



Tribhuvan University
Faculty of Humanities and Social Sciences

A PROJECT REPORT
On
“Web portal: Hospital Appointment
System”

Submitted to
Department of Computer Application
Samriddhi College

In partial fulfilment of requirements for the Bachelors in Computer Application

Submitted by
Aanchal Neupane [11131212]
Urmila Khatri [11131231]

Under the supervision of
Mr.Loknath Regmi

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Tribhuvan University
Faculty of Humanities and Social Sciences
Samriddhi College

Supervisor's Recommendation

I hereby recommend that this project prepared under my supervision by **Aanchal Neupane and Urmila Khatri** entitled “**Hospital Appointment System**” in partial fulfillment of the requirements for the degree of Bachelor of Computer Application is recommended for the final evaluation.

Signature

Mr. Loknath Regmi

Supervisor

BCA Department



Tribhuvan University
Faculty of Humanities and Social Sciences
Samriddhi College

LETTER OF APPROVAL

This is to certify that this project prepared by **Aanchal Neupane and Urmila Khatri** entitled “**Hospital Appointment System**” in partial fulfillment of the requirements for the degree of Bachelor in Computer Application has been evaluated. In our opinion it is satisfactory in the scope and quality as a project for the required degree.

<hr/> SIGNATURE of Supervisor Mr. Loknath Regmi BCA Department Samriddhi College	<hr/> SIGNATURE of HOD/Coordinator
<hr/> SIGNATURE of Internal Examiner	<hr/> SIGNATURE of External Examiner Name: External Examiner

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Aanchal Neupane

Symbol number: 11131212

Urmila Khatri

Symbol number: 11131231

BCA sixth Semester

ABSTRACT

The purpose of the project entire as “Hospital Appointment System is “to computerize the front office management of Hospital to develop software which is user friendly simple, fast, and cost-effective. It deals with the collection of patient’s information, diagnosis details, etc. Traditionally, it was done manually. The main function of the system is register and store patient details and doctor details and retrieve this details and account section details Ehen required, and also to manipulate these details meaningfully system input contains patient details, diagnosis details, while system output is to get these details on the screen. The hospital Appointment System can be entire using a username and password. It accessible either by an administrator or receptionist. Only they can add data into the database. The data can be retrieved easily. The data are well protected for personal use and makes the data processing very fast.

Keywords: *Hospital management, Doctor Appointment, Appointment billing*

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LIST OF ABBREVIATIONS

CSS	Cascading Style Sheet
DFD	Data Flow Diagram
Dpi	Dots per Inch
HMS	Hostel Management System
KB	Kilo Byte
MB	Mega Byte
PHP	Hypertext Preprocessor
RAM	Random Access Memory
SDLC	Software Development Life Cycle
SQL	Structure Query Language
SVGA	Super Video Graphics Array
UTP	Unshielded Twisted Pair
USB	Universal Serial Bus

CHAPTER-1. INTRODUCTION

1.1. Introduction

Human Body is a very complex and sophisticated structure and comprises of millions of functions. All these complicated functions have been understood by man him, part-by-part their research and experiments. As science and technology progressed, medicine became an integral part of the research. Gradually, medical science became an entirely new branch of science. As of today, the Health Sector comprises of Medical institutions i.e. Hospitals, HOSPITAL etc. research and development institutions and medical colleges. Thus the Health sector aims at providing the best medical facilities to the common man. The Hospital Management System is designed for any hospital to replace their existing manual paper based system. The project Hospital Management system includes registration of patients, storing their details into the system, and also computerized billing in the pharmacy, and labs. The purpose of the project entitled as “HOSPITAL APPOINTMENT SYSTEM” is to computerize the Front Office Management of Hospital to develop software which is user friendly simple, fast, and cost – effective [1]. The new system is to control the information of patients. Room availability, staff and operating room schedules and patient invoices. I have designed the given proposed system in the JSP to automate the process of day to day activities of Hospital like Room activities, Admission of New Patient, Discharge of Patient, Assign a Doctor, and finally compute the bill etc.

1.2. Project Statement

Since Hospital is associated with the lives of common people and their day-to-day routines so I decided to work on this project. The manual handling of the record is time consuming and highly prone to error. The purpose of this project is to automate or make online, the process of day-to-day activities like Room activities, Admission of New Patient, Discharge of Patient, Assign a Doctor, and finally compute the bill etc... I have tried to design the software in such a way that user may not have any difficulty in using this package & further expansion is possible without much effort. Even though I cannot claim that this work to be entirely exhaustive, the main purpose of my exercise is perform each Hospital’s activity in computerized way rather than manually which is time consuming. I am confident that this software package can be readily used by non-programming personal avoiding human handled chance of error.

1.3. Objectives

Hospital are the essential part of our lives, providing best medical facilities to people suffering from various ailments, which may be due to change in climatic conditions, increased work-load, emotional trauma stress etc. It is necessary for the hospitals to keep track of its day-to-day activities & records of its patients, doctors, nurses, ward boys and other staff personals that keep the hospital running smoothly & successfully. But keeping track of all the activities and their records on paper is very cumbersome and error prone. It also is very inefficient and a time-consuming process Observing the continuous increase in population and number of people visiting the hospital. Recording and maintaining all these records is highly unreliable, inefficient and error-prone. It is also not economically & technically feasible to maintain these records on paper. Thus keeping the working of the manual system as the basis of our project. We have developed an automated version of the manual system, named as “Administration support system for medical institutions”. The main aim of our project is to provide a paper-less hospital up to 90%. It also aims at providing low-cost reliable automation of the existing systems. The system also provides excellent security of data at every level of user-system interaction and also provides robust & reliable storage and backup facilities.

The objectives of my hospital management system are:

- To get information about Front Office/OPD Management
- To get information about patient care management and departmental modules (radiology, pharmacy and pathology labs)

1.4. Scope and Limitations

The proposed software product is the Hospital Management system (HMS). The system will be used in any hospital, clinic, dispensary or pathology labs. Clinic, dispensary or pathology to get the information from the patients and then storing that data for future usages. The current system in use is a paper based system. It is too slow and cannot provide updated lists of patients within reasonable timeframe. The intention of the system is to reduce over-time pay and increase the number of patients that can be treated accurately. Requirement statements in these documents are both functional and non-functional.

1.5 Development Methodology

System development is a process through which a product will get completed or a product gets rid from any problem. Software development process is described as a number of

phases, procedures and steps that gives the complete software. It follows series of steps which is used for product progress. Figure 1 shows the method of System Development Life Cycle that will be implemented in the project. Prototyping Model has following phases:

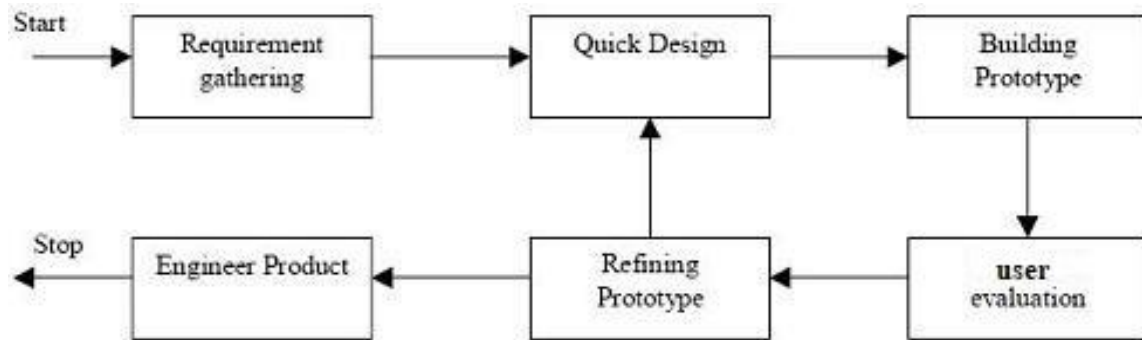


Figure 1.5- 1 Prototyping Model of Hospital Appointment System

a. Requirements gathering and analysis

In this phase, the requirements of the Hospital Management System are defined in detail. During the process, gather information on what the system should do from as many sources as possible:

- i. Directly observing user
- ii. Analyzing procedures and other documents

b. Quick design

In this stage, a simple design of the Hospital Management System is created. However, it is not a complete design. It gives a brief idea of the system to the user. The quick design helps in developing the prototype.

c. Build a Prototype

In this phase, an actual prototype is designed based on the information gathered from quick design. It is a small working model of the required system.

d. User evaluation

In this stage, the proposed system is presented to the user for an initial evaluation. It helps to find out the strength and weakness of the working model. Comment and suggestion are collected from the user.

e. Refining prototype

If the user is not happy with the current prototype, refine the prototype according to the user's feedback and suggestions. This phase will not over until all the requirements specified by the user are met. Once the user is satisfied with the

developed prototype, a final system is developed based on the approved final prototype.

f. Engineer Product

Once the final system is developed based on the final prototype, it is thoroughly tested and deployed to production. The system undergoes routine maintenance for minimizing downtime and prevent large-scale failures.

