Tribhuvan University

Faculties of Humanities and Social Sciences

Hospital Management System (HMS)

A PROJECT PROPOSAL

Submitted To
Department of Computer Application
Ratna RajyaLaxmi Campus
Pradarshani Marga, Kathmandu

In partial fulfillment of the requirements for the Bachelors in Computer Application

Submitted By
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February, 2025

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SUPERVISER'S RECOMMENDATION

I hereby recommend that this project prepared under my supervision by "**Khem Raj Neupane**" entitled **"Hospital Management System (HMS)"** in partial fulfillment of the requirements for the degree of Bachelor of Computer Application is recommended for the final evaluation.

_____

SIGNATURE

Bhupendra Ram Lahar

SUPERVISOR

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LETTER OF APPROVAL

This is to certify that the project prepared by **KHEMRAJ NEUPANE** entitled "**Hospital Management System (HMS)".** In partial fulfillment of the requirements for the degree of Bachelor in Computer Application has been evaluated in our opinion it id satisfactory in the scope and quality as a project for the required degree.

Signature of Supervisor	Signature of HOD
Mr. Bhupendra Ram Luhar Ratna Rajyalaxmi Campus	Mr. Ananda K.C Coordinator, Department of Bachelor in Computer Application Ratna Rajyalaxmi Campus
Signature od internal Examiner	**Signature of External Examiner**
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ABSTRACT

Hospital Management System (HMS) is powerful, flexible, and easy to use and is designed and developed to deliver real conceivable benefits to the hospitals and patients. The new system controls the following information: patient information, Doctor's availability, patient medical history, appointment making and many more. These services provides and efficient, cost-effective manner, with the goal of reducing the time and resources currently required for such tasks. The Project "Hospital Management System" is based on the database, object oriented and networking techniques. As there are many areas where we keep the records in database of which we are using MYSQL software which is one of the best and the easiest software to keep our information. This project uses HTML, CSS, and JavaScript as the front-end and php for server side which has connectivity with MYSQL.

Keywords: Hospital, database, system, server-side

ACKNOWLEDGMENT

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LIST OF ABBREVIATION

CASE: Computer-aided software engineering

CSS: Cascading Style Sheet

HMS: Hospital Management System

HTML: Hypertext Markup language

MYSQL: Microsoft Server Structured Query Language

OTP: One Time Password

PHP: Hypertext Preprocessor

SQL: Structured Query Language

CHAPTER 1: INTRODUCTION

1.1 Introduction

The **"Hospital Management System (HMS)"** is one of the most common software and has the facilities to give a unique id for every patient and stores the details of every patient and the staff automatically. The project can be entered using a username, role and password. Only they can add data into the database. The data can be retrieved easily. The interface is very user-friendly. The hospital supports effective decision making for patient care, hospital administration and critical financial accounting, in a seamless flow. [1]

Hospital Management System is powerful, flexible and easy to use and is designed and developed to deliver real conceivable benefits to hospital. Hospital Management System is a software product suite designed to improve the quality and management of hospital management in the areas of clinical process analysis and activity-based costing. Hospital Management System enables you to develop your organization and improve its effectiveness and quality of work. Traditional management of hospitals is carried out with manual record-keeping, which is time-consuming, error-prone, and less effective in handling enormous amounts of data. Hospital Management System surmounts these problems by providing a centralized system where patient information, doctor schedules, medical reports, and financial transactions can be easily accessed and managed. It improves coordination among departments, reduces administrative tasks, and enhances patient care by enabling quick and accurate medical services. [2]

Patient management is one of the highlighted functions of Hospital Management System, where hospitals can store and retrieve patient records effectively. Medical history, prescriptions, and test results are made accessible in real time for physicians, facilitating enhanced diagnosis and treatment. Appointment booking is also more organized, reducing patient waiting time and physician availability optimization. Billing and invoicing are included in the system, enabling easy financial transactions, such as insurance claims and payment follow-up. Backup and recovery avoid data loss, and analytics and reporting provide visibility into hospital performance, patient demographics, and revenue trends. The laboratory module streamlines diagnostic tests by automating report generation and sending results to physicians and patients. [3]

1.2 Problem Statement:

To find out about the patient's history, the user has to go through carious registers. This result in in convenience and wastage of time. The information generated by various transaction takes time and efforts to be stored at right place. Various changes to information like patient details or immunization details of child are difficult to make as paper work is involved. This become a difficult task as information is difficult to collection from various register.

1.3 Objective:

The main Objective of good Hospital Management System (HMS) is mentioned as such.

- Digitized and manage patient records so they are accepted and known.
- Maintain records in a centralized database of doctors, staff, patients, treatments and billing manage.
- Minimize direct paperwork to a true paperless working environment.

1.4 Scope and Limitation

Some scope of the project:

The scope of hospital management system (HMS) is extensive, covering various aspects of hospital operations. An HMS typically includes functionalities like patient registration, appointment scheduling, billing, inventory management, pharmacy management, and laboratory management. It may also incorporate feature for imaging, telemedicine, reporting and analytics, and integration with external systems like insurance providers and laboratories. The scope of HMS is to automate and streamline administrative and clinical processes, improve patient cate coordination, enhance data security and accuracy, optimize resource utilization and provide valuable insights for decision-making.

Limitation

- Limited Scalability
- Platform Dependency
- Internet Connectivity Requirement
- Security Constraints
- Limited User Roles

- No Offline Support

1.5. Development Methodology

The Waterfall methodology is ideal for creating Vedastra as the project's needs are welldefined and unlikely to vary considerably over time. This model's linear and sequential approach ensures that each phase like requirements collection, design, implementation, testing, deployment, and maintenance is fully finished before moving on to the next. This clarity can assist guarantee that all functionalities are thoroughly planned and documented from the start, resulting in a more ordered and predictable development process.

Furthermore, the Waterfall model's structured design makes it easier to manage and track progress, ensuring that the project stays on track and under budget.
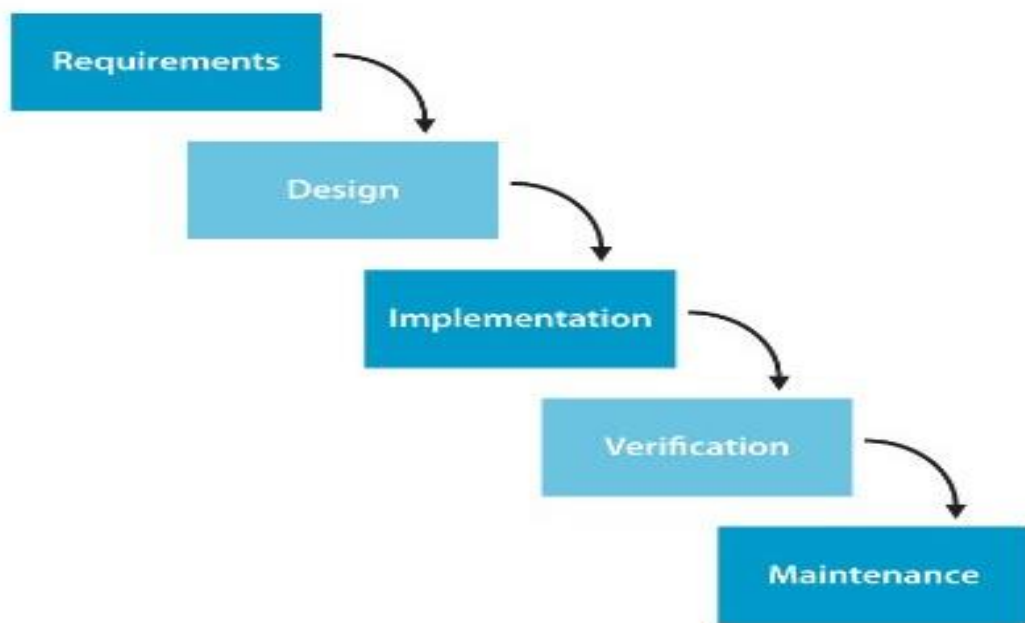
Figure 1: Waterfall model of Hospital Management System

1.6. Report Organization

The Report is organized into 5 chapters as given below:

Chapter 1: Introduction

In this section, the brief introduction of our project, statements of the problem and its objectives are discussed.

