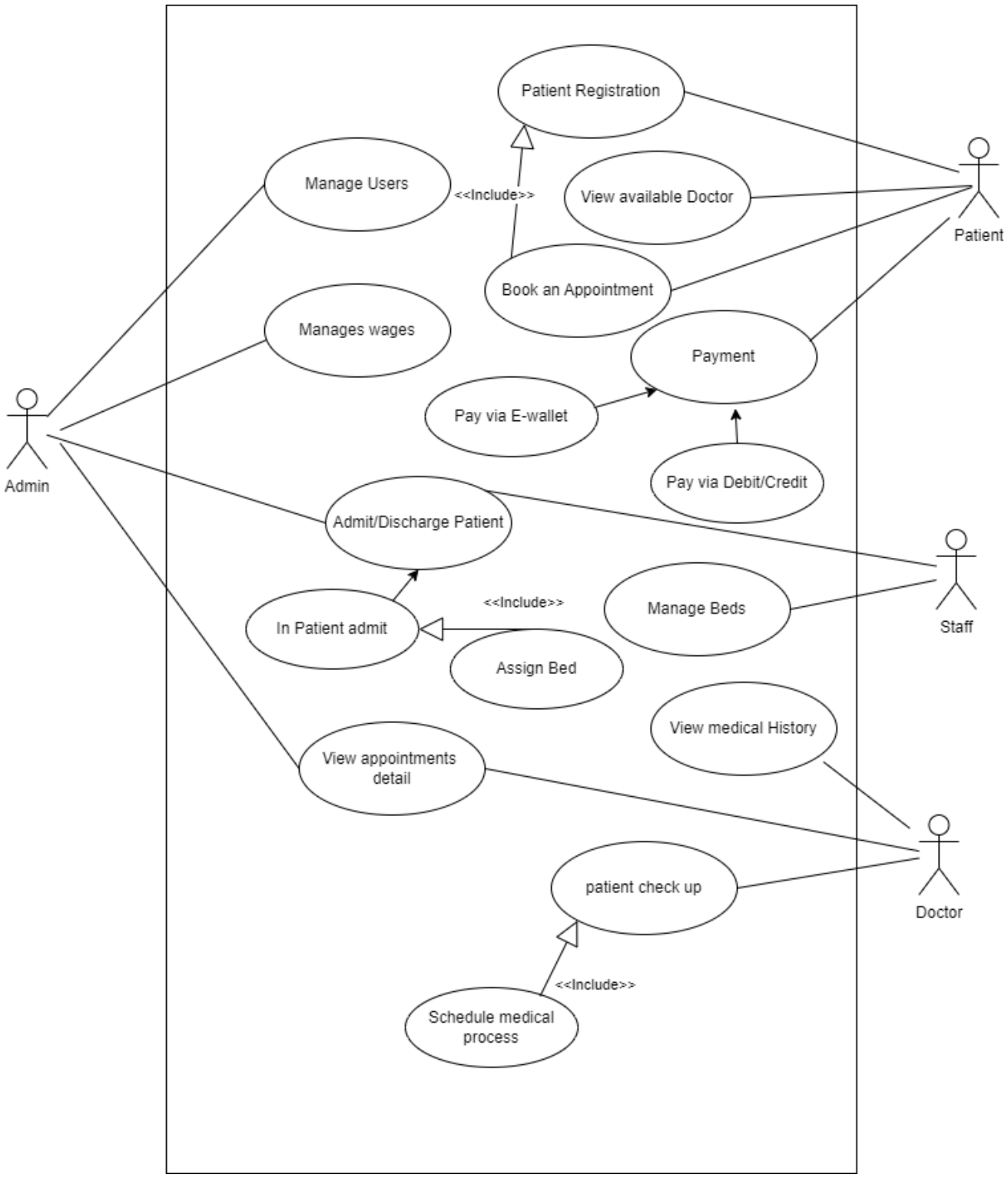


Figure 17 Usecase Diagram

7.5. Sequence diagram

Sequence diagram is visualization of objects interacting with each other in a system.
This diagram consist of lifelines, time duration and messages which is exchange over time.