1.6. Report Organization

This report is organized into five chapters. In the first chapter, the project is introduced in detail along with the problem statement, its objectives and scope. The second chapter contains the functional and non-functional requirements of the project. Analysis and evaluation of project is done by feasibility analysis. Also, data modeling and process modeling of the project are done to analyze the data and working mechanism of the system in detail. The third chapter looks into detail about the system design of the project that includes interface design and process design among others. The methods and tools used to implement the project and all testing for this system are clearly explained in the fourth chapter. Finally, the fifth chapter contains conclusion based on the project.

CHAPTER-2. BACKGROUND STUDY AND LITERATURE REVIEW

2.1. Background Study

In this section we are going to analyze the existing system and provide solutions to errors or build a new system all together. The existing system is manual based and need lot of efforts and consume enough time. In the existing system we can apply for the hospital online but the patient appointment processes are done manually. It may lead to make mistake in the process of treatment. The existing system does not deal with Online Patient Medical Report and complaint registration. To manage the hospital facilities, a lot of data need to be maintained such as number of patent hospital can accommodate, hospital rules and regulation, hospital fee, hospital in and out of patent, guest and visitor record and so on. So, this need the system which has an ability to capture all kind of data and information and analysis it properly for smooth functioning of the hospital. Hospital in charge can easily maintain the data [2].

Hospital Management in hospital often involves administering of all activities of patents. All these still remains difficult and require some job for the top management. Hospital Management functions and responsibilities in modern day hospital have always been a problem in managing, because of the manual system method of tools they use. Hospital Management System is well designed specially to meet challenges of administrative set up of any hospital. HMS can be used to assist in patent's allocation, setup hospital information, hospital application, and patent outing record and visitor management. In short, this system will assist the staff in managing the hospital management at hospital.

Manual System was the following drawbacks.

- More human power
- More strength and strain of manual labor needed
- Repetition of same procedure
- Low security
- Data redundancy.
- Difficulty to handle and update data.
- Record keeping is difficult.
- Backup data can be easily generated

2.2. Literature Review

Quality tools and techniques are the important instruments which the organization can use to improve its condition, whether in the service given to the customers, process, delivery time, number of defects, etc. There are many methods that the organization can choose to improve quality, such as Total Quality Management (TQM), Lean and Six Sigma, Malcolm Baldrige, etc. But in any method chosen, these quality tools and techniques would be used. McQuater, R.E., et al. (1995) distinguished tool and technique as follows: ▪ A single tool may be described as a device which has a clear role. It is often narrow in focus and is usually used on its own. Some examples of tools are: cause and effect diagrams, Pareto analysis, relationship diagrams, control charts, histograms, and flowcharts. ▪ a technique has a wider application than a tool. This often results in a need for more thought, skill, and training to use techniques effectively. Viewed simplistically, techniques can be thought of as a collection of tools. For example, statistical process control (SPC) employs a variety of tools such as charts, graphs and histograms, as well as other statistical methods. Some examples of techniques are: SPC, benchmarking, quality function deployment, failure mode and effects analysis, and design of experiments. Dale, Barrie stated several main roles of the quality tools and techniques, which are for summarizing data and organizing its presentation, data-collection and structuring ideas, identifying relationship, discovering and understanding a problem, implementing action, finding and removing the causes of the problem, selecting problems for improvement and assisting with the setting of priorities, planning, and performance measurement and capability assessment. While according to McQuater, R.E., et al. (1995), tools and techniques' key roles are for continuous improvement, because they allow processes to be monitored and evaluated; everyone to become involved in the improvement process; people to solve their own problems; a mindset of continuous improvement to be developed; a transfer of experience from quality improvement activities to everyday business operations; and reinforcement of teamwork through problem-solving. In order to make the use of these tools and techniques effective and efficient to improve the organization's performance, McQuater, R E, et al. (1995) stated that there are some critical success factors that require attention, such as: full management support and commitment; effective, timely and planned training; a genuine need to use the tool or technique; defined aims and objective for use; a cooperative environment; and backup and support from improvement facilitators. Tsang, J.H.Y. and Antony, J. (2001) surveyed UK service organizations and found that the critical success factors are customer

focus; continuous improvement; teamwork and involvement; top management commitment and recognition; training and development; quality systems and policies; supervisory leadership; communication in company; supplier partnership/supplier management; measurement and feedback; and cultural change [3]. Using six sigma method, Antony, J., et al. (2006) added several other critical success factors, such as: management commitment and involvement; company-wide commitment; cultural change; linking six sigma to business strategy; integrating six sigma with the financial infrastructure; organizational infrastructure; training and education; incentive program; customer focus; understanding the six sigma methodology; project management skills; project prioritization and selection; and project tracking and reviews. In a study in National Healthcare Service in Scotland, Antony, J. (2008) was defining the critical success factors for healthcare industry which were using Lean and Six Sigma. The critical success factors are: focusing on the needs of patients; senior management commitment and involvement; strong leadership to continuous improvement financial indicators; and training in lean / six sigma. If there is some missing critical success factors, the organization will face some difficulties in implementing the quality tools and techniques. that there are two important factors about the tools and techniques, which are without a strategy and plan, the implementation of any tool and technique in isolation will not get the long-term benefit and that there is no one tool or technique which is more important than others. Both the non-statistical tools and the statistical tools play important role of the quality improvement process. These are the explanations of each quality tools and techniques used in this study:

CHAPTER-3. SYSTEM ANALYSIS AND DESIGN

3.1. System Analysis

System analysis is a method of problem-solving that deals with the breaking down of a system into components parts in order to study how well the individual parts work and interact to accomplish their purpose. It involves the process of enumerating the existing problems, analyzing the proposed system for costs and benefits, analyzing the system and user requirements, and considering possible alternative system. System analysis is important in the design of subsequent systems. System design consists of design activities that produce system specifications which satisfy the functional requirements that have been developed in the system analysis process. System design is basically the structural implementation of system analysis. System Analysis is a separation of a substance into parts for study and their implementation and detailed examination. Before designing any system it is important that the nature of the business and the way it currently operates are clearly understood. The detailed examination provides the specific data required during designing in order to ensure that all the client's requirements are fulfilled. The investigation or the study conducted during the analysis phase is largely based on the feasibility study. Rather it would not be wrong to say that the analysis and feasibility phases overlap. High-level analysis begins during the feasibility study. Though analysis is represented as one phase of the system development life cycle (SDLC), this is not true. Analysis begins with system initialization and continues until its maintenance. Even after successful implementation of the system, analysis may play its role for periodic maintenance and up gradation of the system. One of the main causes of project failures is inadequate understanding, and one of the main causes of inadequate understanding of the requirements is the poor planning of system analysis.

3.1.1. Requirement Analysis

I. Functional Requirement

This system interface is divided into two section:

1. Administrator Interface

- i. Administrator can delete any post.
- ii. Administrator can verify user account.

2. User Interface

- i. User can browse all ads without any account.
- ii. For post an ad needs to create an account

- iii. User can update/edit their own account.
- iv. Log in and Log out system.
- v. To create a new account user must be needs to verify his email with verification code.
- vi. If any user forget his/her password he/she can recovery his account with verify his email and create a new password.

Use Case Diagram

A use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases.

Use case diagrams are formally included in two modeling languages defined by the OMG: the unified modeling language (UML) and the systems modeling language (seem)

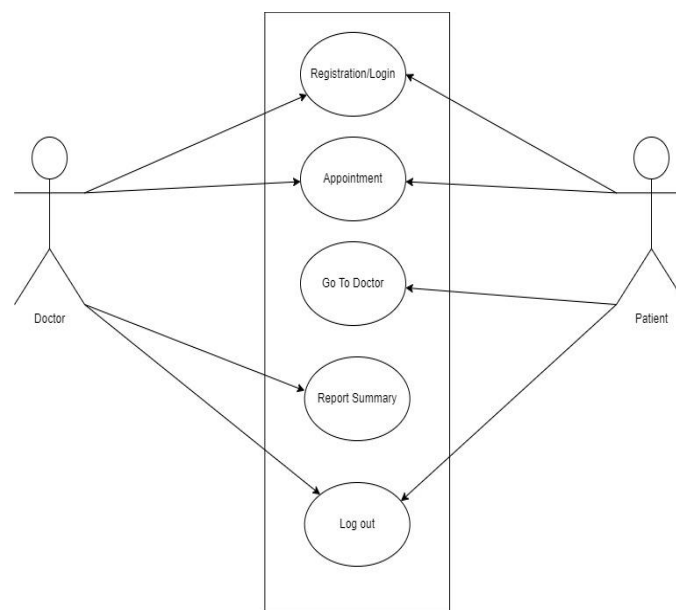


Figure 3.1.1- 1 Use Case Diagram for the system

II Non Functional Requirement

a. Performance requirements

Some performance requirement identified is list below:

1. The database shall be able to accommodate a more record to store.
2. The software shall support use of multiple users at a time.
3. There are no other specific performance requirements that will affect development.

b. Safety Requirements

The database may get crashed at any certain time due to virus or operating system failure. Therefore, it is required to take the database backup.

c. Security Requirements

Some of the factors that are identified to protect the software from accidental or malicious access use, modification, destruction or disclosure are described below.