Chapter 2: Literature Review and System Analysis

The previous work related to our project and similar works were studied and different feasibility analysis is summarized in this section.

Chapter 3: System Design

In this section, we have design system architecture, system flow diagram, dataflow diagram etc.

Chapter 4: Implementation and Testing

In this section, various implementation method and tools are discussed and also contains descriptions of testing.

Chapter 5: Conclusion and Future Enhancement:

In this section, conclusion to our project and description about what features can be added in the future has been described.

CHAPTER 2: BACKGROUND STUDY AND LITERATURE REVIEW

2.1 Background

As per the context of Nepal, many hospitals are not well managed in terms of management and services. There's still the problem of security for the data as the records are still maintained through record files and hard copies. Due to that, large amount of time is required for the job to be done. We cannot get the required information on time. Because of that, the accuracy of the job is also very low. Hence, the files are to be stored very carefully so that all the required necessary records can be retrieved when necessary.

2.2 Literature Review

One of the major challenges existing hospital management systems faces is around operational efficiency and wait times between different processes, departments and persons. This paper highlights such limitations of existing systems and proposes a RFID (Radio Frequency ID) and wireless sensor based, location and information management framework that facilitates real time tracking of hospital assets, personnel and patients as they move through pre-set procedures as part of daily activities of the hospitals. The system covers the visual simulation and providing ability to analyze the ongoing operations so they can be corrected to achieve increased process efficiency and service levels. [1]

Presently, all the hospital functionalities are done manually. That is, if a patient wants to consult a doctor, he must go to the hospital himself, make an appointment and then wait for his turn to meet the doctor which might be an hour or some days. This makes the process very difficult. Here, the main disadvantage is time-consuming. Similarly, following limitations can also be seen in the recent hospital system. [2]

CHAPTER 3: SYSTEM ANALYSIS AND DESIGN

3.1. System Analysis

System analysis is a process of gathering and interpreting facts, diagnosing problems and the information about the Hospital Management System (HMS) to recommend improvements on the system. It is a problem-solving activity that required intensive communication between the system user and system development. System analysis or study is an important phase of any system development process. The system is studied to the minutest detail and analyzed. The system analyst plays role of the interrogator and dwells deep into the working of the present system. System analysis is concerned with becoming aware of the problem, identifying the relevant and decisional variables, analyzing and synthesizing the various factors and determining an optimal or at least a satisfactory solution or program of action. The output from the organization are traced to the various processes.

The existing Hospital Management System (HMS) will be referred to as the same system. Neutral comments will be made about existing hospital management system to describe the problems and deficiencies, such as timing issues in booking appointment, duplicating or erroneous data entry in billing. once the problem areas are identified, the alternative proposals are constructed as improvements.

3.1.1. Requirement Analysis

Requirements determination means figuring out what a system should do. The System's needs are split into two types: Functional (tasks it must do, like adding items) and non-functional (how well it does them, like speed). It's like planning for a system that works and meets all the necessary criteria.

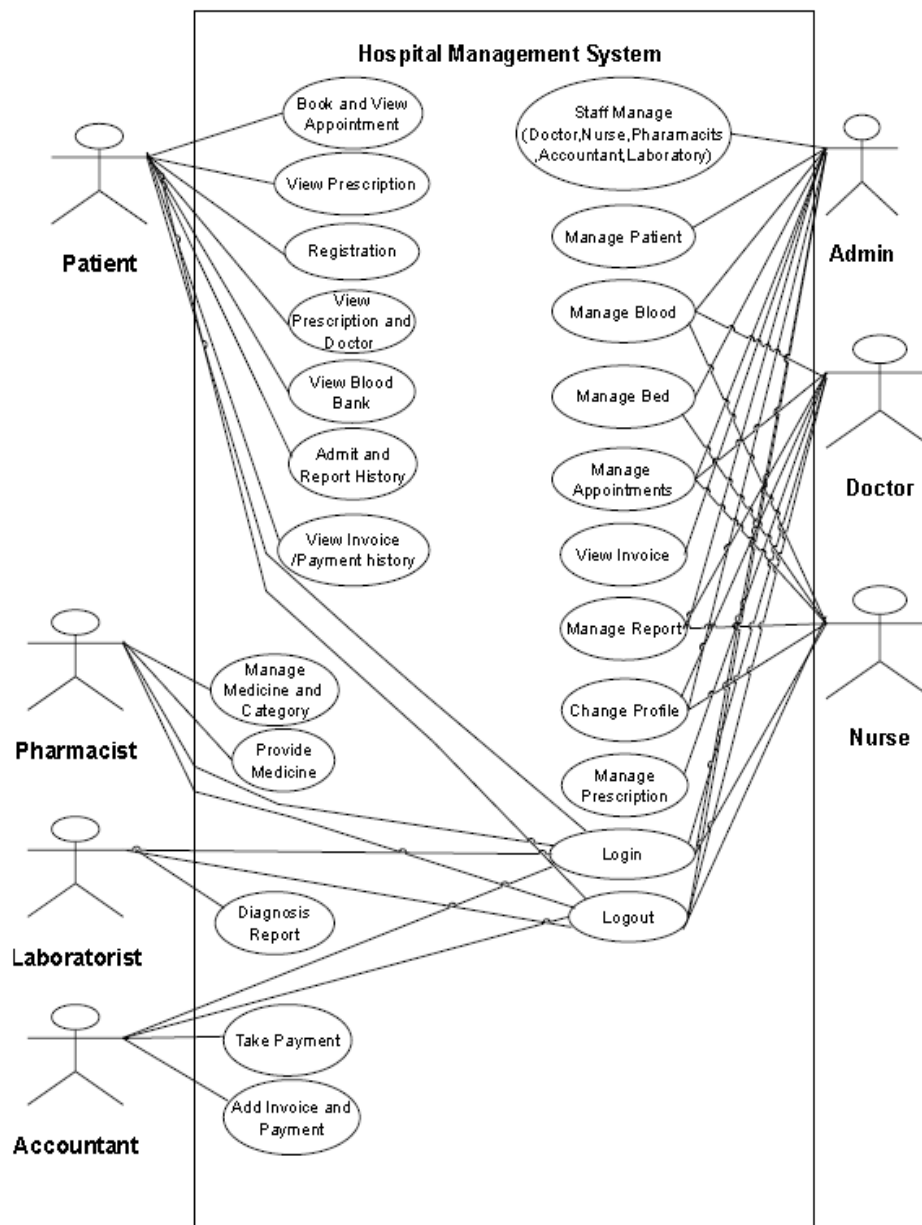**i Functional**

Uses Case Diagram of Hospital Management System

Figure 2:System Use Case Diagram of Hospital Management System

In the above use case diagram, there are seven modules where each of the modules have their specific functions.

ii Non-Functional

Maintainability:

The Hospital Management System must have high level of Maintainability.

Serviceability:

If issue arises in the Hospital Management System, then the project must be programmed in such a way that developer can service it again

Availability:

This is web-based application, so it shall be available to anyone who can access it.

Usability:

The Hospital Management System must have a good looing user friendly interface.

