

Chapter 1

Introduction

1.1 Overview:

Hospital Portal is web-based technology which brings up various diagnosis works online. Here patients are first allowed to register on the website and provide personal, test information. Once registered with their address and contact details, the patients may now see a variety of tests conducted by the lab. The patient will select the required test and book appointment after that lab centre send a lab boy at registered address to collect a sample. After successful sample collection patient can track their test history using the name, order, and registered mobile number. The system allows admin to attach a copy of the report into the system and automatically shown on user side so user can download report.

In Hospital Portal, we use **PHP and MySQL** database. It has two modules i.e.

1. Admin
2. User (Patient)

1.1.1 Admin Module:

Admin is the super user of the website who can manage everything on the website. Admin can log in through the login page

- **Dashboard:** In this section, the admin can see all detail in brief like the total, assigned and the sample collected and completed tests.
- **Pathologist:** In this section, the admin can manage Phlebotomist (add, update, delete).
- **Testing:** In this section, the admin can manage all the tests like assign the test to Pathologist and update the history.
- **Report:** In this section, the admin can generate two types of report. One is between dates reports and another one is by search. Admin can search the report by order number, name, and mobile number.

- **Notification:** In this section, the admin will get a notification for every new test request (notification bell).
- Admin can also update his profile, change the password, and recover the password

1.1.2 User (Patient) Module

- User can visit the application through a URL.
- **Testing:** This section divided into two parts. One is for new user and another one is for registered user. New user (First-time user) needs to provide personal and testing Information. A registered user only needs to provide test information; their personal information will be fetched from the database.
- **Dashboard:** In this section, the User can see the in which State of how many tests are done.
- **Report:** In this section, Users can search their test report using order number, name, and registered mobile number.

1.2 Purpose

The main purpose of Hospital Portal to provide a platform where patients can book the test online and get their Hospital Test Report done at home. With the help of this project, we are bringing the use of technology in the field of medical diagnosis where patients can avail all the diagnosis facilities at their door steps. Another purpose for developing this application is to generate the report automatically.

1.3 Scope

Today also we must go to the Hospital, wait in the queue to get our medical test done. As Technology is growing rapidly, we are also moving to a technical world where everything we want to be online. So, with the help of this project, we are bringing the use of technology in the field of medical diagnosis where patients can avail all the diagnosis facilities at their door steps. This project makes the diagnosis process easy and reduces the burden of patients. At a same time, its help the diagnostic centre to track

all their patients details with their test reports. This access friendly software provides quick and effective services which helps the diagnostic centre to increase their sales and profit.

1.4 Need

Efficient Management: A hospital portal web application can help streamline the management of various hospital operations, such as appointments scheduling, patient records management, and inventory management.

Improved Patient Experience: A portal web application can provide patients with a more convenient way to manage their health. Patients can use the portal to schedule appointments, view test results, and access their medical records online.

Enhanced Communication: A hospital portal web application can improve communication between patients, doctors, and other hospital staff. Patients can communicate with their doctors online, and doctors can access patient records remotely.

Better Coordination: A portal web application can help hospital staff coordinate their efforts and work more efficiently. Staff can access the portal to share patient information and coordinate care.

Increased Security: A hospital portal web application can provide enhanced security measures to protect patient data. This includes encryption of sensitive data, user authentication, and access control.

Chapter 2

Project Plan

2.1 Software Model:

- For this project, we use iterative model.
- Iterative process starts with a simple implementation of a subset of the software requirements and iteratively enhances the evolving versions until the full system is implemented.
- At each iteration design modifications are made and new functional capabilities are added. The basic idea behind this method is to develop a system through is to develop a system through repeated cycles and in smaller portions at a time.