- Register sequence diagram

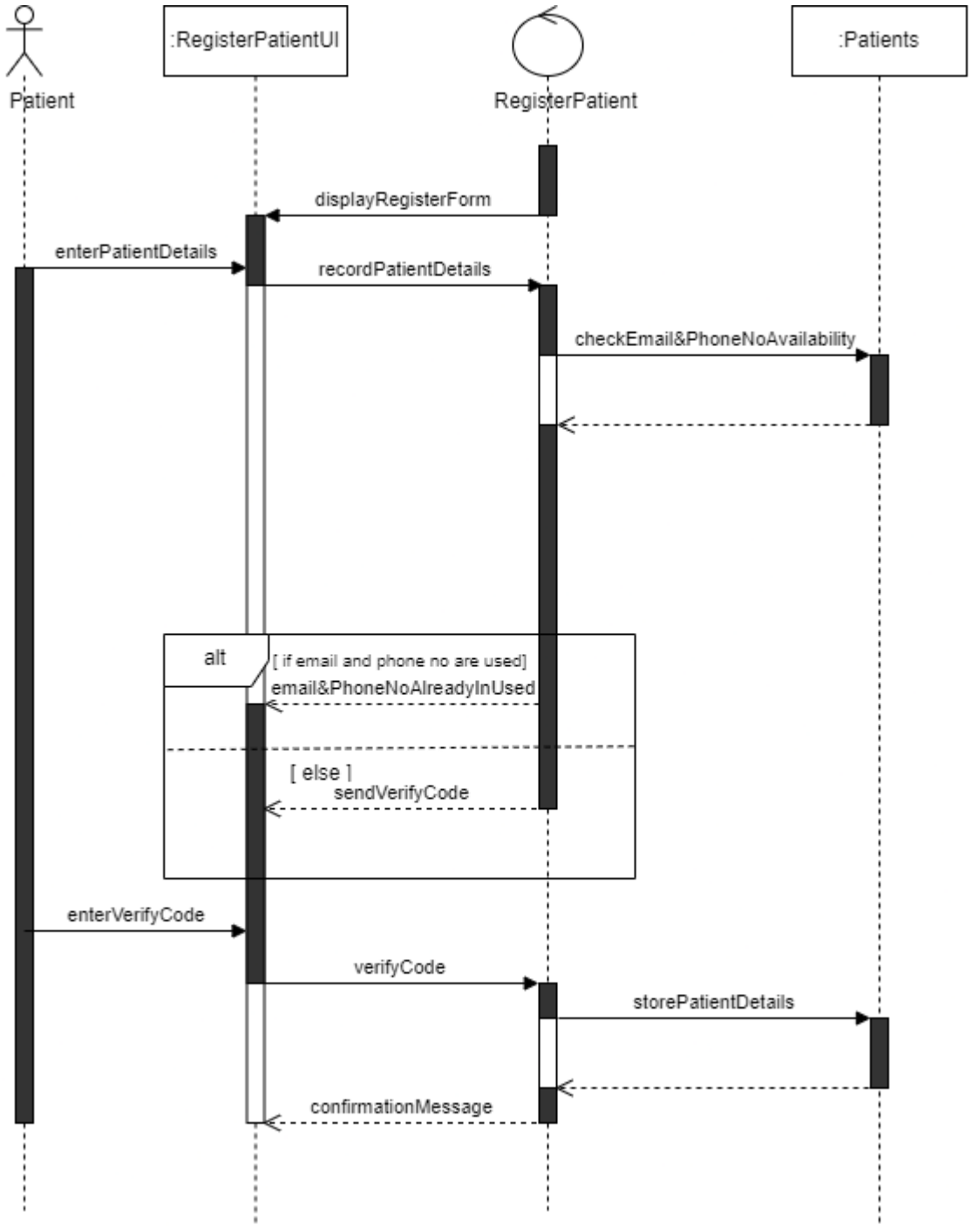


Figure 18 Register sequence diagram

- Appointment sequence diagram

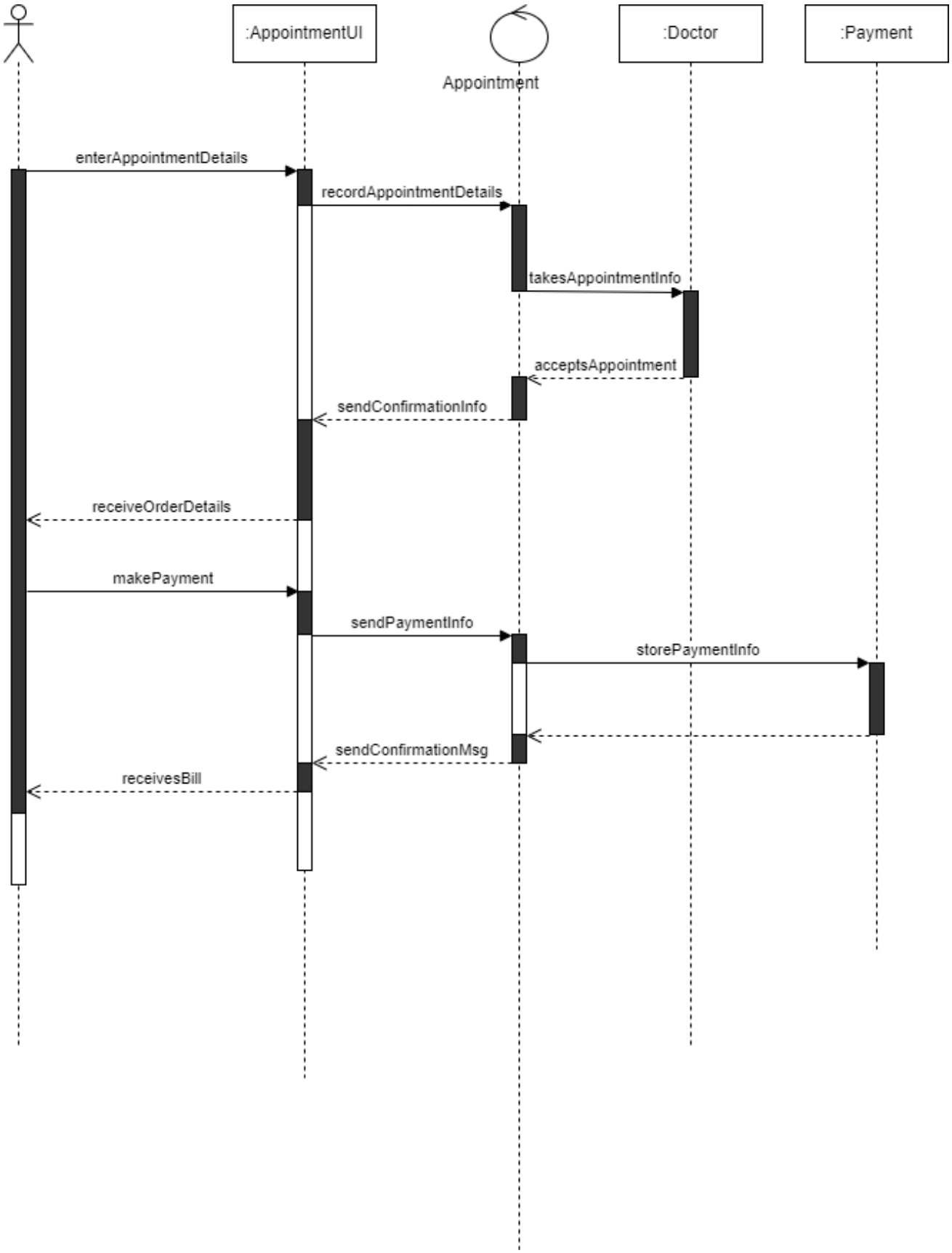


Figure 19 sequence diagram appointment

7.6. Collaboration diagram

Collaboration diagram is an illustration of the interaction and relationships between objects in a system.