3.1.2. Feasibility Study

The analysis of feasibility has concluded that the project is feasible with respect to time and cost. The technology used to develop are almost Open Source, therefore less cost for implementation and maintenance will be involved.

a. Technical Feasibility:

The proposed system can be operated on almost all of web browser as it is a web-based application. Computer having a processor of at least 800MHz, 50 MB of storage, and 128MB of RAM is sufficient to operation the system.

b. Operational Feasibility:

To Operate the system, no any special training is required. Just user having basic level knowledge of web-browsing is enough to operate the system to its full potential.

c. Economic Feasibility:

The System is designed in such order that the installation, implementation, and the operational cost can be kept bare minimum. The system proposed system is completely economical.

d. Schedule Feasibility:

Schedule feasibility is assessed through Gannt Chart, which provides a visual representation of the project timeline. The chart shows the various phases of the project and their expected completion dates. For this project, the Gantt Chart indicates the tasks are planned in a manner that aligns with the project's deadline, making it likely that the project will be completed with the scheduled time limits. This scheduling confidence

further supports the project's overall feasibility, ensuring that time constraints are met without compromising quality.

Month	Falgun 2081					Chaitra 2081					Baishakh 2082					Jestha 2082				
Work/Week	Week 1	Week 2	Week 3	Week 4	Week 5	Week 1	Week 2	Week 3	Week 4	Week 5	Week 1	Week 2	Week 3	Week 4	Week 5	Week 1	Week 2	Week 3	Week 4	Week 5
Planning			▓	▓																
Analysis				▓	▓															
Design						▓	▓	▓												
Coding										▓	▓	▓	▓	▓						
Testing																	▓	▓	▓	
Documentation		▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
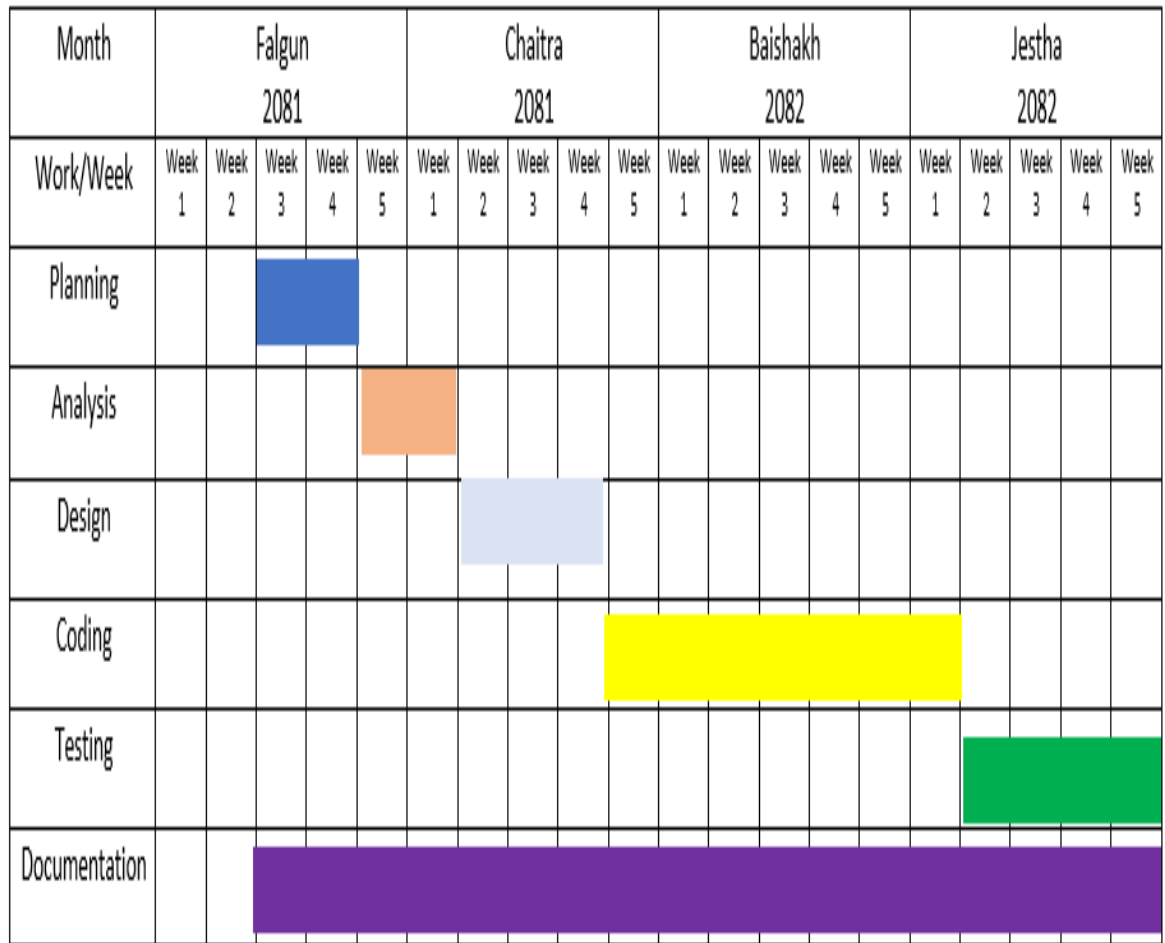
Figure 3: Gantt Chart for Hospital Management System

3.1.3. Object Modelling

a. Class Diagram

The class diagram for a Hospital Management System (HMS) with 7 roles like: admin doctor, patient, nurse, laboratorist, accountant and pharamacist the structure of the system by showing each role as a class with its own attributes and method. These classes are connected through relationship that reflect real-world interaction. The Diagram clearly defines how to each role operates within the system, their responsibilities, and how they collaborate to manage hospital operations efficiently.
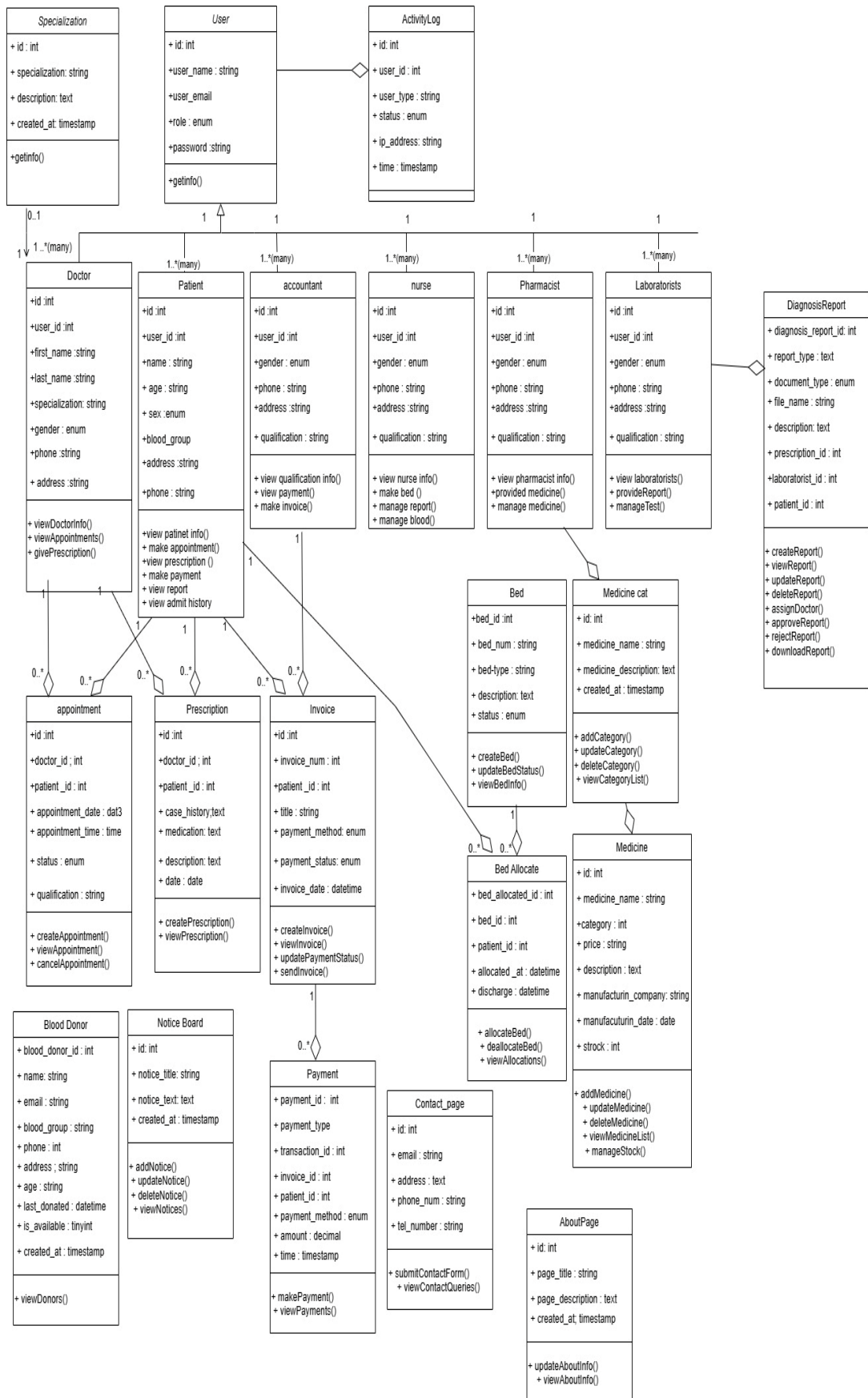
Figure 4: Class Diagram Hospital Management System