- i. Keep specific log or history data sets
- ii. Assign certain functions to different modules
- iii. Check data integrity for critical variables

3.1.2. Feasibility Analysis

I. Technical Feasibility

The technical feasibility in the proposed system deals with the technology used in the system. It deals with the hardware and software used in the system whether they are of latest technology or not and if it happens that after a system is prepared, a new technology arises and the user wants the system based on that technology. This system uses windows platform, apache server, SQL for database, PHP as the language and html or xml as user interface. Thus HOSPITAL MANAGEMENT SYSTEM is technically feasible.

II. Operational Feasibility

The project has been developed in such a way that it becomes very easy even for a person with little computer knowledge to operate it. This software is very user friendly and does not require any technical person to operate. Thus the project is even operationally feasible.

III. Economic Feasibility

Economic analysis is the most frequently used technique for evaluating the effectiveness of a proposed system. More frequently known as cost/benefit system and compare them with costs. If benefits outweigh costs, a decision is taken to design and implement the system.

IV. Schedule Feasibility

The schedule feasibility shows the time taken to develop the software this software has completed within three months.

We have divided the project into the tasks and milestones as shown in figure

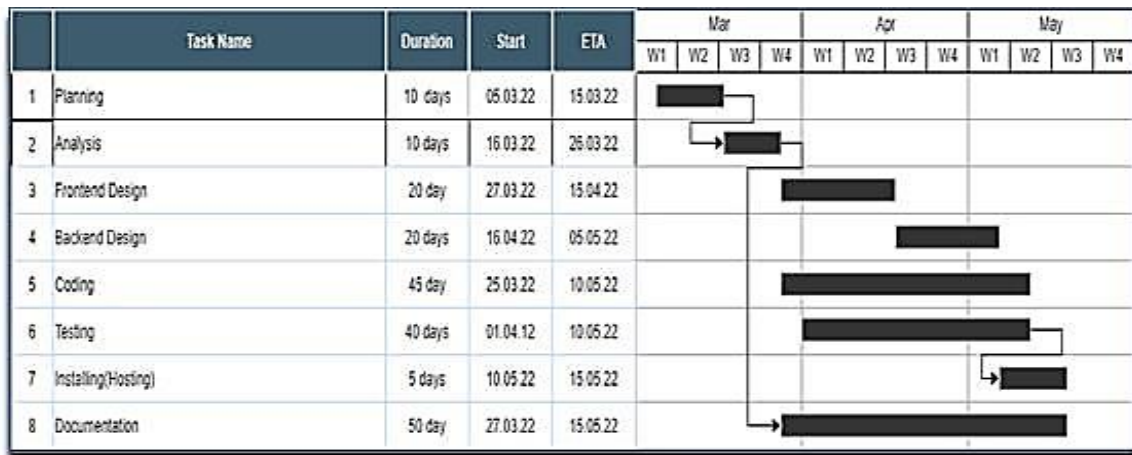


Figure 3.1.2- 1 Gantt chart of project

3.1.3. Data Modeling

An entity-relationship diagram (ERD) is an abstract and conceptual representation of data. Entity relationship modeling is a database modeling method, used to produce a type of conceptual schema or semantic data model of a system, often a relational database, and its requirements in a top-down fashion.

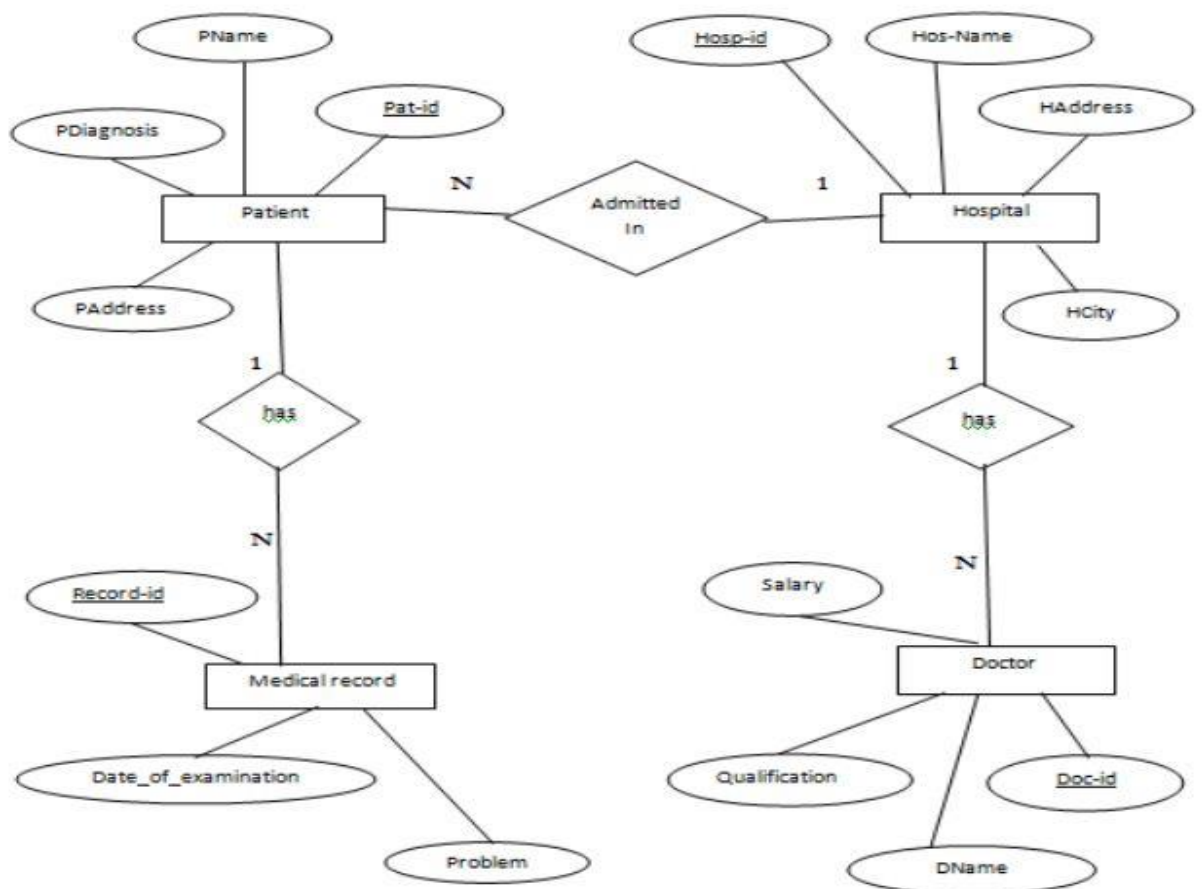


Figure 3.1.3- 1 ER diagram for the system

3.1.4. Process Modeling

A data flow diagram is a graphical view of how data is processed in a system in terms of input and output.