2.2 Approach in project development:

- Specific
- Measurable
- Achievable
- Realistic
- Time-bound

2.3 Goals

The following goals are achieved by this project plan:

1. Software risks are documented for use in planning and tracking the software project.
2. Software project activities and commitments are planned and documented.
3. Affected groups and individuals agree to their commitments related to the software project.
4. Project is scheduled and documented.
5. Gives the desired output

2.4 Project Scope

2.5 Project Risks

Major risks we have determined for this software are as follows:

- Equipment failure.
- Late delivery of software.
- Technology will not meet expectations.
- Changes in requirements.
- Deviation from software engineering standards.

- Less reuse than planned **Risk Table:**

Risks	Probability	Impact
Equipment failure	60%	1
Late delivery	30%	1
Technology will not meet expectations	25%	3
Changes in requirements	20%	2
Less use than planned	40%	4

Table 1 - Risk Table

Impact level:

- 1.High
- 2.High to Medium
- 3.Medium
- 4.Medium to low

2.6 Project Schedule

Month schedule	Phase	Number of days required	Work done
February	Topic searching	7 days	Topic searched
February	Topic selection	4 days	Topic selected
February	Project confirmation	1 day	Project confirmed
February-March	Literature survey	7 days	Literature survey done
March	Requirement analysis	7 days	Requirement analysis done
March	Requirement gathering	7 days	Requirements gathered
March	Deciding technology stack	10 days	Technology stack designed
March	Php database creation	1 day	Database created
March	Coding according to divided modules	25 days	Created modules
April	Integrating the	15 days	Integrated
	modules		
April	Integrating the database	2 days	Integrated
May	Testing the system	5 days	Tested
May	Adding additional functionalities	7 days	Done
May	Testing the working of modules	2 days	Done
May	Fixing bugs	5 days	Done
May	Result analysis	2 days	Done
May	Report	2 days	Done

Table 2 - Project Schedule

Chapter 3

Requirement Analysis

This chapter will explore the system requirement analysis (Functional and non-functional requirements) and requirement specifications.

3.1 Hardware Requirements:

Client Side:

- RAM :512 MB
- Hard Disk :10 GB
- Processor :1.0 GHz

Server Side:

- RAM :1GB
- Hard Disk :20GB
- Processor :2.0 GHz

3.2 Software Requirement:

Client Side:

Web Browser : Google Chrome or any compatible browser
Operating : System Windows or any equivalent OS

Server Side:

Web Server : APACHE
Server-side Language : PHP5.6 or above version
Database Server : MYSQL
Web Browser : Google Chrome or any compatible browser
Operating System : Windows or any equivalent OS

3.3 Technology Stack



Figure 1 -Front-end



Figure 2 -Apache HTTP Server



Figure 3 -PHP



Figure 4 -My SQL

Front-end:

HTML is used to structure content on web pages, CSS is used for styling and layout, and JavaScript is used for interactivity and dynamic behaviour. Together, they make up the core technologies of the web.

Apache HTTP Server:

The Apache HTTP Server Project is an effort to develop and maintain an open-source HTTP server for modern operating systems including UNIX and Windows. The goal of this project is to provide a secure, efficient, and extensible server that provides HTTP services in sync with the current HTTP standards.

The Apache HTTP Server ("httpd") was launched in 1995 and it has been the most popular web server on the Internet since April 1996. It has celebrated its 20th birthday as a project in February 2015.

PHP:

- PHP stands for PHP: Hypertext Preprocessor.
- PHP is a server-side scripting language, like ASP.
- PHP scripts are executed on the server.
- PHP supports many databases (MYSQL, Informix, Oracle, Sybase, Solid, Generic ODBC, etc.).
- PHP is an open-source software.
- PHP is free to download and use.

MYSQL

- MYSQL is a database server.
- MYSQL is ideal for both small and large applications.
- MYSQL supports standard SQL.
- MYSQL compiles on several platforms.
- MYSQL is free to download and use.

Chapter 4

Analysis and Design

4.1. Analysis:

Today also we must go to the diagnostic centre, wait in the queue to get our hospital test done. As Technology is growing rapidly, we are also moving to a technical world where everything we want to be online. So, with the help of this project, we are bringing the use of technology in the field of medical diagnosis where patients can avail all the diagnosis facilities at their door steps. This project makes the diagnosis process easy and reduces the burden of patients. At a same time, its help the diagnostic centre to track all their patients details with their test reports.