b. Object Diagram
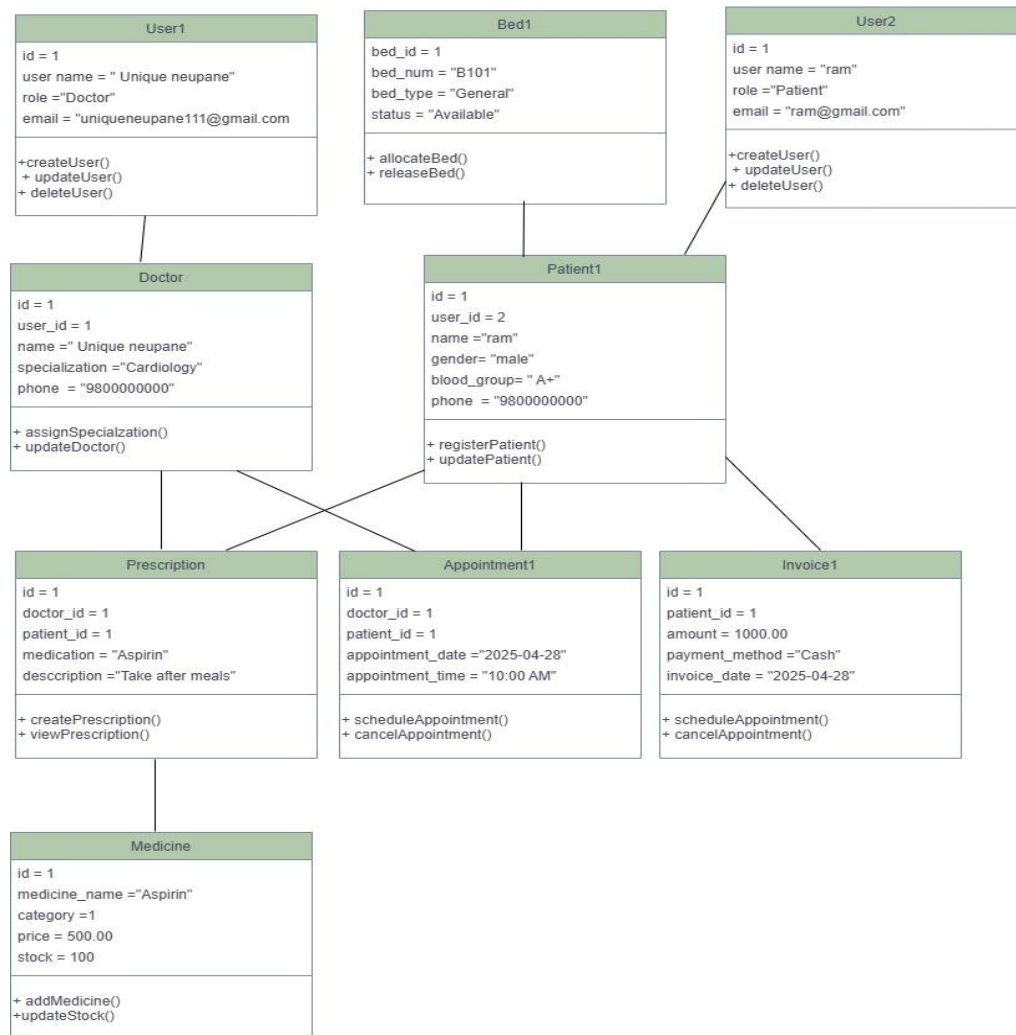
Figure 5: Object Diagram Hospital Management System

This Object Diagram provides a detailed internal structure of the Hospital Management System by illustrating the objects involved, their attributes, and their methods. Each object such as Doctor, Patient, Bed, Medicine, Appointment, Invoice and Prescription, represents a real-world entity that interacts with the system.

3.1.4. Dynamic Modelling

a. State Diagram

A Static Diagram in a hospital management system the different states an object can be in and how it transitions between those states based on specific events. It Object's lifecycle, starting from an initial state, passing through intermediate states triggered by