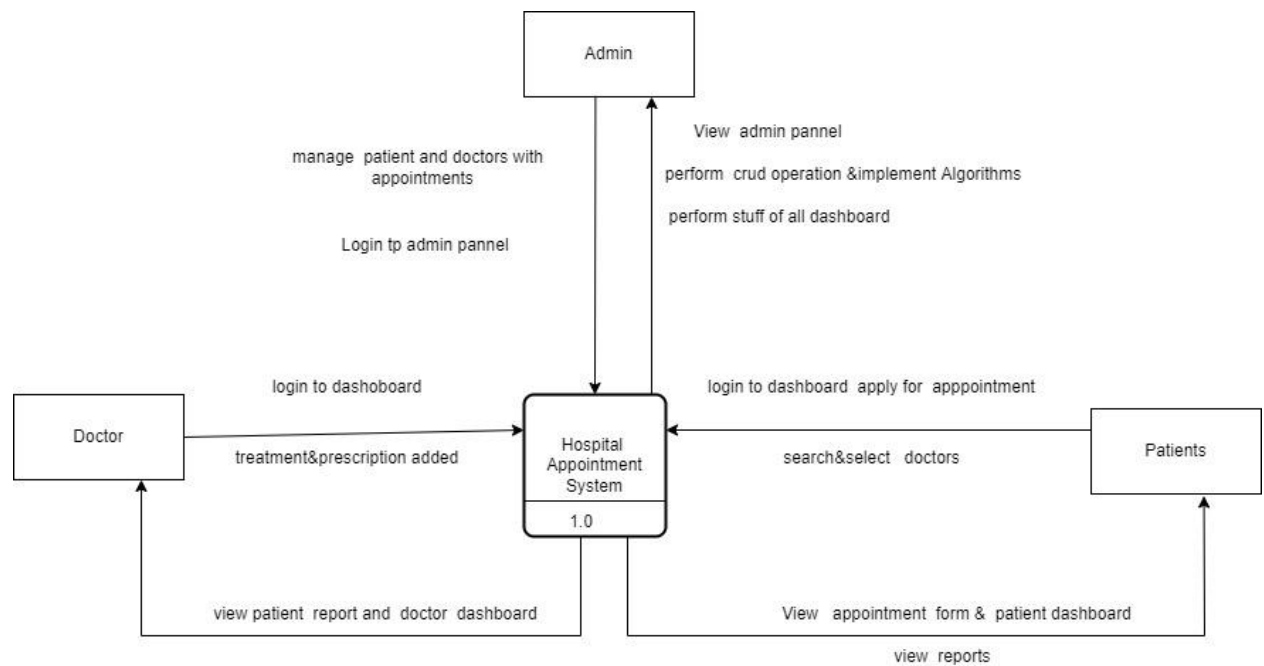


Figure 3.1.4- 1 Level 0 DFD

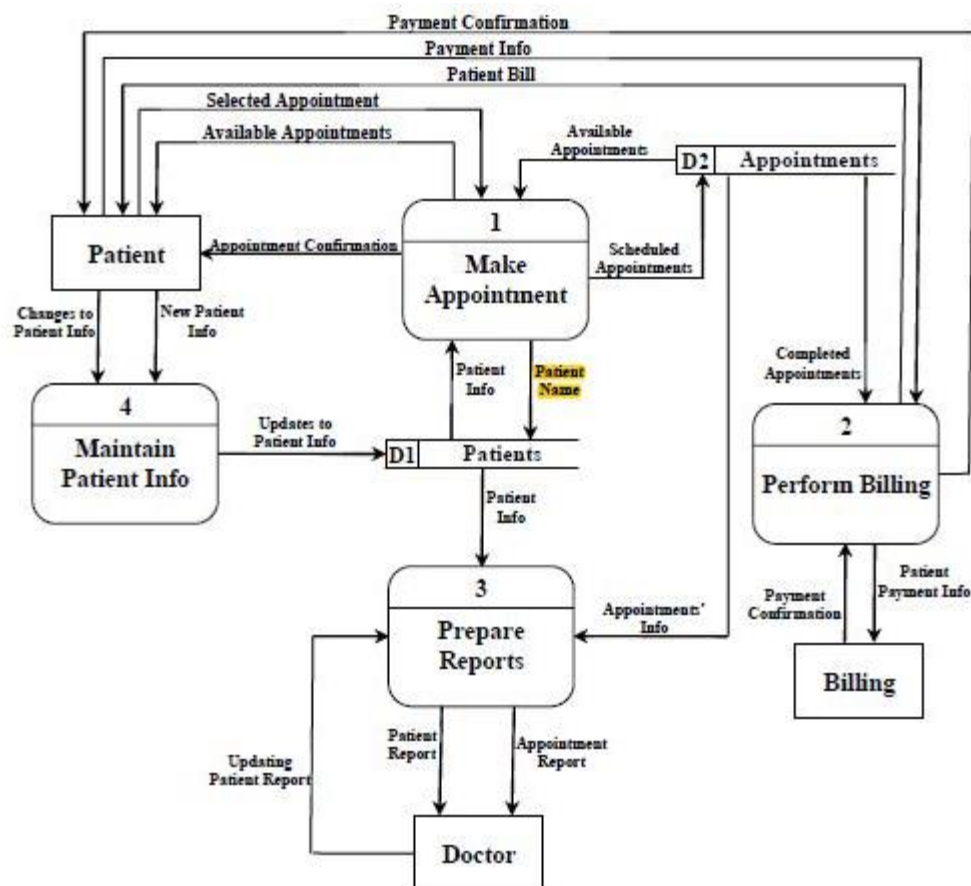


Figure 3.1.4- 2 Process model for HAS

3.2. System Design

The purpose of design phase is to plan a solution for problem specified by the requirements. System design aims to identify the modules that should be in the system, the specification of those modules and how they interact with each other to produce the result. The goal of the design process is to produce a model or representation of a system can be used later to build that system. The produced model is called design of the system.

3.2.1. Architectural Design

System architecture is the conceptual model that defines the structure, behavior, and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system. A system architecture can consist of system components and the sub-systems developed, that will work together to implement the overall system.

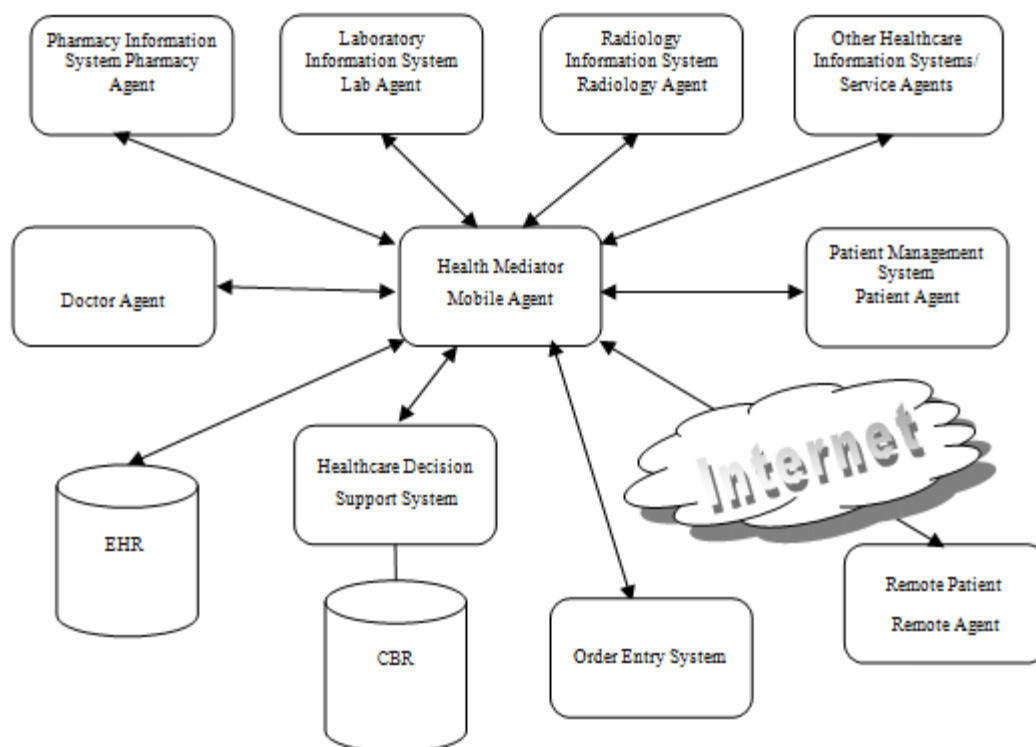


Figure 3.2.1- 1 Architectural design of the system

3.2.2. Database Schema Design

A database schema is the skeleton structure that represents the logical view of the entire database. It defines how the data is organized and how the relations among them are associated. It formulates all the constraints that are to be applied on the data. A database

schema can be divided broadly into two categories – Physical Database Schema: This schema pertains to the actual storage of data and its form of storage like files, indices, etc. It defines how the data will be stored in a secondary storage. Logical Database Schema:

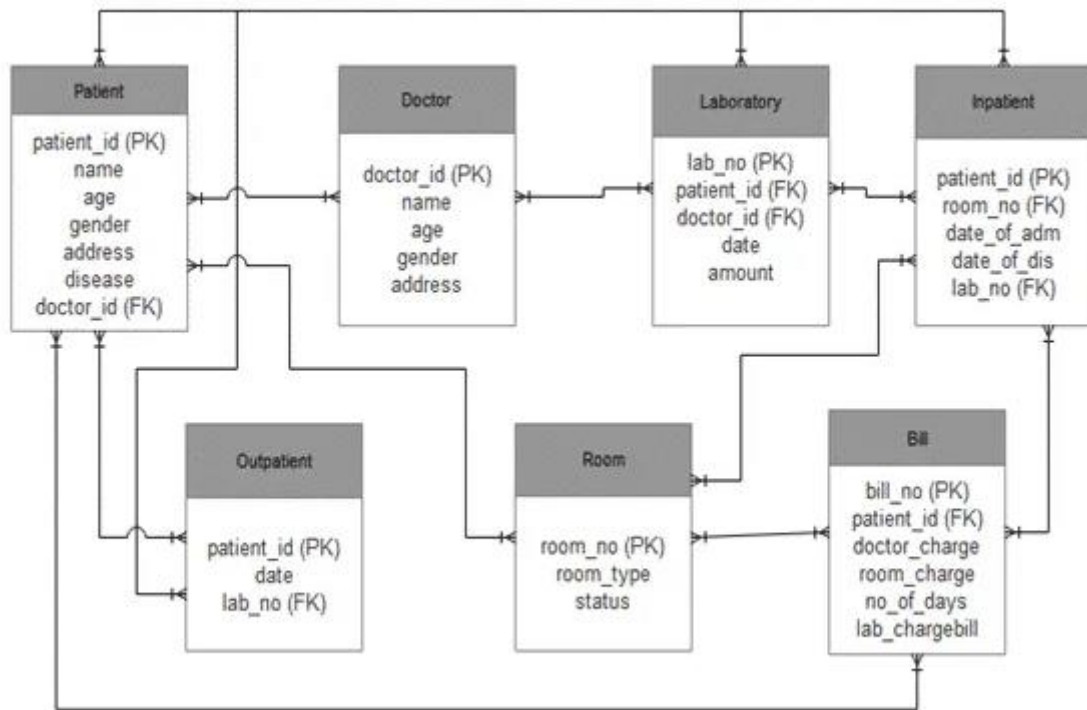


Figure 3.2.2- 1 Database schema for the system

3.3.3 Interface Design

User Interface design of this system is generally refers to the visual layout of the elements that a user might interact with in a system and technological product. User interface designs must not only be attractive to potential users, but must also be functional and created with users in mind.

These squares are joined together by links without arrows. No arrows are needed as it is assumed that you can move forward and backward from screen to screen without limitations. Arrow heads would only be used if access to screens was one way only.

The dialogue diagram of this system design as required for interface design. The figure 3.3.3-1 shows the interfaces that are created in this purposed system. The dialogue diagram is shown in below:

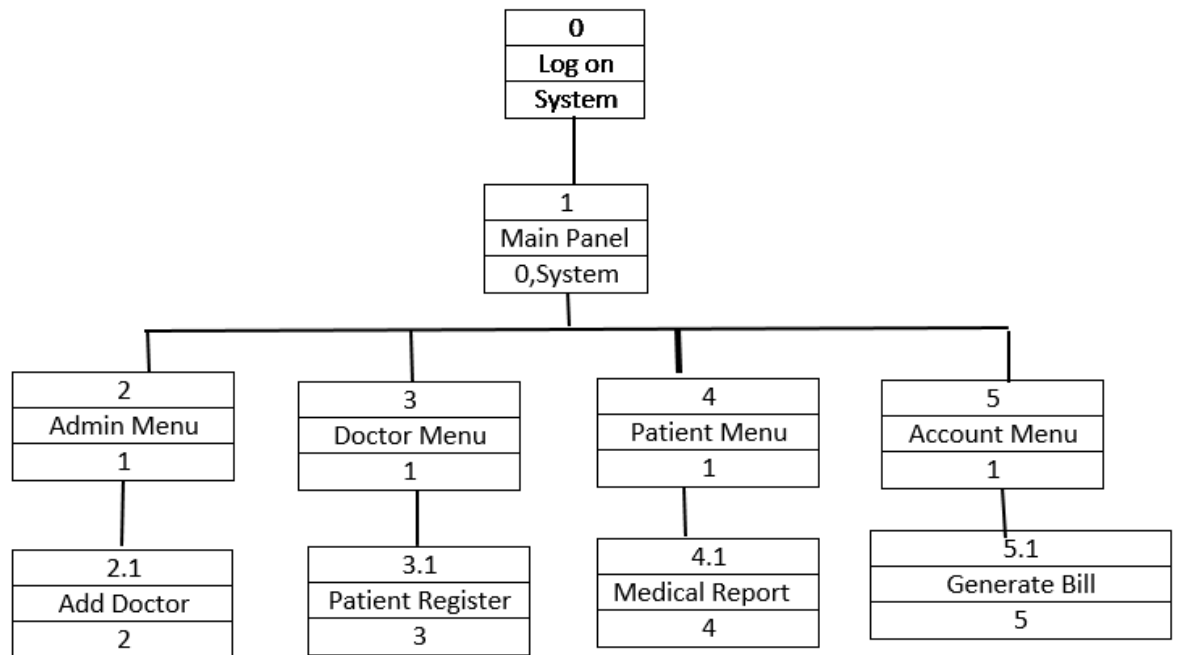


Figure 3.2.3- 1 Dialogue diagram for interface design

3.2.3. Physical DFD

This diagram represent what are the bounders and scope of Hospital Appointment System project. It describes the main objective of the system and entities involved.

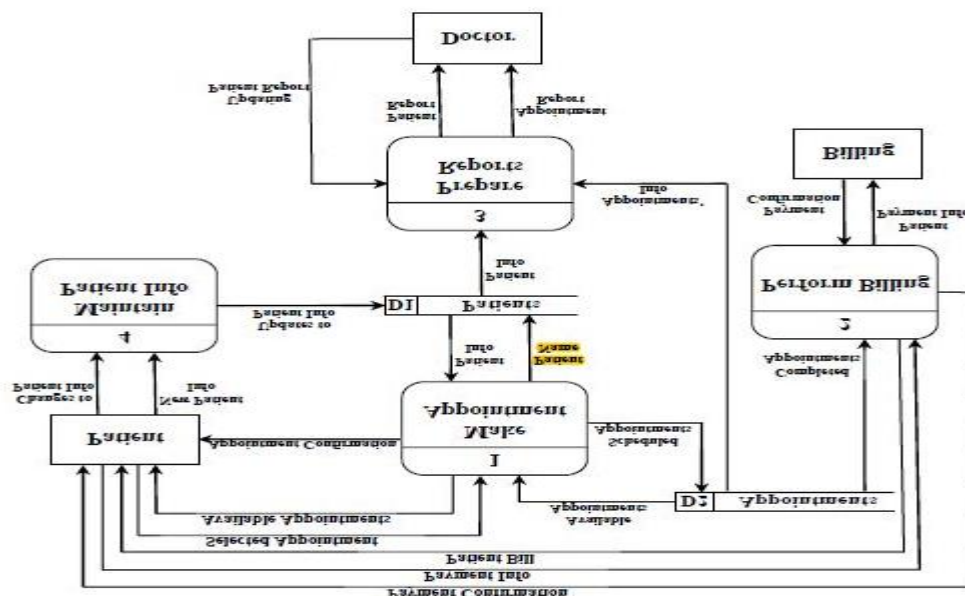


Figure 3.2.4- 1 Physical DFD for the system

3.3. Algorithm Details

Greedy algorithms are widely used to address the test-case prioritization problem, which focus on always selecting the current “best” test case during test-case prioritization. The greedy algorithms can be classified into two groups. The first group aims to select tests covering more statements, whereas the second group aims to select tests that is farthest from the selected tests.

Regarding to the first group, the most popular greedy algorithms are the total and additional algorithms. In particular, the total algorithm prioritizes test cases based on the descendent order of statements covered by each test case, whereas the additional algorithm prioritizes test cases based on the descendent order of statements that are covered by each unselected test case but uncovered by the existing selected test cases.

We are using this step of greedy algorithm in Hospital Appointment System

Step 1: Start

Step 2: Open registration page

Step 3: Allocate memory for new patient information

Step 4: Enter information

Step 5: Create unique patient id

Step 6: Create username and password

Step 7: Create entry to the database

Step 8: Allocate doctor for the patient

Step 9: Tests and reports entry

Step 10: Patient health progress

Step 11: Patient prescription

Step 12: Pending fees and updation

Step 13: End

Mathematical Equation

Algorithm Greedy (appointment, n) {

 Doctor := 0;

 for i = 0 to n do

 {

 patients := select(appointment);

 if feasible(solution, x)

 {

```

    Available doctor: = union(doctor , patients)
}
return doctor;
} }

```

Binary search

A binary search is an advanced type of search algorithm that finds and fetches data from a sorted list of items. Its core working principle involves dividing the data in the list to half until the required value is located and displayed to the patient & doctor in the search result. We are using this step of Binary search algorithm in Hospital Appointment System for searching the prefer doctors.