4.2. Disadvantage of Present System

- **Not user friendly:** The present system not user friendly because data is not stored in structure and proper format.
- **Manual Control:** All report calculation is done manually so there is a chance of error.
- **Lots of paper work:** Visitors maintain in the register so lots of paper require storing details.
- **Time consuming**

4.3 Design

Design is the first step in the development phase for any techniques and principles for the purpose of defining a device, a process or system in sufficient detail to permit its physical realization. Once the software requirements have been analyzed and specified the software design involves three technical activities - design, coding, implementation, and testing that are required to build and verify the software.

The design activities are of main importance in this phase, because in this activity, decisions ultimately affecting the success of the software implementation and

its ease of maintenance are made. These decisions have the final bearing upon reliability and maintainability of the system. Design is the only way to accurately translate the customer's requirements into finished software or a system.

Design is the place where quality is fostered in development. Software design is a process through which requirements are translated into a representation of software. Software design is conducted in two steps. Preliminary design is concerned with the transformation of requirements into data

4.3.1 UML Diagrams:

UML stands for Unified Modelling Language. UML is a language for specifying, visualizing, and documenting the system. This is the step while developing any product after analysis. The goal from this is to produce a model of the entities involved in the project which later need to be built. The representation of the entities that are to be used in the product being developed need to be designed.

4.3.2 Use case Diagram:

Use case diagrams model behaviour within a system and helps the developers understand of what the user require. The stick man represents what is called an actor. Use case diagram can be useful for getting an overall view of the system and clarifying that can do and more importantly what they cannot do.

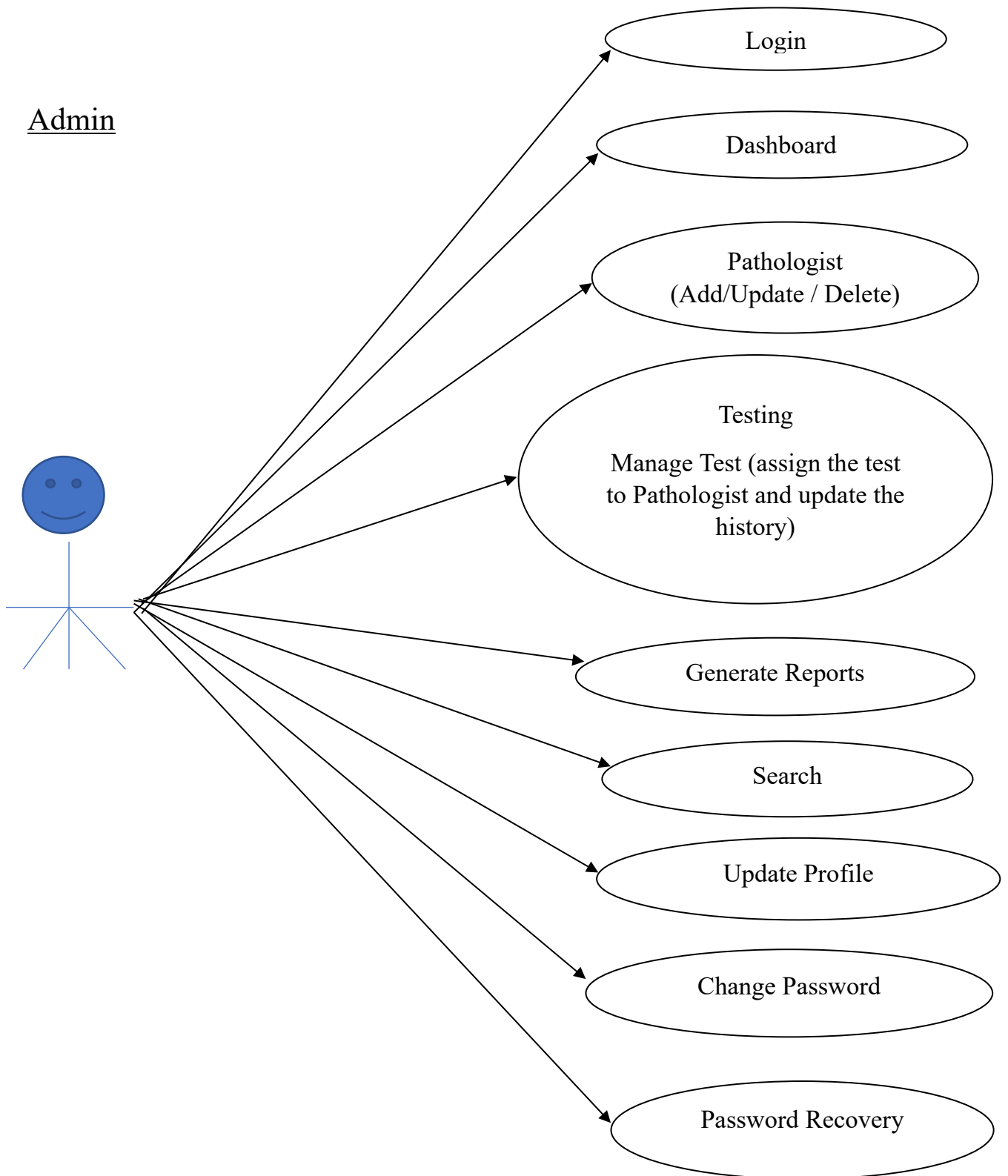
Use case diagram consists of use cases and actors and shows the interaction between the use case and actors.