- Appointment collaboration diagram

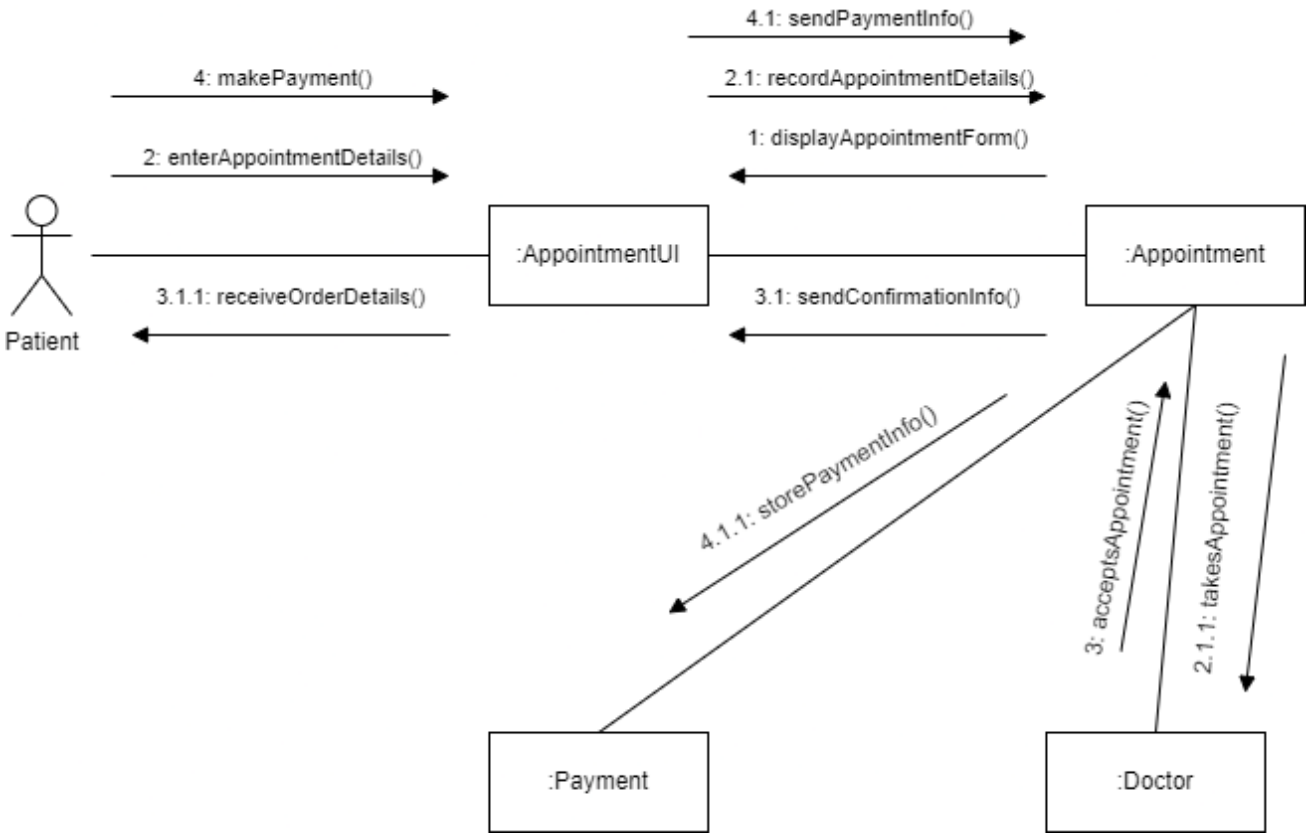


Figure 20 Appointment collaboration diagram

- Register collaboration diagram

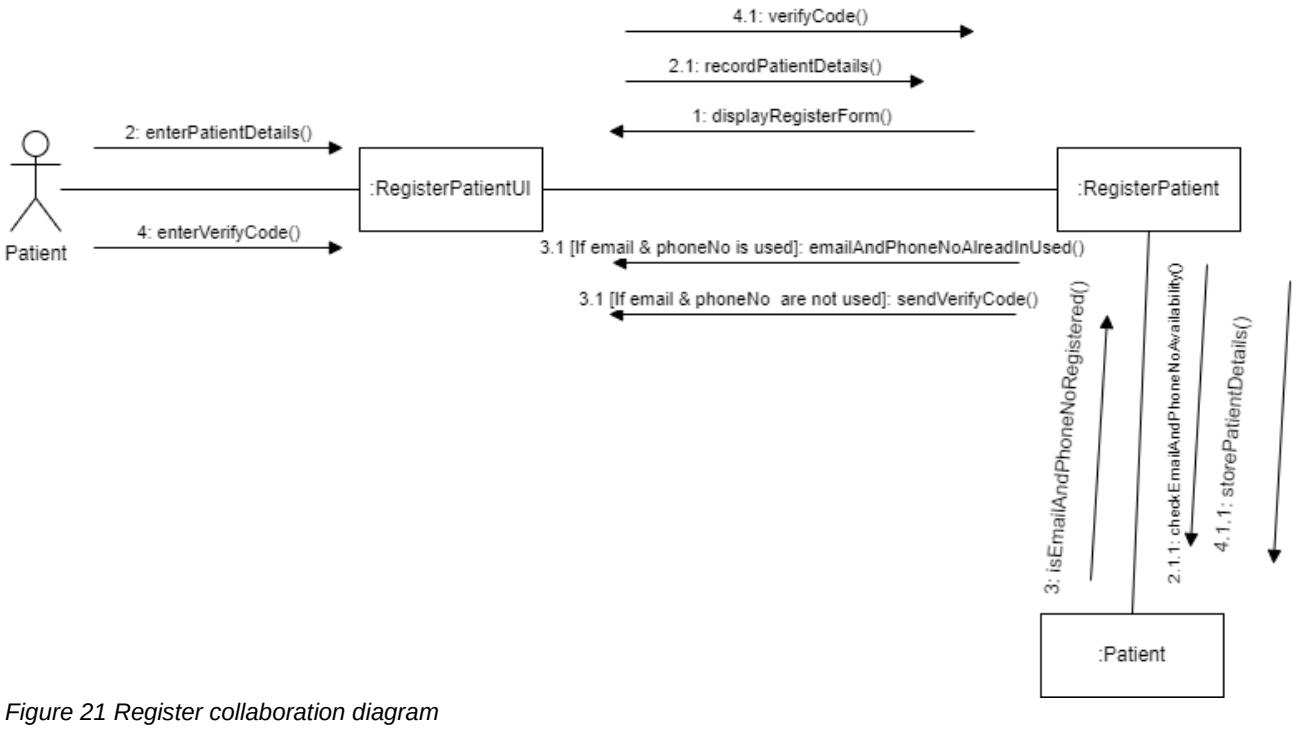


Figure 21 Register collaboration diagram

7.7. Data flow diagram DFD

Data flow diagram (dfd) is the flow of data in a system which is visualized in the diagram.