Step 1: Start

Step 2: Allocate memory for new patient information

Step 3: Enter information

Step 4: Search the doctor

Step 5: Select the doctor

Step 6: Updation of information

Step 7: End

Mathematical Equation

Procedure binary_search

$A \rightarrow$ sorted array, $n \rightarrow$ size of array, $x \rightarrow$ value to be searched

if $n=0$

EXIT: x does not exists.

Set lowerBound = 0

Set upperBound = $n-1$

while lowerBound \leq upperBound

set midPoint = lowerBound + (upperBound - lowerBound) / 2

if $A[\text{midPoint}] < x$

set upperBound = midPoint - 1

if $A[\text{midPoint}] > x$

set lowerBound = midPoint + 1

if $A[\text{midPoint}] = x$

EXIT: x found at location midPoint

end while

end procedure

CHAPTER-4. IMPLEMENTATION AND TESTING

4.1. Implementation

Implementation is the process of having system personal check out and provides new equipment's into use, train the user to install a new application and construct any files of data needed to use it. There are three types of implementations. Implementation of computer system to replace a manual system. To problem encountered are covering files, training user, creating accurate files and verifying print outs for integrity. Implementation of a new computer system to replace an existing one. This is usually difficult conversion. If not properly planned, there can be many problems. So large computer system many take as long as a year to convert. Implementation of a modified application to replace the existing one using the same computer. This type of conversing is relatively easy to handle, usually there are no major change in the file. Our project is yet to be implemented.

4.1.1. Tools Used

I. Software Requirement

1. PHP Programming Language

PHP is a server side scripting language. That is used to develop Static websites or Dynamic websites or Web applications. PHP stands for Hypertext Pre-processor, that earlier stood for Personal Home Pages. PHP scripts can only be interpreted on a server that has PHP installed.

2. Java Script

JavaScript is a programming language commonly used in web development. It was originally developed by Netscape as a means to add dynamic and interactive elements to websites. While JavaScript is influenced by Java, the syntax is more similar to C and is based on ECMAScript, a scripting language developed by Sun Microsystems.

3. HTML

Hypertext Markup Language (HTML) is a computer language that makes up most web pages and online applications. A hypertext is a text that is used to reference other pieces of text, while a markup language is a series of markings that tells web servers the style and structure of a document. HTML is not considered a programming language as it can't create dynamic functionality. Instead, with HTML, web users can create and structure sections, paragraphs, and links using elements, tags, and attributes.

4. Bootstraps

Bootstrap is a free and open-source CSS framework directed at responsive, mobile-first front-end web development. It contains CSS- and (optionally) JavaScript-based design templates for typography, forms, buttons, navigation, and other interface components.

5. Database Platform

XAMPP is an abbreviation for cross-platform, Apache, MySQL, PHP and Perl, and it allows you to build WordPress site offline, on a local web server on your computer. It is a simple and lightweight solution works on Windows, Linux, and Mac – hence the “cross-platform” part.

II. Hardware Requirements

The section of hardware configuration is an important task related to the software development. Insufficient random access memory may affect adversely on the speed and efficiency of the entire system. The process should be powerful to handle the entire operations. The hard disk should have sufficient capacity to store the file and application.

Processor: Pentium IV and above

Processor speed: 1.4 GHz Onwards

System memory: 2 GB minimum (4 GB recommended)

Cache size: 512 KB

RAM: 2 GB (Minimum)

Network card: Any card can provide a 100mbps speed

Network connection: UTP or Wi-Fi connection

Printer: Inkjet/Laser Color printer provides at least 1000 Dpi

Hard disk: 80 GB

Monitor: SVGA Color 15”

Mouse: 104 keys US Key Serial, USB or PS

4.1.2. Implementation Details of Modules

i. Administration module:-

Administrator can view all the details of the hospital record.

ii. Inpatient module:-

This module is used to store details of patients who are admitted.

iii. Outpatient module:-

The outpatient module contains details of the patient who are came for checkup.

iv. Lab module:-

Lab module is used to generate laboratory reports.

v. Billing module:-

Billing module is used to calculate the bill of the patient.

4.2. Testing

Software Testing is a method to check whether the actual software product matches expected requirements and to ensure that software product is defect free. It involves execution of system components using manual or automated tools to evaluate one or more properties of interest. The purpose of software testing is to identify errors, gaps or missing requirements in contrast to actual requirements. The following things were done during the process of Hospital Appointment System testing:

- Tests were planned before testing begun.
- The entire tests were prepared as per users' requirements.
- Analytical tools were used to develop test cases.
- A testing strategy was adopted and applied.
- Tools were created to control testing.

As it is application-oriented software with GUI interface, the testing was less time consuming and more precise.

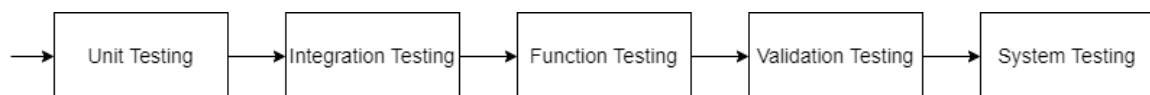


Figure 4.2: Testing of Hospital Appointment System

The two main Test approach of Software Engineering are:

1. White box testing

White box testing is a test case design approach that employs the control architecture of the procedural design to produce test cases. It is gone through all internal testing including the source code manipulation of the software. Each and every code goes smoothly as per my requirements. Using white box testing approaches, the software engineering can produce test case that will:

- i. Guarantees all independent paths in a module have been exercised at least once.
- ii. Execute all logical decisions.
- iii. Execute all loops at their boundaries and in their operations.
- iv. Exercise internal data structures to maintain their validity.

2. Black box Testing

Black box testing approaches concentrate on the fundamentals requirements of the software. Black box testing allows us to produce groups of input situations that will fully exercise all functional requirements for a program. It is a complementary approach that is likely to uncover a different type of errors that the white box approaches. Black box testing tries to find errors in the following categories. It is done all those testing which gives the exact output whatever it desire. Including this testing it have gone through all the following points:

- i. Incorrect or missing functions.
- ii. Interface errors.
- iii. Errors in data structures or external data base access.
- iv. Performance errors.
- v. Initialization and termination errors.

Errors get fixed. We took a destructive attitude towards the program we test, but at larger context our work was constructive.

4.2.1. Test Cases for Unit Testing

The software units in the systems are modules and routines that are assembled and integrated to perform a specific function. As a part of unit testing we executed the program for individual modules independently. This enables, to detect errors in coding and logic that are contained within each of the three modules. This testing includes entering data that is filling forms and ascertaining if the value matches to the type and entered into the database. The various controls are tested to ensure that each performs its.

Table 4.2.1- 1 Unit Test Specification for Admin Login

Test case id	1		
Test case description	Admin Login		
Prerequisites	Admin must be registered Enter the valid username and password. Click login		
Test scenario 1	Admin enter a wrong username		
Test data	Username: abc Password: student		
Step	Expected output	Actual Result	Pass/fail
1	Incorrect information	Username or Password is Invalid	Pass
Test scenario 2	Admin enter a wrong password		
Test data	Username: example Password: abcd		
Step	Expected output	Actual Result	Pass/fail
1	Incorrect information	Username or Password is Invalid	Pass
Test scenario 3	Admin enter all details successfully		
Test data	Username: example Password: example1		
Step	Expected output	Actual Result	Pass/fail
1	Admin account login	Login Successful	Pass

Table 4.2.1- 2 Unit Testing for Patient Module Login

Test case id	2		
Test Case Description	Add new Patient		
Prerequisites:	1.Valid id and password		
Test Scenario	1. Enter the valid id and password. 2. Click login		
Test Data	User name: patient Password: patient123		
Step	Expected Result	Actual Result	Pass/Fail
1.	Logged in.	Login Successful.	Pass

Table 4.2.1- 3 Unit Testing for Add Patient Module

Test Case ID	3		
Test Case Description	Fill the field and submit		
Prerequisites:	1.Fill all the valid information		
Test Scenario	1. Fill out empty fields message box will appear. 2. Click save button		
Test Data	Doctor name:Dr.Niraj Date:9/20/2022		
Step	Expected Result	Actual Result	Pass/Fail
1.	Patients added successfully message will be displayed	. Patients added succesfully	Pass
Test Scenario	1. Fill out only few empty fields message box will appear. 2. Click save button		
Test Data	Doctor name:Dr.Jha Date:3/20/2022		
Step	Expected Result	Actual Result	Pass/Fail

1.	Patients added successfully message will be displayed	Patients is not added successfully	Pass
----	---	------------------------------------	------

Table 4.2.1- 4Edit Patient Module

Test Case ID	5		
Test Case Description	Edit the patient record		
Prerequisites:	All the field must be filled.		
Test Scenario	1. Click edit button on which Patient is edit 2. On editable dialog box if one or more fields are empty.		
Test Data	Patient Name:Nischal Patient id:345 Date:9/20/2022		
Step	Expected Result	Actual Result	Pass/Fail
1.	Updated Patient information message dialog box will be displayed	Upateded Patient information message dialog box will be displayed	Pass

4.2.2. Test Cases for System Testing

As the part of system testing we execute the program with the intent of finding errors and missing operations and also a complete verification to determine whether the objectives are met and the user requirements are satisfied. The ultimate aim is quality assurance. Tests are carried out and the results are compared with the expected document. In the case of erroneous results, debugging is done. Using detailed testing strategies a test plan is carried out on each module. The various tests performed are unit testing, integration testing and user acceptance testing.