- The purpose is to show the interactions between the use case and actor.
- To represent the system requirements from user's perspective.
- An actor could be the end-user of the system or an external system.

USECASE DIAGRAM: A Use case is a description of set of sequence of actions. Graphically it is rendered as an ellipse with solid line including only its name. Use case diagram is a behavioral diagram that shows a set of use cases and actors and their relationship. It is an association between the use cases and actors. An actor represents a real-world object. Primary Actor – Sender, Secondary Actor Receiver.

USECASE DIAGRAM:

Admin



Users (Patient)

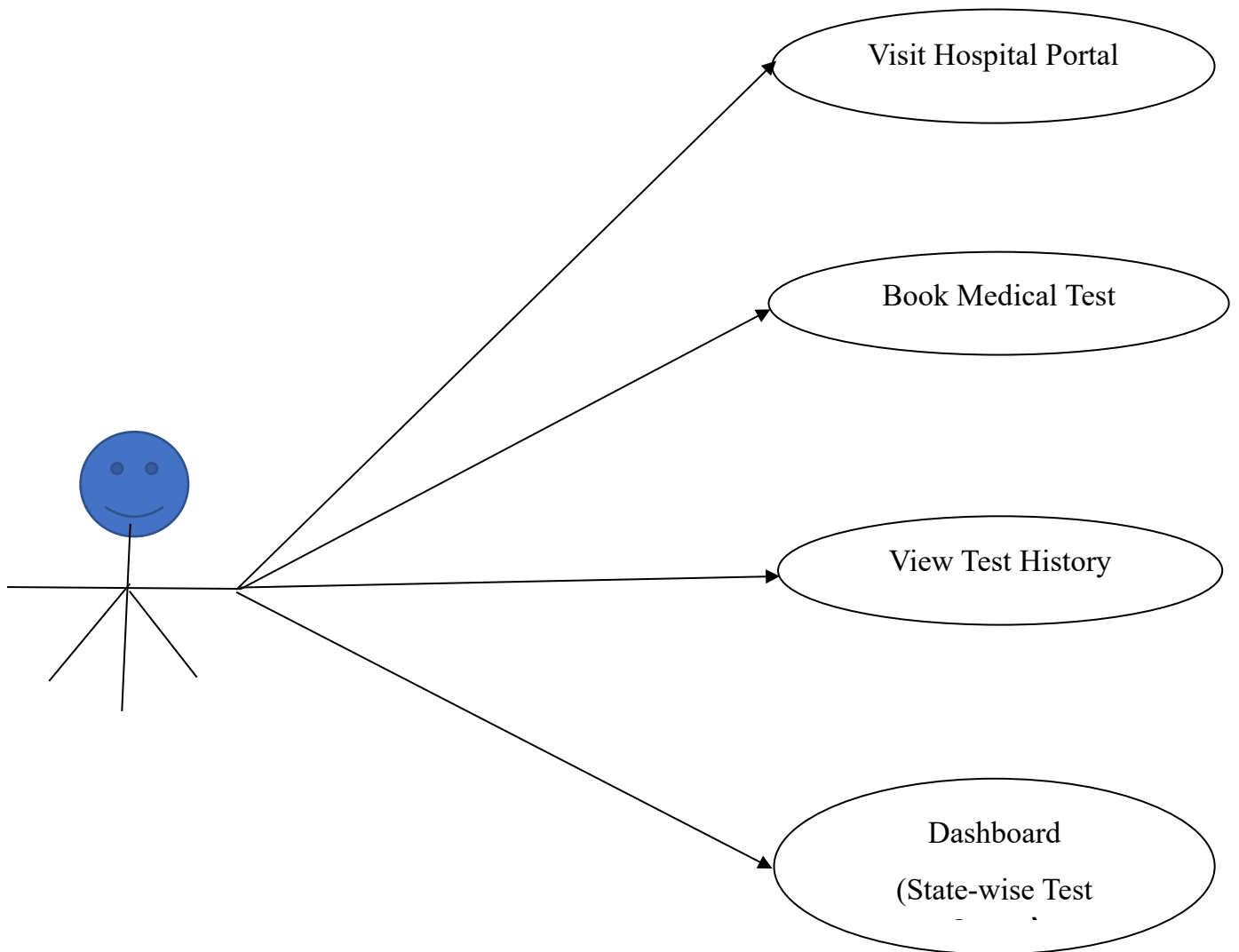
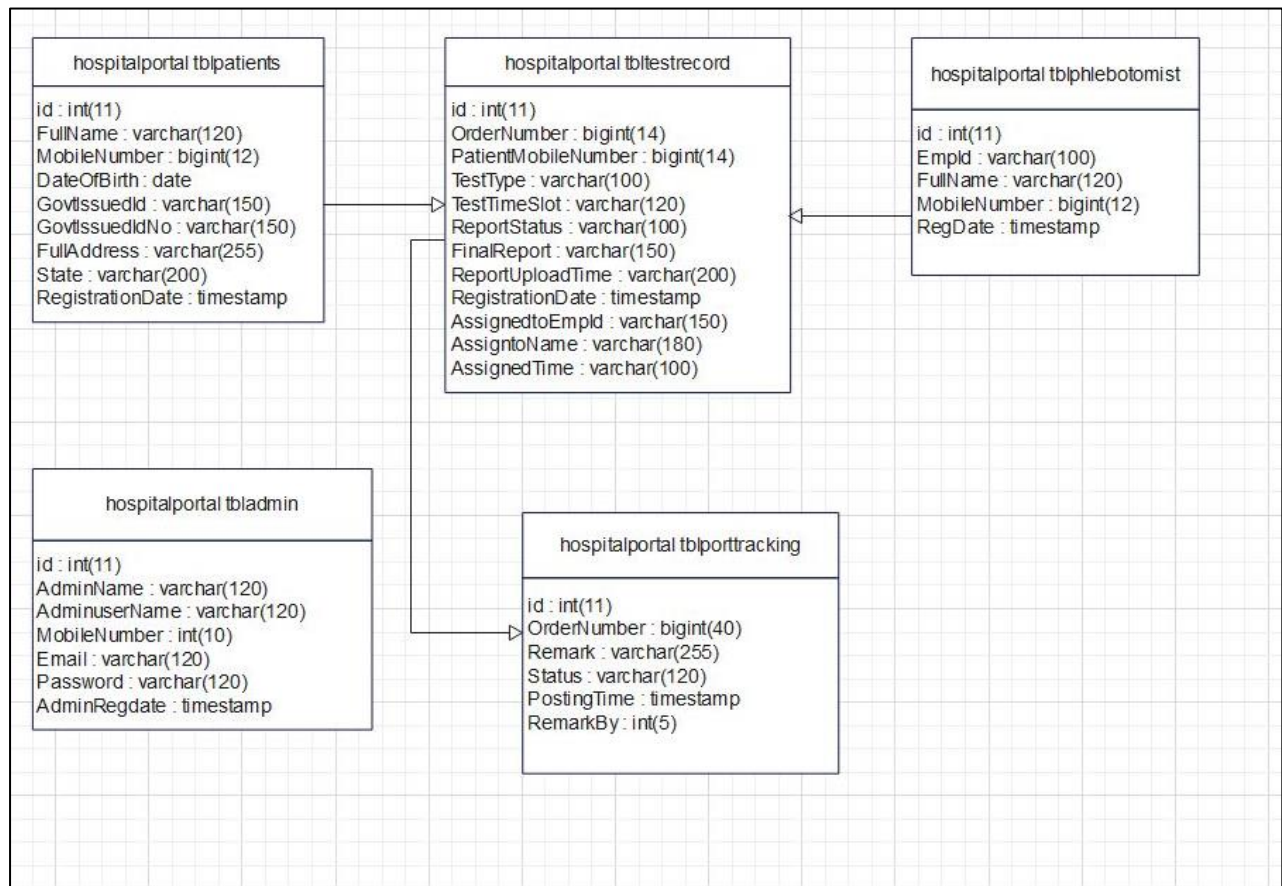