- Data flow diagram DFD 0

Figure 22 dfd 0

- Data flow diagram DFD 1

Register patient

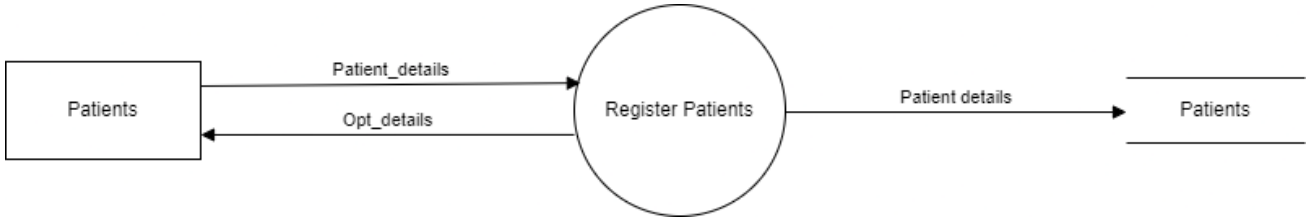


Figure 23 DFD 1 register patient

Appointment

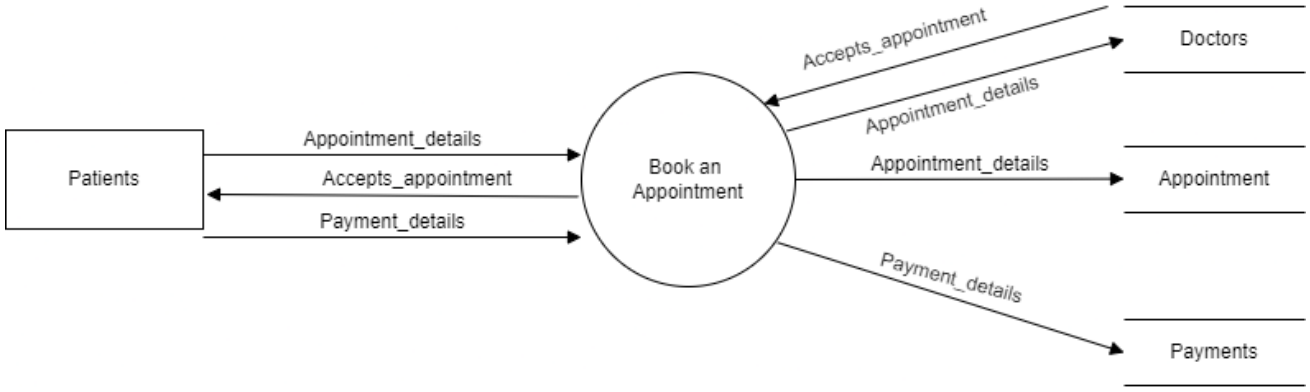


Figure 24 DFD appointment

LogIn

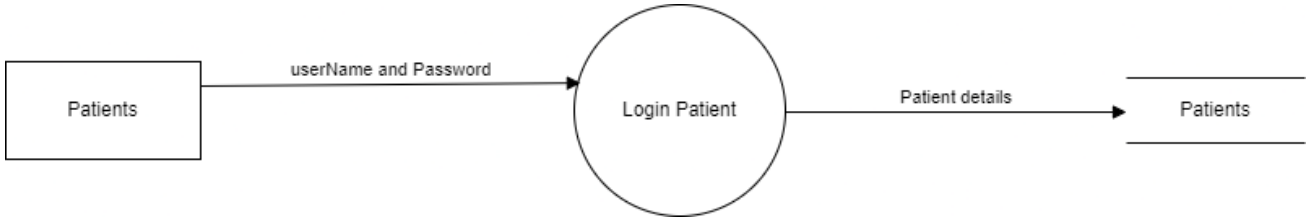


Figure 25 dfd 1 login

8. Wireframe

Wireframe is a layout or structure of a website.