System Configuration

A major element in building a system is the selection of compatible software since the software in the market is experiencing in geometric progression. Selected software should be acceptable by the firm and one user as well as it should be feasible for the system. This document gives a detailed description of the software requirement specification. The study of requirement specification is focused specially on the functioning of the system. It allows the developer or analyst to understand the system, function to be carried out the performance level to be obtained and corresponding interfaces to be established.

The System to be tested is the requirement documentation of the first prototype of the hostel Management System. This prototype focuses on the certain and the maintenance timecards and the initialization of the run system sequence.

1. Application Scope Testing

In order to be able to effectively test a system scope you require a testable system specification. Testing an application system has three main goals.

- i. To reveal bugs that is present only at system scope.
- ii. To demonstrate that the system under test implements all required capabilities.
- iii. To provide answer the question. "Is the system finished?"

a. Extended Use Case Test

This involves the design of test cases to exercise all relationship implied by a use case.

b. Integration Testing

Software systems are built with components that must inter-operate. Three basic kinds of testing are needed to show that the components are minimally inter-operative: Test on individual components, test on the system resulting from the federation of components, and test of components interoperation. Integration testing is the search for component faults that cause inter-component failures.

CHAPTER 5: CONCLUSION AND FUTURE RECOMMENDATIONS

5.1. Lesson Learnt/ Outcome

The efficiency of any system designed to suit an organization depends cooperation during the implementation stage and also flexibility of the system to adopt itself to the organization. “Hospital Analyzer” has been developed to overcome the problems with traditional hospital management in large scale. Advantages over traditional manual systems are online application access through out all the go downs from the same location, reducing the manual work, storage the data at a secured centralized locations and quick generation of reports as per our requirements.

5.2. Conclusion

This project has been a rewarding experience in more than one way. The entire project work has enlightened us in the different areas. I have gained an insight into the working of the HOSPITAL. This represents a typical real world situation. My database design has been strengthened this is because in order to generate the final reports of database designing has to be properly followed. Scheduling a project and adhering to that schedule creates a strong sense of time management. Sense of single work has developed and confidence of handling real life project has increased to a great extent. Initially, there were problem with the validation but with discussions, I complete to implement validation.

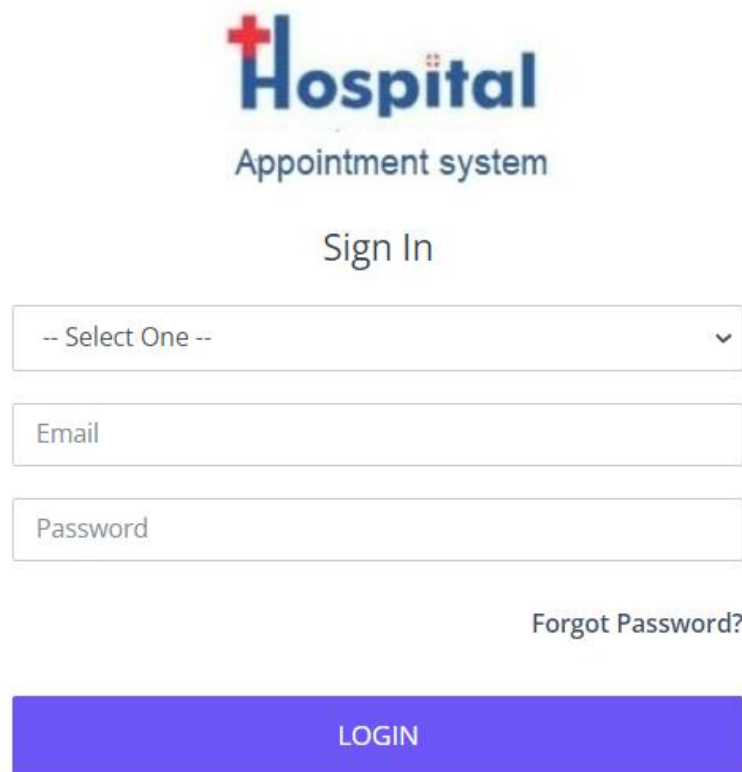
5.3. Future Recommendations

This research was only getting low response rate (less than 40%), and the number of respondents are less than 30. This may lead to over generalization of the mapping of current condition of Bandung hospitals. We suggest further research that uses online questionnaires to make the data gathering process easier and faster, and can reach wider respondents. Another research can be conducted to see the detail implementation of some quality tools and techniques that are already used in the hospitals, and therefore can also find out which of the quality tools and techniques that are most appropriate for healthcare institutions. It is also considered to put critical success factor for successful application of the quality tools and technique

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APPENDIX



The sign-in form for the Hospital Appointment system. It features the system's logo at the top, followed by a 'Sign In' heading. Below this is a dropdown menu labeled '-- Select One --', an 'Email' input field, and a 'Password' input field. A 'Forgot Password?' link is positioned to the right of the password field. At the bottom is a large blue 'LOGIN' button.