action or events, and finally reaching a terminal state. This helps in understanding and designing the dynamic behavior of the system.
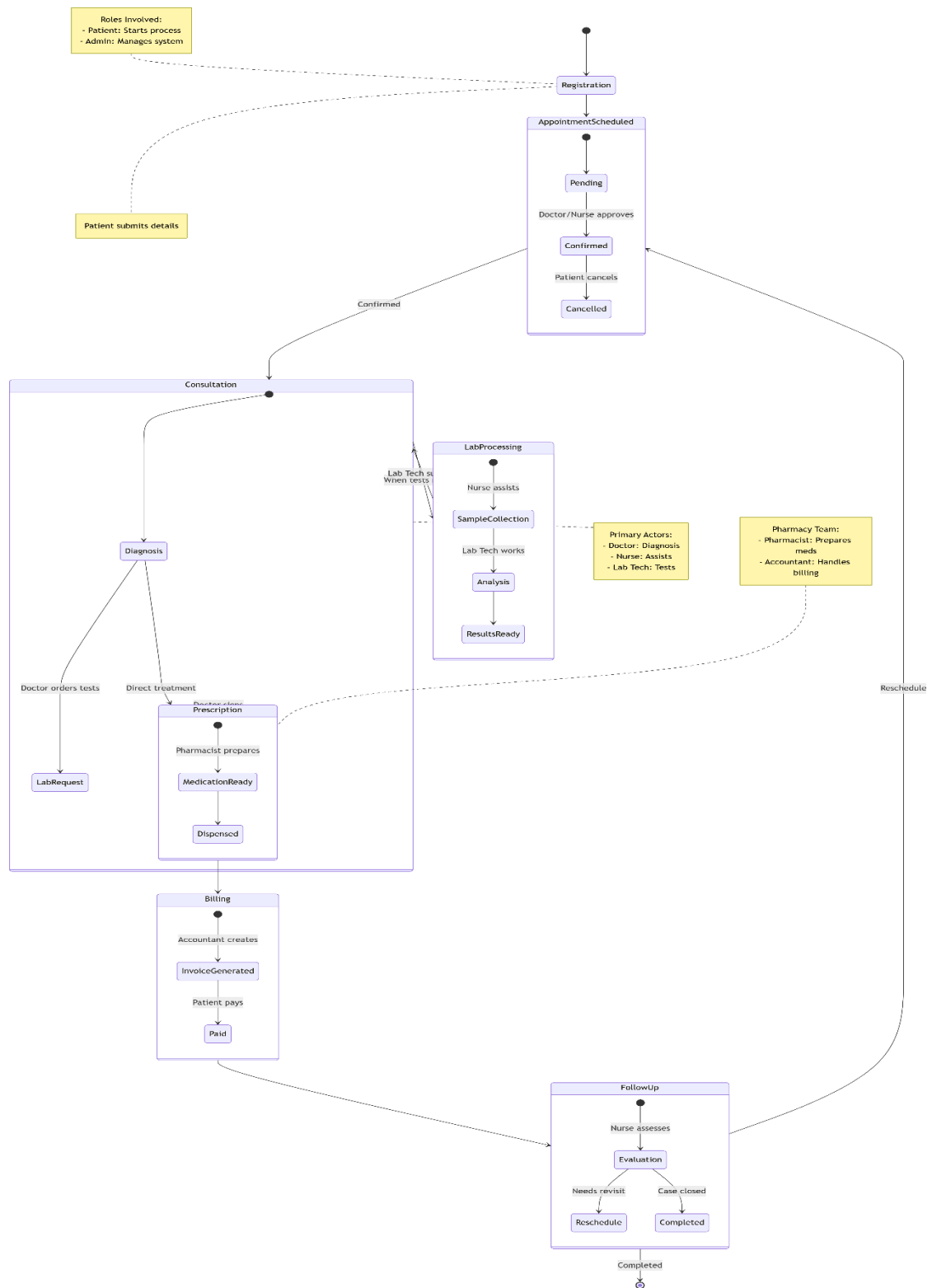
Figure 6: State Diagram Hospital Management System

b. Sequence Diagram
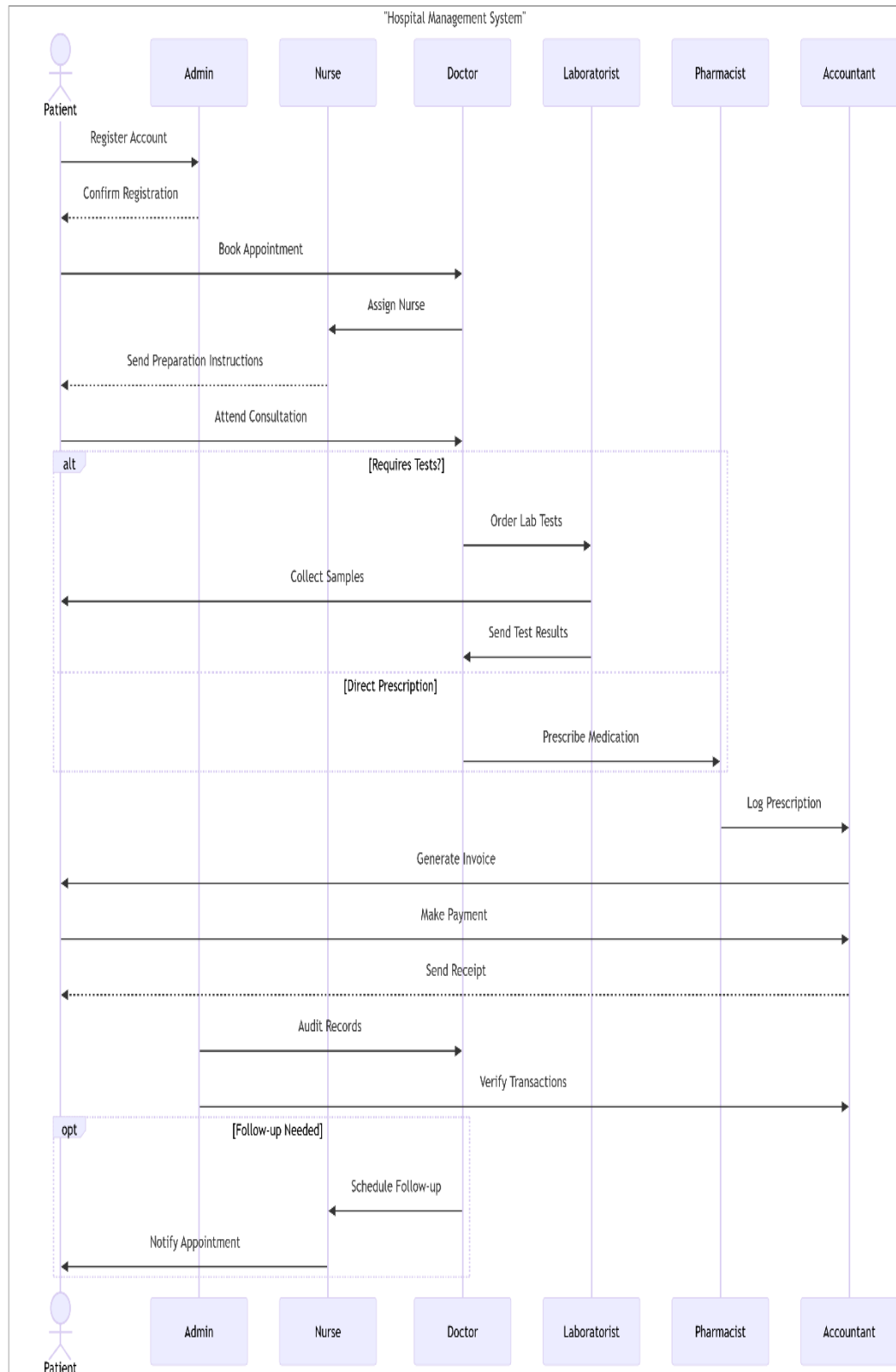
Figure 7:Sequence Diagram Hospital Management System