- **Login wireframe**

Figure 26 Login Wireframe

- **Register wireframe**

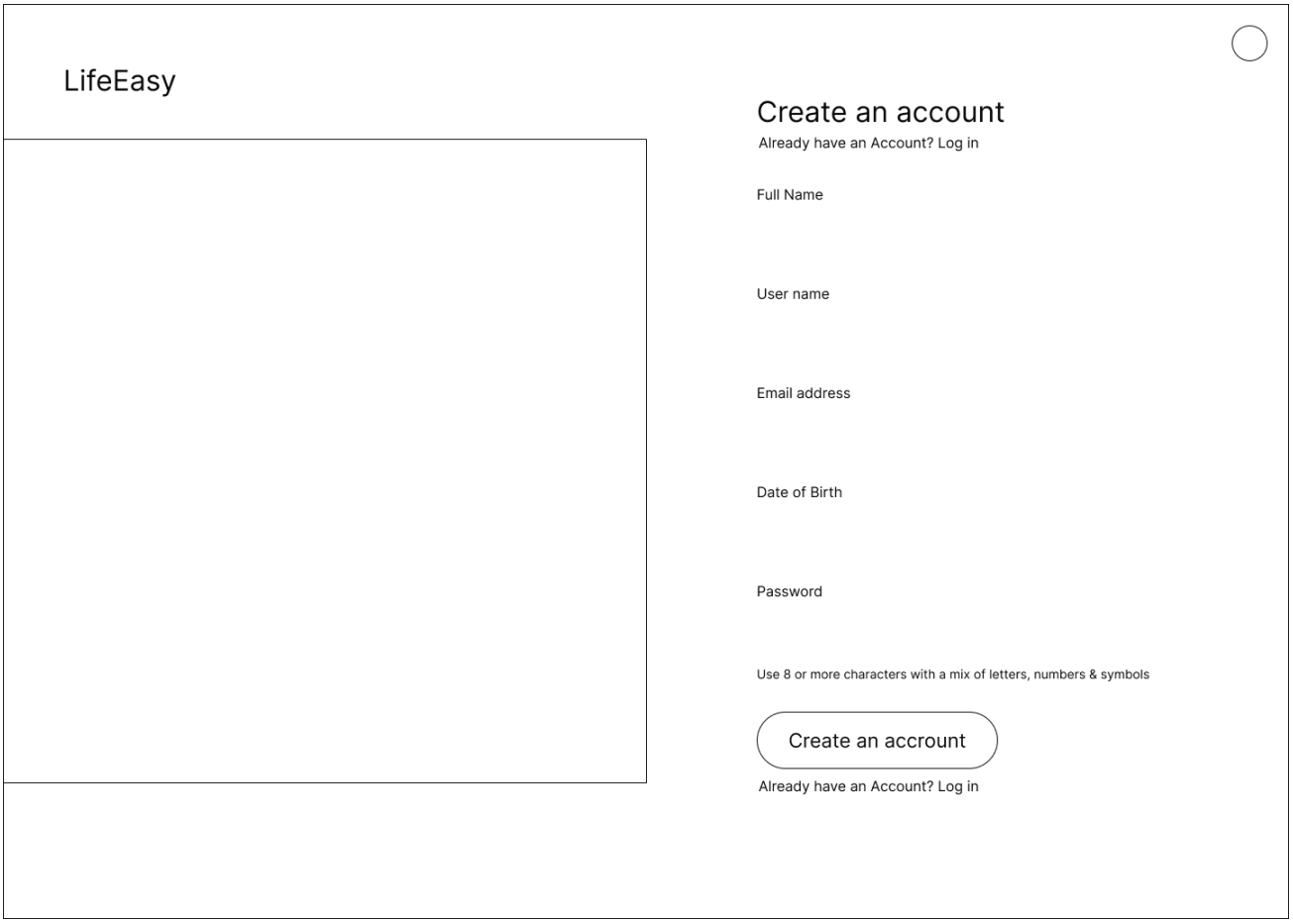


Figure 27 Registration wireframe

9. Prototype

- **Login page**

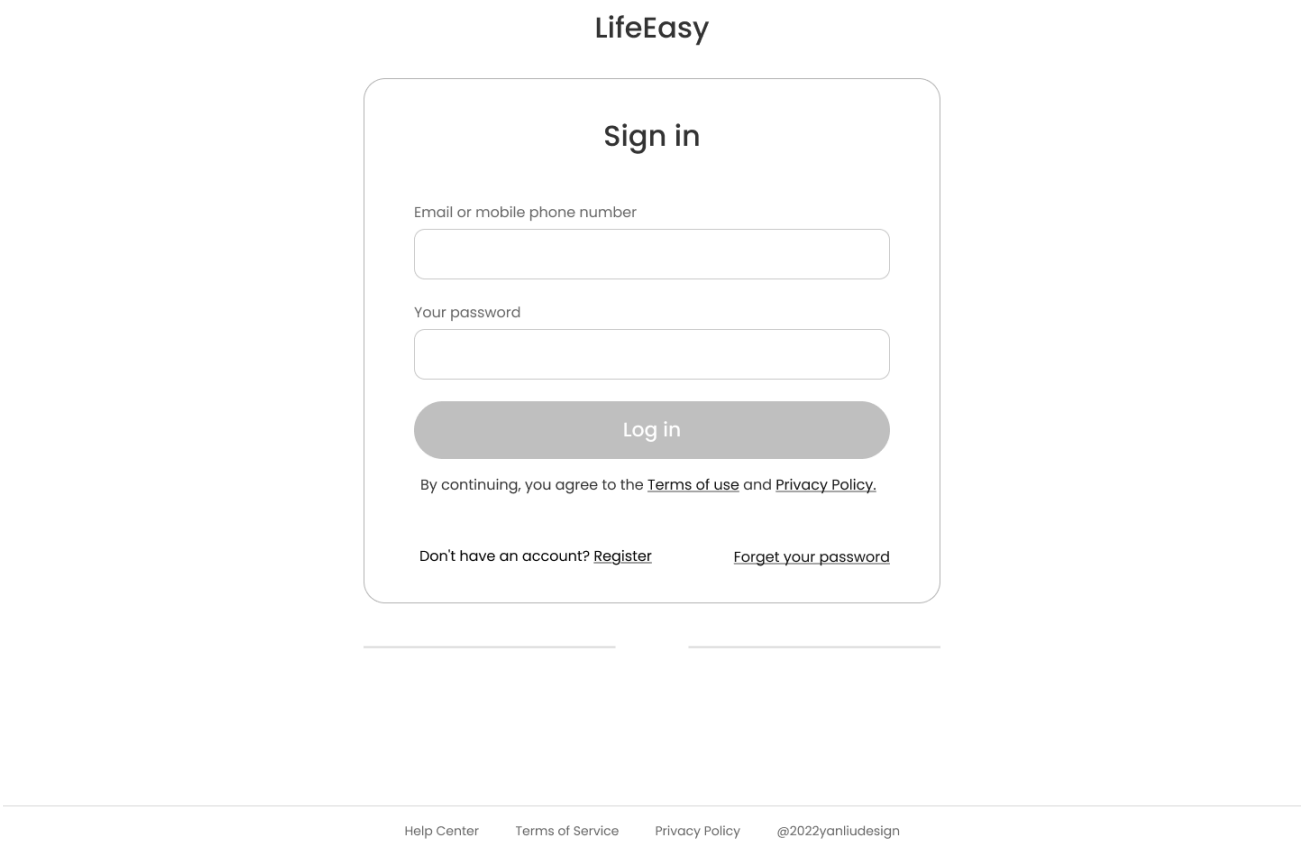


Figure 28 Login page

- **Registration page**

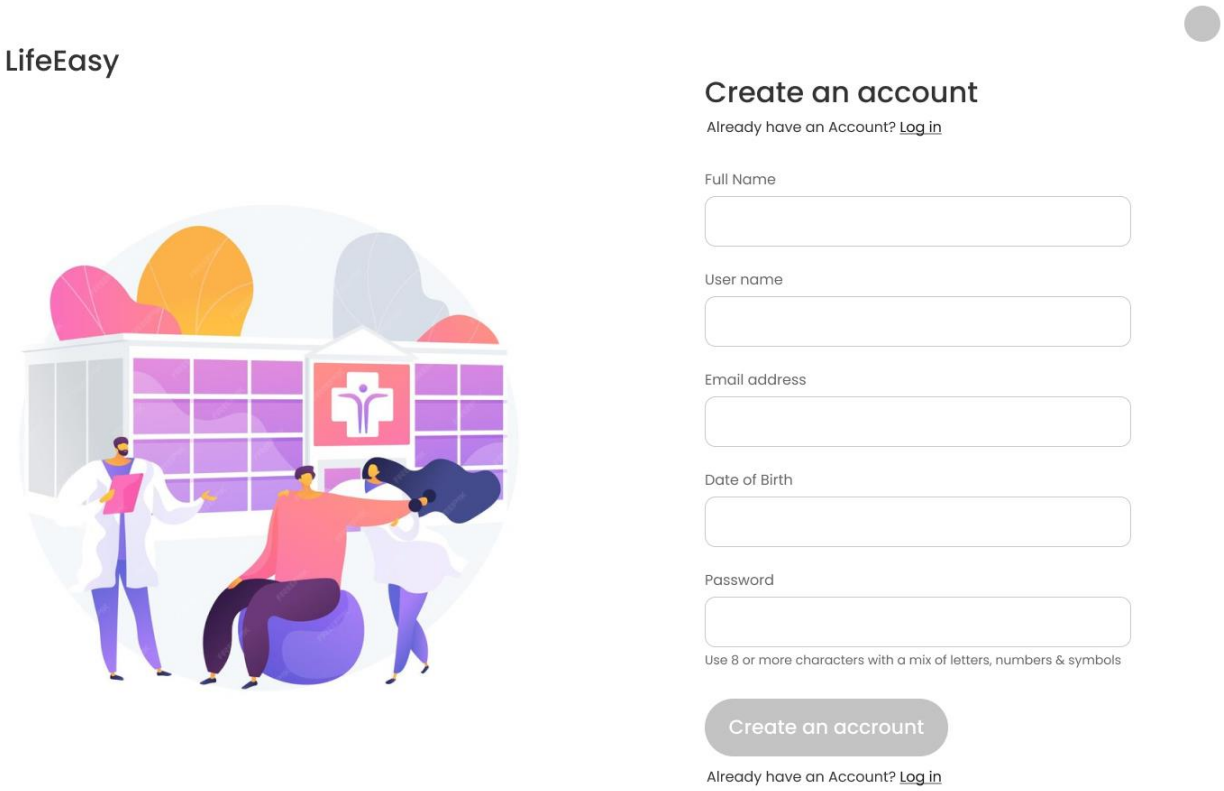


Figure 29 Registration page

10. Front-end development

- **Login page**

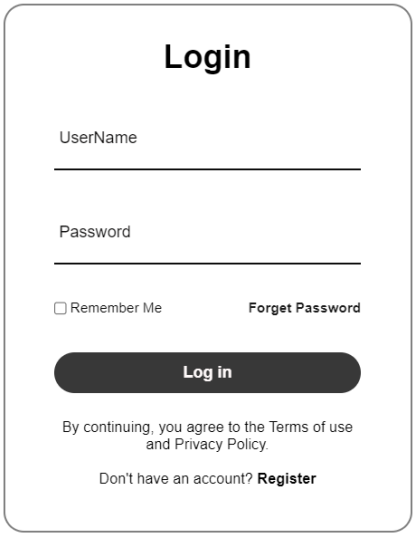


Figure 30 Front-End login page

- **Login html code**

Login.html > html > body > section > form > div.register > p

```
<html lang="en">
</head>
<body>

        <section>
            <form>
                <h1>Login</h1>
                <div class="inputbox">
                    <ion-icon name="Text-outline"></ion-icon>
                    <input type="UserName" required>
                    <label for="">UserName</label>
                </div>
                <div class="inputbox">
                    <ion-icon name="lock-closed-outline"></ion-icon>
                    <input type="password" required>