Figure 1: Sign in form

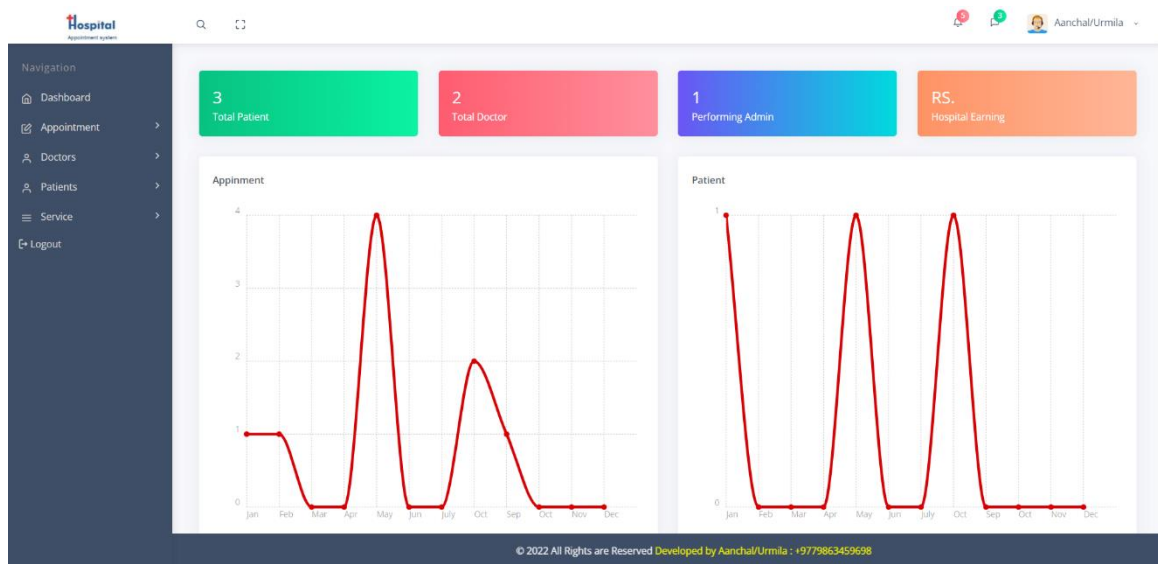


Figure 2: Admin Dashboard

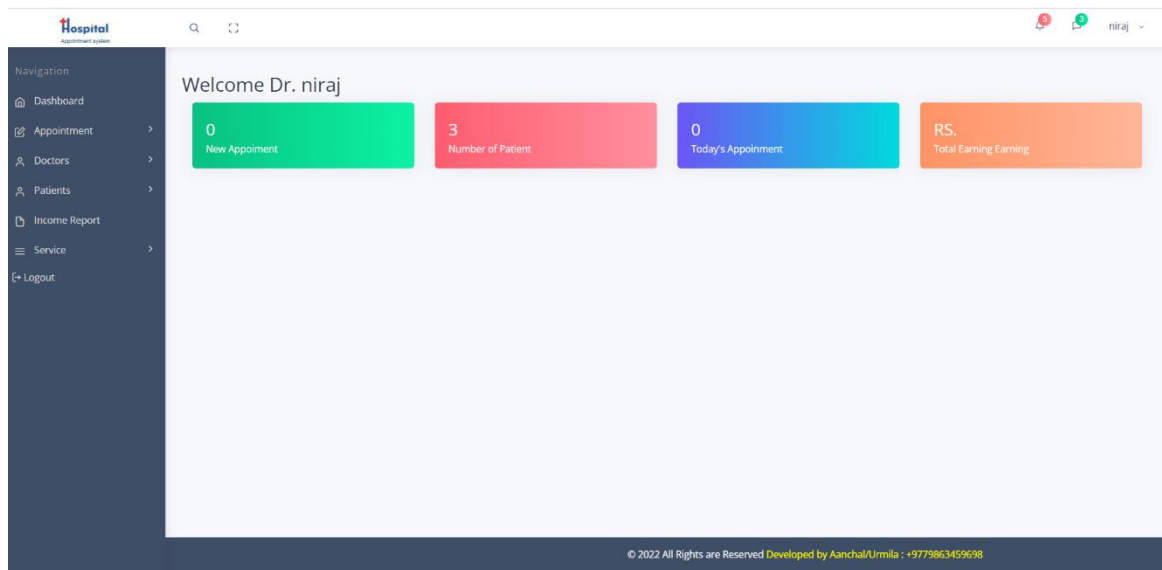


Figure 3: Doctor Dashboard

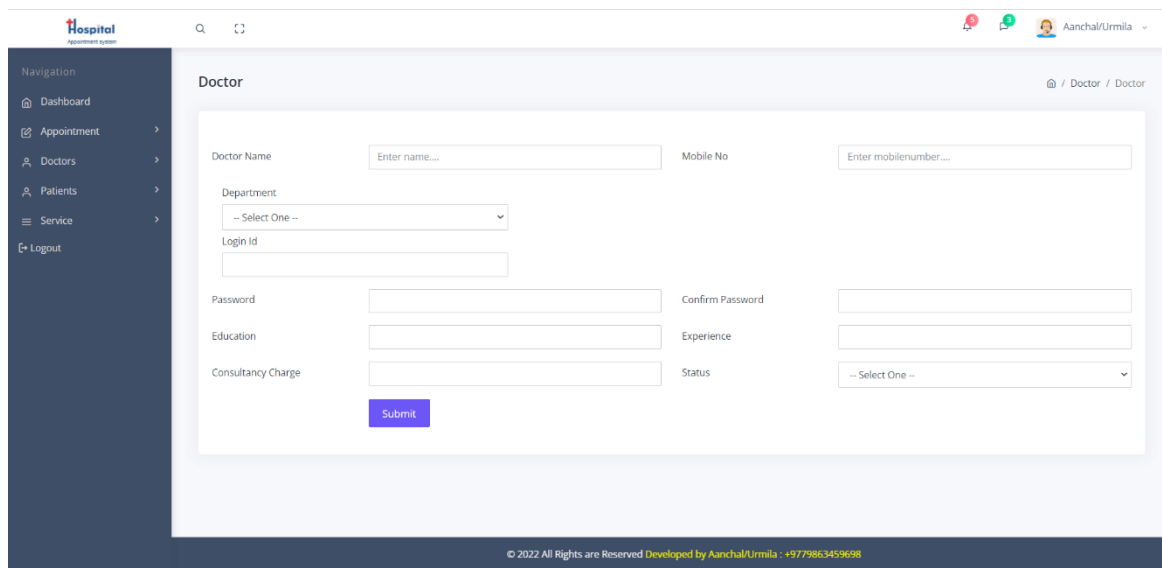


Figure 4: Add Doctor

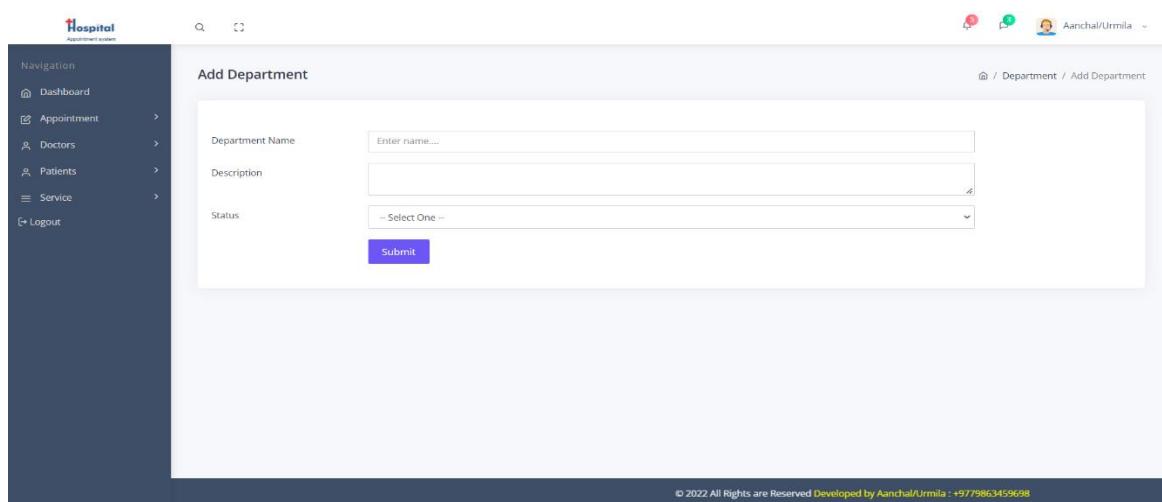


Figure-5: Add Department

Visiting Hour

Form:

To:

Status:

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Figure-6: Set patient Visiting Hour

Treatment

Show: entries

Search:

Treatment Type	Treatment cost	Note	Status
Blood Test	Tk.200.00	Treatment note here	Active
ddd	Tk.0.00	ff	Active
Hawa	Tk.50.00	Chup fuccha	Active
n bn	Tk.5000.00	55	Active
paracemata	Tk.2500.00	tauko	Active
tauko	Tk.2500.00	hawa	Active
tauko futyo	Tk.2500.00	tauko	Active
Doctor Name	Description	Status	

Showing 1 to 7 of 7 entries

Previous Next

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Figure-7: Treatment

Profile

First Name:

Email:

Contact:

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Figure-8: Admin Profile

Medicine

Medicine Name

Medicine Cost

Description

Status

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Figure-9: Add Medicine

Appointment

Patient

Department

Date

Time

Doctor

Status

Reason

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Figure-10: Add Appointment

Appointment Approved

Show entries

Search:

Patient detail	Appointment Date & Time	Department	Doctor	Appointment Reason	Status	Action
Atul Petkar 9423979339	25-May-2020 12:00 PM	ICU department	Dr. Akash Ahire	Reason of appointment	Approved	<input type="button" value="View Report"/> <input type="button" value="Treatment"/> <input type="button" value="Add Prescription"/>
Atul Petkar 9423979339	27-May-2020 10:00 AM	Neurology department	Dr. Akash Ahire	reason of appointment	Approved	<input type="button" value="View Report"/> <input type="button" value="Treatment"/> <input type="button" value="Add Prescription"/>
Atul Petkar 9423979339	26-May-2020 11:11 AM	ICU department	Dr. Akash Ahire	reason	Approved	<input type="button" value="View Report"/> <input type="button" value="Treatment"/> <input type="button" value="Add Prescription"/>
Atul Petkar 9423979339	29-May-2020 15:00 PM	Neurology department	Dr. Akash Ahire	reason of appointment	Approved	<input type="button" value="View Report"/> <input type="button" value="Treatment"/> <input type="button" value="Add Prescription"/>
Atul Petkar 9423979339	16-Sep-2022 09:35 AM	Neurology department	Dr. Akash Ahire	skjdhfuargf	Active	<input type="button" value="Approve"/> <input type="button" value="Delete"/> <input type="button" value="Treatment"/> <input type="button" value="Add Pres"/>
manu 1234567890	11-Aug-2022 11:55 AM	Orthopedic	ram	tauko	Approved	<input type="button" value="View Report"/> <input type="button" value="Treatment"/> <input type="button" value="Add Prescription"/>
nischal 1234567890	19-Jan-2022 21:19 PM	ICU department	niraj	hjh	Approved	<input type="button" value="View Report"/> <input type="button" value="Treatment"/> <input type="button" value="Add Prescription"/>

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Figure-11: Appointment Approval