3.1.5. Process Modelling

Activity Diagram
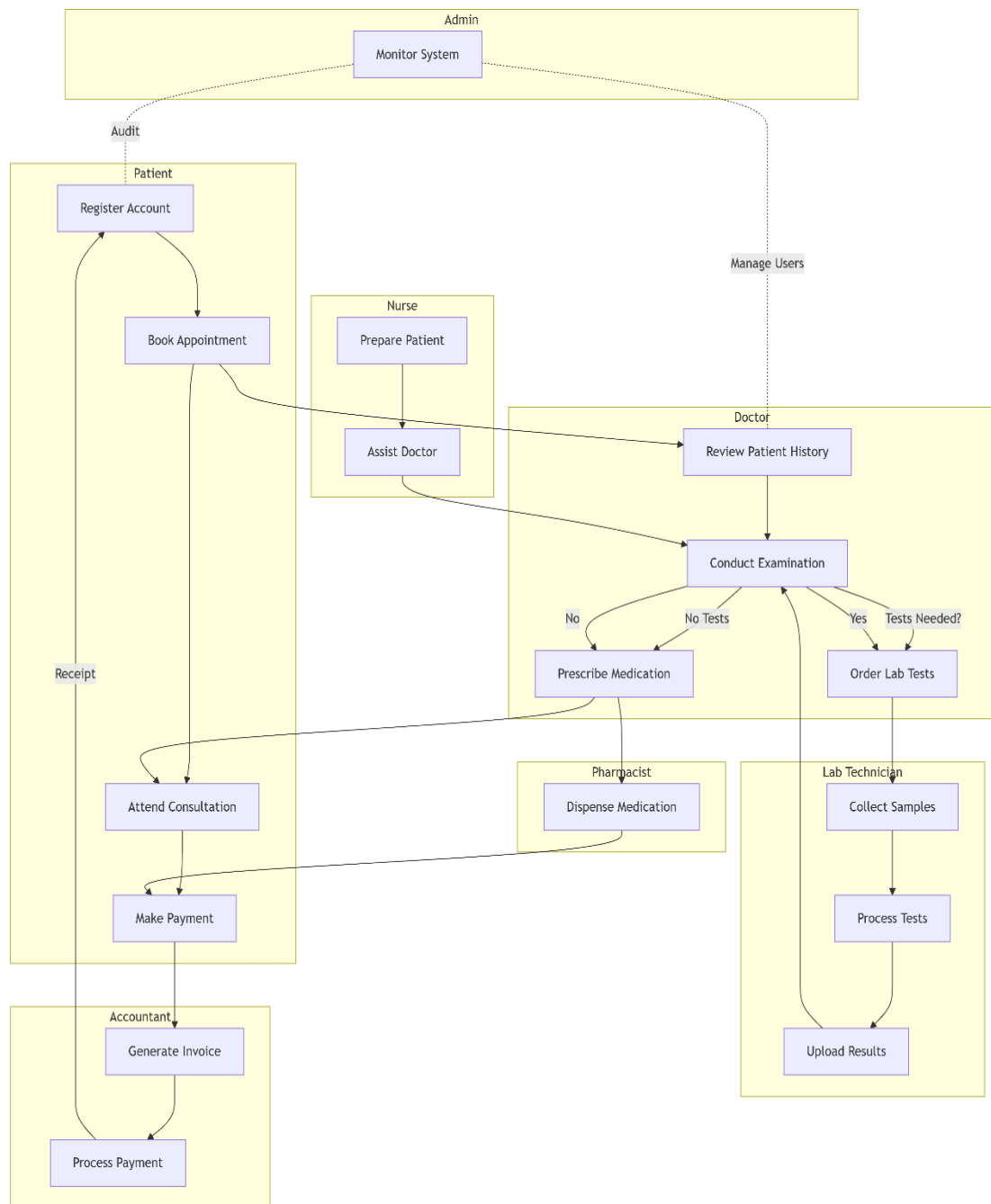
Figure 8:Activity Diagram of Hospital Management System

3.2. System Design

The system design of the project 'Hospital Management System' consists of Refinement of class and object, component Diagram and Deployment Diagram. Each of the figures are discussed below.

3.2.1 Refinement of Class and Object
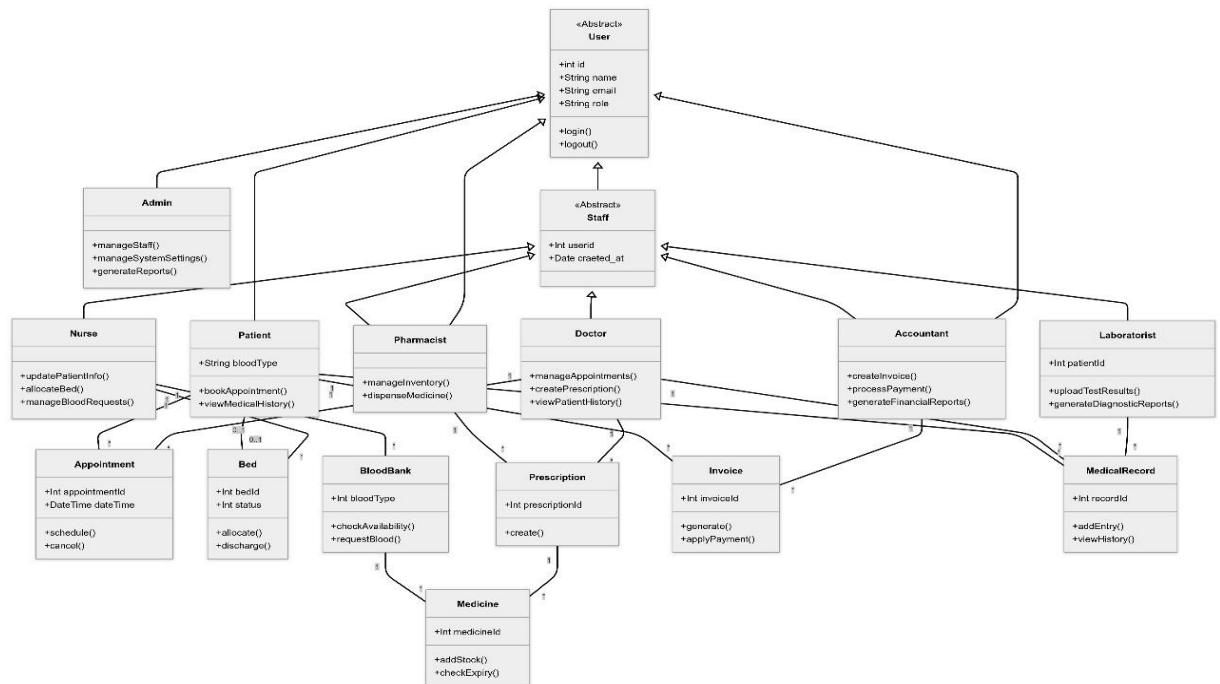
Figure 9:Refinement of Class Diagram Hospital Management System

3.2.2. Component Diagram
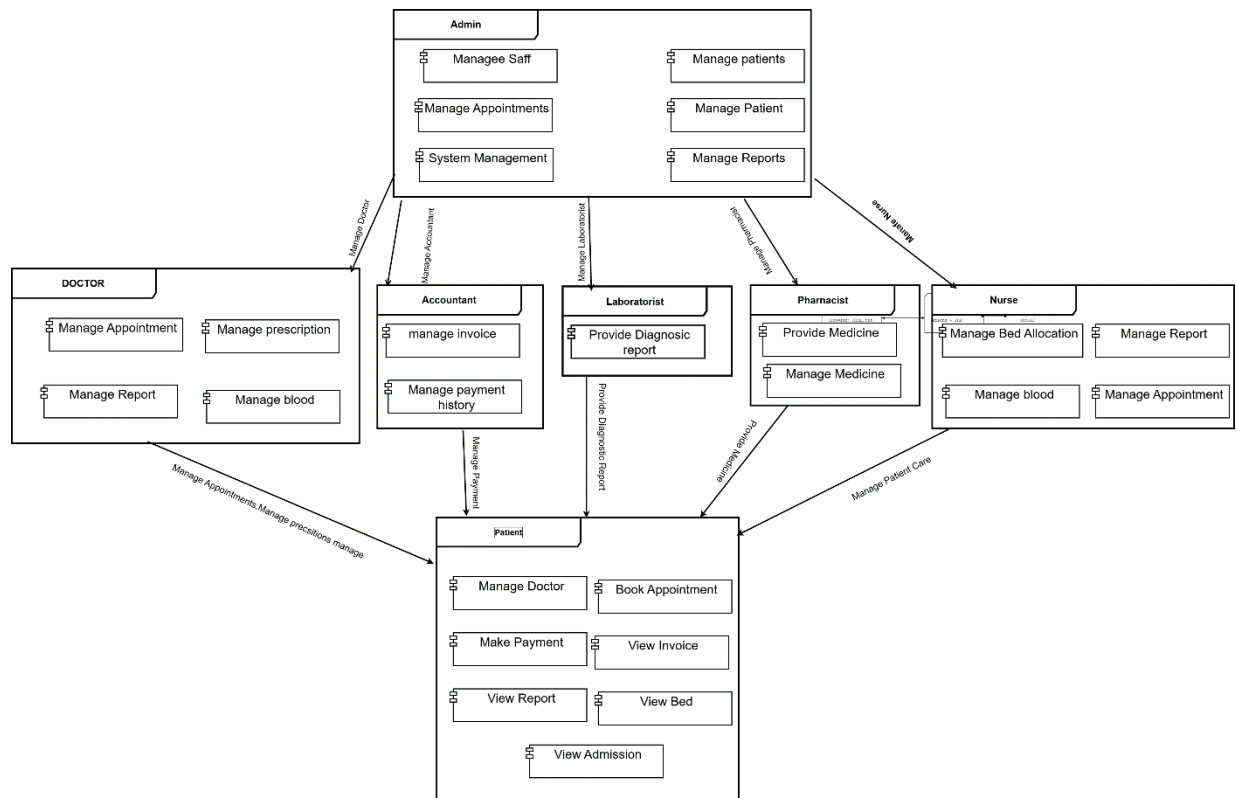
Figure 10: Component Diagram Hospital Management System