Figure 5- Usecase Diagram

4.3.3 Class Diagram:

A description of set of objects that share the same attributes operations, relationships, and semantics



4.3.2 ER Diagram:

The Entity-Relationship (ER) model was originally proposed by Peter in 1976 [Chen76] as a way to unify the network and relational database views. Simply stated the ER model is a conceptual data model that views the real world as entities and relationships. A basic component of the model is the Entity-Relationship diagram which is used to visually represent data objects. Since Chen wrote his paper the model has been extended and today it is commonly used for database design for the database designer, the utility of the ER model is:

- It maps well to the relational model. The constructs used in the ER model can easily be transformed into relational tables.
- It is simple and easy to understand with a minimum of training. Therefore, the model can be used by the database designer to communicate the design to the end user.
- In addition, the model can be used as a design plan by the database developer to implement a data model in specific database management software.

4.3.3 ER Notation

There is no standard for representing data objects in ER diagrams. Each modelling methodology uses its own notation. The original notation used by Chen is widely used in academics texts and journals but rarely seen in either CASE tools or publications by non-academics. Today, there are several notations used; among the more common are Bachman, crow's foot, and IDEFIX.

All notational styles represent entities as rectangular boxes and relationships as lines connecting boxes. Each style uses a special set of symbols to represent the cardinality of a connection. The notation used in this document is from Martin. The symbols used for the basic ER constructs are:

- **Entities** are represented by labelled rectangles. The label is the name of the entity. Entity names should be singular nouns.
- **Relationships** are represented by a solid line connecting two entities. The name of the relationship is written above the line. Relationship names should be verbs
- **Attributes**, when included, are listed inside the entity rectangle. Attributes which are identifiers are underlined. Attribute names should be singular nouns.
- **Cardinality** of many is represented by a line ending in a crow's foot. If the crow's foot is omitted, the cardinality is one.

Chapter 5

Testing

Software testing can be stated as the process of verifying and validating that a software or application is bug free, meets the technical requirements as guided by its design and development and meets the user requirements effectively and efficiently with handling all the exceptional and boundary cases.