                    <label for="">Password</label>
                </div>
                <div class="forgetPW">
                    <label for=""><input type="checkbox">Remember Me</label>
                    <a href="#">Forget Password</a>

                </div>

                <button>Log in</button>
                <div class="register">
                    <p>By continuing, you agree to the Terms of use and Privacy Policy. </p>
<br>
                    <p>Don't have an account? <a href="#">Register</a></p>
                </div>
            </form>
        </section>

    </body>
</body>
```

Figure 31 Login html code

- **Login Css code**

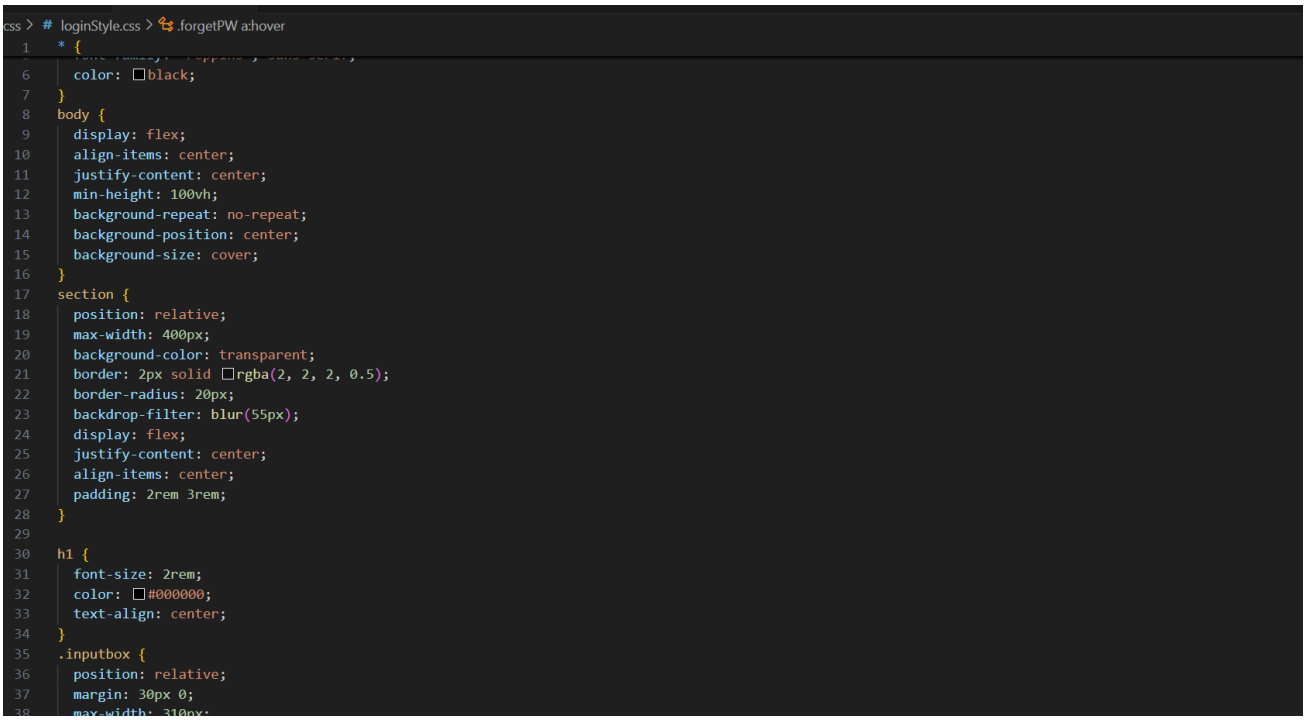


Figure 32 Login Css code

11. Further work

SNo	Task	Comment	Date
1	Implement register/login	Login/register task is still in progress and will be completed by 20th jan	January 20, 2025
2	Appointment and admin panal	Patient can book an appointment and get notification.	February 30, 2025
3	Notification system, medical record and admit patient	Patients get notifications and patients medical record are stored where doctor can view it.	March 29, 2025
4	Billing , payment and bed manage	Invoice are generated, patients bills can be save in patients database.	April 30, 2025

Table 2 further work

I should complete all the task on time and develop proper project test them properly and create report accordingly.

Conclusion:

In conclusion, LifeEasy aims to revolutionize hospital operations by providing a complete web-based solution that simplifies staff collaboration, billing, appointment scheduling, and patient monitoring. LifeEasy builds interdepartmental communication, lowers administrative burdens, and provides better patient care overall by digitalize and automating critical processes. Healthcare facilities can run smoothly while upholding strict service and data security standards because of LifeEasy's user-friendly interface and safe, scalable architecture. In the end, LifeEasy helps create a healthcare system that is more easily accessible and effective.

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