3.3.3. Deployment Diagram
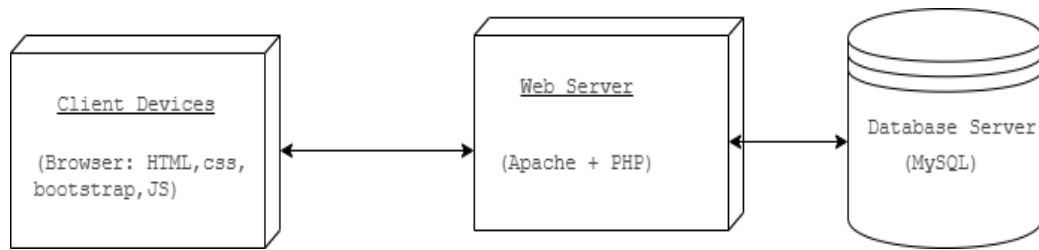
Figure 11:Component Diagram Hospital Management System

3.3. Algorithm Details

The naïve Bayes algorithm is a classification algorithm based on Bayes' theorem user for predicting the class or category of data point. in your case, the algorithm predicts the specialist doctor based on the patient's symptoms.

Here's how to algorithm works:

1. **Input Symptoms:**

The patient submits their symptoms, such ad fever, cough or chest pain.

2. **Symptom Data Collection:**

A dataset is built containing the symptoms of previous patient along with the specialist doctors they consulted. for example

- Symptoms: fever, cough. **Doctor:** Pulmonologist
- Symptoms: chest pain, shortness of breath **Doctor**: Cardiologist

3. **Probabilities Calculation:**

The Naive Bayes algorithm calculates the probability of each specialist being the correct recommendation for the give symptoms.

Mathematical Formula:

$$P(D\,|\,S) = \frac{P(S|D).P(D)}{P(S)}$$

Let:

- P(D|S) probability of a doctor being the correct specialist, give the symptoms.
- P(S|D) Probability of observing the symptoms, give the doctor.
- P(D) Prior Probability of the doctor.
- P(S) Probability of observing the Symptoms.

Steps in Naive Bayes for Doctor Recommendation:

i. Data Collection

Collection data of past patients including symptoms and the specialist doctor they were treated by: example.

Fever	Headache	Chest Pain	Recommended Doctor
Yes	Yes	No	General Physician
No	Yes	Yes	Cardiologist

ii. Calculate Prior Probability -P(D)

This is the probability of recommending each doctor based on historical data.

formula:

$$P(D) = \frac{Number\ of\ times\ doctor\ D\ was\ recommended}{Total\ number\ of\ patient\ records}$$

iii. Calculate Likelihood -P(S|D)

For each symptom (features), calculate the probability that the doctor treats patients with that symptom.

formula:

$$P(Symptom YES | Doctor D) = \frac{Number\ of\ patients\ with\ symptom\ treated\ by\ D}{Total\ patients\ treated\ by\ D}$$

iv. Prediction

For a new patient, combine the probabilities to compute.

$P(D|Symptoms) \propto P(D) \times P(S1|D) \times P(S2|D) \times ..$

Recommend the doctor with the highest probability.

CHAPTER 4: IMPLEMENTATION AND TESTING

4.1. Implementation

Implementation is the process of putting a decision or plan into effect. During implementation we start coding according to our requirement.

4.1.1. Tools Used

Diagram

"Draw.io" is used to make all the system designs required for this project. It is a proprietary software for making diagram and charts. The software lets us choose from an automatic layout function or create a custom layout. The drag and drop feature make it simple to create a great looking diagram or chart.

HTML:

HTML is markup Language which used for creating web pages and which defines the structure of web pages. It is one of the most basic building blocks of every website and we have used HTML for the front end.

CSS:

CSS is the language for describing the presentation of web pages, including colors, layout and fonts. It is a simple design language intended to simplify the process of making web pages presentable.

PHP:

PHP is an open-source general-purpose scripting language that is especially suited for web development and can be embedded into HTML. It is a scripting language used to create dynamic websites. With the help of PHP, we have been able to create a dynamic page.

MySQL:

MySQL is a popular open-source relational database management system (RDBMS) used to store, organize, and manage data.

JQUERY:

jQuery is a fast, lightweight JavaScript library that simplifies HTML document traversal, event handling, and animations.

Visual Studio Code:

Visual studio code is a source-code editor which includes features like debugging, syntax highlighting, intelligent code completion, etc. It was made by Microsoft and can

run on different types of operating systems like Windows, Linux and Mac OS. Different programming language are readily available thus making the coding process faster and hassle free.

4.1.2. Implementation Details of Modules

Registration Module: By providing all the essential and valid details of the patient on the registration form patients can access the system using the registration module. All the essential information is verified and then if everything goes well patient can register and access the dashboard of patient panel.

Login Module: Registered users (patients, admin, doctor, nurse, accountant, pharmacist, laboratorist) can log into the system by entering their valid credentials. The system verifies the details, and upon successful verification, users are redirected to their respective dashboards.

Admin Module: Admin can manage the entire Hospital System, including staff (doctors, nurses, pharmacists, laboratorists, accountants), patient, blood bank, hospital bed, appointments, invoices, payment history and reports. Admins also have to profile management, password change and full system setting.

Doctor Module: Doctors can manage appointments, prescriptions, beds, and blood bank information related to their consultations. They can also update their profile details and password change through the doctor dashboard.

Nurse Module: Nurses hospital bed allotments manage report manage blood bank, and patient care services. They can also update their profile details, password change and access necessary patient records through their dashboard.

Accountant Module: Accountants handle the financial operations of the hospital, including generating invoices, managing payments, recording transaction histories, and ensuring the hospital's financial processes are smooth and accurate.

Pharmacist Module: Pharmacists manage the inventory of medicines, organize them by category, and provide prescribed medicines to patients. They ensure that the hospital's pharmacy is stocked and operational.

Laboratorist Module: Laboratorists are responsible for managing and uploading diagnosis reports, maintaining laboratory records, and assisting in patient treatment by providing accurate lab results to doctors and patients.

Patient Module: Patients can book appointments, view prescriptions, register for hospital services, search for doctors, check blood bank availability, view their

admission and medical history reports, and manage their invoices and payment history. all through their dedicated patient dashboard.