Chapter 6

User Manual

Chapter 7

Strength and Limitations

7.1 Strength

- 1.The work has been automated with this system.
- 2.Patient and Doctor got a website platform to interact.
- 3.This Application saves a lot of time and offline work.
- 4.Promotes digital India.
- 5.Easy to use and understand.
- 6.Application does not need any kind of administration.
- 7.As every record is stored in database doctor can examine patient whenever and wherever needed.
8. Improved Patient Satisfaction: Hospital portal web applications can improve patient satisfaction by providing a more convenient and accessible way to access healthcare services.
9. Cost Savings: Hospital portal web applications can reduce costs by streamlining administrative tasks and reducing the need for paper-based systems.
10. Better Outcomes: Hospital portal web applications can help healthcare providers make more informed decisions by providing them with access to up-to-date patient information and test results, leading to better patient outcomes.

7.2 Limitations:

1.Technology Barriers: Patients who lack the technological skills or access to the necessary equipment, such as computers or smartphones, may have difficulty using the portal. This may limit access for some patients and result in unequal access to healthcare.

2. Security Risks: Hospital portal web applications can pose security risks to patients' personal health information if the system is not secure. This can lead to data breaches, identity theft, and other privacy concerns.

3. Limited Scope: The features of hospital portal web applications may be limited to certain types of healthcare services, such as scheduling appointments, accessing medical records, or paying bills. Other types of healthcare services, such as telemedicine, may not be available through the portal.

4. Resistance to Change: Some healthcare providers may be resistant to change and may be hesitant to adopt new technology, leading to lower adoption rates of the hospital portal web application.

5. Language and Accessibility: Hospital portal web applications may not be accessible to patients who speak languages other than the primary language of the healthcare provider. Additionally, they may not be fully accessible to patients with disabilities, such as visual or hearing impairments.

Chapter 8

Future Scope

8.1. Future Scope

The future scope of hospital portal web applications is vast and is expected to continue to evolve and improve over time. Some potential areas of growth and innovation include:

- 1. Artificial Intelligence (AI) Integration:** Hospital portal web applications can incorporate AI algorithms to provide patients with personalized recommendations based on their medical history and health data.
- 2. Remote Patient Monitoring:** Hospital portal web applications can integrate with wearable devices and other monitoring technologies to enable remote patient monitoring, allowing healthcare providers to track patients' health in real-time.
- 3. Telemedicine Integration:** Hospital portal web applications can integrate with telemedicine platforms, enabling patients to connect with healthcare providers virtually and receive medical consultations and treatment remotely.
- 4. Integration with Electronic Health Records (EHRs):** Hospital portal web applications can integrate with EHRs, allowing patients to access and manage their health information from a single platform.
- 5. Patient Engagement:** Hospital portal web applications can improve patient engagement by incorporating features such as patient feedback and social media integration.
- 6. Advanced Analytics:** Hospital portal web applications can leverage advanced analytics and data visualization tools to help healthcare providers identify trends and patterns in patient data, enabling them to make more informed decisions.

Overall, the future scope of hospital portal web applications is promising, with the potential to revolutionize the way patients access and manage their healthcare services, and to improve patient outcomes through the integration of new technologies and innovative features.

Chapter 9

Conclusion

Hospital Portal is very much graceful and lively. Patients must register to the portal by giving their details and then they can take appointment through online with minimal effort. The Pathologist comes to patient address to collect the sample. Once test is done and test report is generated patient can download the report by logged in to the portal.

This system can be implemented in diagnostic labs and clinics.

- Automation of the entire system improves the productivity.
- It provides a friendly graphical user interface which proves to be better when compared to the existing system.
- It gives appropriate access to the authorized users depending on their permissions.
- It effectively overcomes the delay in communications.
- Updating of information becomes so easier.
- System security, data security and reliability are the striking features.
- The System has adequate scope for modification in future if it is necessary.

Chapter 10

References