4.2. Testing

Once the source code is generated, software must be testing to identify and correct as many errors as possible before delivery to the customer. The goal is to design a series test cases with a high likelihood of uncovering errors. Following testing techniques are well known and the same strategy is adopter during this project testing.

4.2.1 Test Cases for Unit Testing

Test cases for unit testing are specific scenarios designed to verify the correctness of individual units or components of a software application. Unit testing focuses on testing the smallest parts of an application in isolation, such as functions, methods, or classes, to ensure they work as expected.

Table 1:Test Cast for Patient

Test Case Id	Test cast Name	Test case Description	step	Expected Result	Actual Result	Test Case Status Pass/Fail
TC01	Registration From password validation	Input unmatched password	Input unmatched password	Display alert message "password don't match please try again."	Display Alert message "Password doesn't match".	Pass
TC02	Registration From validation	Entire form validation	Input every detail	If same Details then display message "Patient already exits" else register	When entered existing user's details errors message displays saying "patient email is already existing" and when new	Pass

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					details are entered account creates.	
TC03	Registration form validation	Provide valid username email password phone and other	Provide valid username email password phone and other	Login to the panel	Logged in to the panel	Pass

Table 2: Testing Login Form

Test case Id	Test case Name	Test Case User	Test Case Description	Step	Expected Result	Actual Result	Test case Status Pass/ Fail
TC04	Validate Login	Admin, doctor, nurse laboratorist accountant pharamacist patient	Enter valid email, usertype and password	Enter valid email, usertype and password	An error message "Invalid email or password" must be displayed.	An error message "Invalid email or password" must be displayed.	Pass
TC05	Validate Login	Admin, doctor, nurse laboratorist accountant pharamacist patient	Enter valid email, usertype and password	Enter valid email, usertype and password	Login successfully and direct user to the dashboard	Login successfully and direct user to the dashboard	Pass

4.2.2 Test case for system testing

System testing is done after integration testing in order to ensure that the whole system functions properly. After the integration testing, the entire system working process was checked. The output was as per the system specifications and hence the system was found to work properly.

Table 3: Testing for Admin Dashboard

Test case Id	Test Case Name	Test Case Description	Step	Expected Result	Actual Result	Test Case Status Pass/ Fail
TC07	Dashboard	Check if dashboard loads after login	Login with valid credentials redirect dashboard	Successfully login Directed to Dashboard	Successfully login Directed to Dashboard	Pass
TC08	Role-based module visibility	Verify module visibility based on user role	Login as doctor, nurse laboratorist accountant pharamacist patient	Modules shown per user role	Modules shown per user role	pass
TC09	Unauthorized access Restricition	Ensure Dashboard is unauth access	Visit dashboard URL without login	Redirects to login page	Redirects to login page	pass
TC10	Add doctor	Checking add doctor option	Not filling one of the details of the doctor	Can't add the doctor	Can't add the doctor	Pass

TC12	Add doctor	Checking add doctor option	Filling all the appropriate details of the doctors	Doctor added and display the doctor list section	Doctor added and display the doctor list section	Pass
TC13	Delete Doctor	Checking delete doctor option	Filling the valid email of the doctor	Doctor should be delated from the database	Doctor should be delated from the database	Pass
TC14	Add Nurse	Checking add nurse option	Not filling one of the details of the nurse	Can't add the doctor	Can't add the doctor	Pass
TC15	Add Nurse laboratorist accountant pharamacist	Checking add nurse option	Filling all the appropriate details of the nurse laboratorist accountant pharamacist	Nurse laboratorist accountant pharamacist added and display the laboratorist accountant pharamacist list section	Nurse laboratorist accountant pharamacist added and display the laboratorist accountant pharamacist list section	Pass
TC16	Queries	Checking queries Option	Filling the valid contact	Should display queries of that specific contact	Should display queries of that specific contact	Pass

Table 4:4: Testing for Doctor Panel

Test Case Id	Test Case Name	Test Description	Step	Expected Result	Actual Result	Test Case

					Pass/ Fail
TC17	Security Testing	Checking security access system	Login with your admin assigned email and password	Successfully Login Directed to Doctor dashboard	Successfully Login Directed to Doctor dashboard	Pass
TC18	Appointment Report Prescription	Checking the status of the appointment	Appointment status is active and there are two action prescribe and cancel	Status must be active and prescribe must be available	Status must be active and prescribe must be available	Pass
TC19	Appointment Report and prescription	Checking the status of the appointment	Doctor prescribes to the specific appointment	After prescription the status must turn into prescribed and action must be available	After prescription the status must turn into prescribed and action must be available	Pass
TC20	Appointment Cancellation	Cancelling the active appointment	Doctor patient cancels the active appointment	After the cancellation status must turn into cancelled	After the cancellation status must turn into cancelled	Fail
TC21	Appointment Cancellation	Cancelling the active appointment	Doctor patient cancels the active appointment	After the cancellation status must turn into cancelled	After the cancellation status must turn into cancelled	Pass

Table 5:Testing for Patient Panel

Test Case Id	Test Case Name	Test Description	Step	Expected Result	Actual Result	Test Case Pass/ Fail
TC22	Security Testing	Checking security access system	Login with your admin assigned email and password	Successfully Login Directed to Patient dashboard	Successfully Login Directed to Patient dashboard	Pass
TC23	Appoint ment Booking	Booking the appointment	Selecting all the essential doctor details and times	Appointment should be booked successfully and display in appointment history section	Appointment should be booked successfully and display in appointment history section	Pass
TC24	Appoint ment List View	Verify patient can see list of booked	Go to "View Appointments" to the specific appointment	List of upcoming/past appointments appears the	List of upcoming/past appointments appears the	Pass
TC225	Search Sympto ms	Verify symptom checker/search tool works	Go to "View Doctor" and Enter symptoms	List of possible conditions shown	List of possible conditions shown	Pass
TC226	Make Payment	Verify patient can make payment for services	Go to "View Invoice" Select bill/invoice Complete payment	Payment success message shown	Payment success message shown	Pass

CHAPTER 5. CONCLUSION AND FUTURE RECOMMENDATIONS

5.1. Lesson Learnt /Outcome

The Hospital Management System (HMS) is expected to enhance the workings of a hospital by key procedures such as patient registration, emailing, diagnosis, manage blood donor, manage report, manage prescription, appointment booking, billing, medical record keeping. It will make the workings of the hospital more effective by reducing paperwork, cutting down on errors, and facilitating instant access to information about patients. The system will deliver enhanced patient care by streamlining doctor-patient communications, maximizing resource utilization, and facilitating real-time reporting for decision-making. Sophisticated security features will protect confidential patient information through role-based access control and encryption. Additionally, the HMS will automate drug and hospital resource inventory management, reducing costs and increasing speed of delivery. In general, the system will help provide a leaner, faster, and more patient-oriented hospital environment.

5.2. Conclusion

Our Hospital Management System (HMS) works smoothly and is easy to use. Patients can book appointments, see their prescriptions, and pay bills online. Doctors can check appointment and write prescription quickly. The admin can manage all hospital staff and activities. Laboratorist can upload test reports, pharamacist can handle medicines, nurse manage patient, bed, bed allocate, blood donor, manage report and accountant can tack payment manage invoice. The System everything appointments, prescription, lab tests, pharmacy and payments making hospital work faster and more organized. It's a complete solution that helps hospitals run better.

5.3. Future Recommendations

to further enhance the Hospital Management System, several improvements can be implemented. Integrating telemedicine features, such as video consultations, would enable remote healthcare services. AI-powered tools like chatbots and diagnostic support could streamline patient interactions and assist doctors. Additional features like multi-language supports, wearable device integration and a feedback system would make the system more inclusive and patient-centered.

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