MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

Project Report

on

HOSPITAL MANAGEMENT SYSTEM

Submitted By:

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE

GWALIOR - 474005 (MP) est. 1957

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A project report submitted in partial fulfillment of the requirement for the degree of

BACHELOR OF TECHNOLOGY

in
COMPUTER SCIENCE AND ENGINEERING

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CERTIFICATE

This is certified that **Aayush Bhadoria** (0901CS191001) has submitted the project report titled **HOSPITAL Management System** of **Mr. Mir Shahnawaz Ahmad,** in partial fulfilment of the requirement for the award of degree of Bachelor of Technology in Computer Science and Engineering from Madhav Institute of Technology and Science, Gwalior.

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This is certified that **Ansh Bais** (0901CS191019) has submitted the project report titled **HOSPITAL MANAGEMENT SYSTEM** under the mentorship of **Mr. Mir Shahnawaz Ahmad,** in partial fulfilment of the requirement for the award of degree of Bachelor of Technology in Computer Science and Engineering from Madhav Institute of Technology and Science, Gwalior.

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DECLARATION

I hereby declare that the work being presented in this project report, for the partial fulfilment of requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering at Madhav Institute of Technology & Science, Gwalior is an authenticated and original record of my work under the mentorship of **Prof. Mir Shahnawaz Ahmad, Compute Science and Engineering** I declare that I have not submitted the matter embodied in this report for the award of any degree ordiploma anywhere else.

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The full semester project has proved to be pivotal to my career. I am thankful to my institute, **Madhav Institute of Technology and Science** to allow me to continue my disciplinary/interdisciplinary project as a curriculum requirement, under the provisions of the Flexible Curriculum Scheme (based on the AICTE Model Curriculum 2018), approved by the Academic Council of the institute. I extend my gratitude to the Director of the institute, **Dr. R. K. Pandit** and Dean Academics, **Dr. Manjaree Pandit** for this.

I would sincerely like to thank my department, **Department of Computer Science and Engineering, for allowing** me to explore this project. I humbly thank **Dr. Manish Dixit**, Professor and Head, Department of Computer Science and Engineering, for his continued support during the course of this engagement, which eased the process and formalities involved.

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ABSTRACT

The purpose of the project entitled as "HOSPITAL MANAGEMENT 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 these details as and when required, and also to manipulate these details meaningfully System input contains patient details, diagnosis details, while system output is to get these details on to the screen. The Hospital Management System can be entered using a username and password. It is 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.

Keyword: user friendly, fast, and cost – effective,collection of patient's information, diagnosis details,data into the database.

सार:

"**अस्पताल प्रबंधन प्रणाली**" नामक परियोजना का उद्देश्य सॉफ्टवेयर विकसित करने के लिए अस्पताल के फ्रंट ऑफिस प्रबंधन को कम्प्यूटरीकृत करना है जो उपयोगकर्ता के अनुकूल सरल, तेज और लागत प्रभावी है। यह रोगी की जानकारी, निदान विवरण आदि के संग्रह से संबंधित है। परंपरागत रूप से, यह मैन्युअल रूप से किया जाता था। सिस्टम का मुख्य कार्य रोगी के विवरण और डॉक्टर के विवरण को पंजीकृत करना और स्टोर करना है और इन विवरणों को आवश्यकता पड़ने पर पुनः प्राप्त करना है, और इन विवरणों को सार्थक रूप से हेरफेर करना भी है सिस्टम इनपुट में रोगी विवरण, निदान विवरण शामिल हैं, जबकि सिस्टम आउटपुट इन विवरणों को प्राप्त करना है। पर्दा डालना। उपयोगकर्ता नाम और पासवर्ड का उपयोग करके अस्पताल प्रबंधन प्रणाली में प्रवेश किया जा सकता है। यह या तो एक व्यवस्थापक या रिसेप्शनिस्ट द्वारा पहुँचा जा सकता है। केवल वे ही डेटाबेस में डेटा जोड़ सकते हैं। डेटा आसानी से पुनर्प्राप्त किया जा सकता है। डेटा व्यक्तिगत उपयोग के लिए अच्छी तरह से सुरक्षित है और डेटा प्रोसेसिंग को बहुत तेज़ बनाता है।

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Chapter 1:Introduction

1.1 Introduction:

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 software has the facility to give a unique id for every patient and stores the details of every patient and the staff automatically. It includes a search facility to know the current status of each room. User can search availability of a doctor and the details of a patient using the id.

The Hospital Management System can be entered using a username and password. It is accessible either by an administrator or receptionist. Only they can add data into the database. The data can be retrieved easily. The interface is very user-friendly. The data are well protected for personal use and makes the data processing very fast.

Hospital Management System is powerful, flexible, and easy to use and is designed and developed to deliver real conceivable benefits to hospitals.

Hospital Management System is designed for multi-speciality hospitals, to cover a wide range of hospital administration and management processes. It is an integrated end-to-end Hospital Management System that provides relevant information across the hospital to support effective decision making for patient care, hospital administration and critical financial accounting, in a seamless flow.

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. Managing the key processes efficiently is critical to the success of the hospital helps you manage your processes

1.2 Problem Introduction:

Lack of immediate retrievals: -The information is very difficult to retrieve and to find particular information like- E.g. - To find out about the patient's history, the user has to go through various registers. This results in in convenience and wastage of time.

Lack of immediate information storage: -The information generated by various transactions takes time and efforts to be stored at right place.

Lack of prompt updating: Various changes to information like patient details or immunization details of child are difficult to make as paper work is involved.

Error prone manual calculation: -Manual calculations are error prone and take a lot of time this may result in incorrect information. For example calculation of patient's bill based on various treatments.

Preparation of accurate and prompt reports: -This becomes a difficult task as information is difficult to collect from various register.

1.3 Objective:-

1) Define hospital
2) Recording information about the Patients that come.
3) Generating bills.
4) Recording information related to diagnosis given to Patients.
5) Keeping record of the Immunization provided to children/patients
6) Keeping information about various diseases and medicines available to cure them

These are the various jobs that need to be done in a Hospital by the operational staff and Doctors. All these works are done on papers.

1.4 Scope of the Project:-

7) Information about Patients is done by just writing the Patients name, age and gender. Whenever the Patient comes up his information is stored freshly.
8) Bills are generated by recording price for each facility provided to Patient on a separate sheet and at last they all are summed up.
9) Diagnosis information to patients is generally recorded on the document, which contains Patient information. It is destroyed after some time period to decrease the paper load in the office.
10) Immunization records of children are maintained in pre-formatted sheets, which are kept in a file.
11) Information about various diseases is not kept as any document. Doctors themselves do this job by remembering various medicines.

All this work is done manually by the receptionist and other operational staff and lot of papers are needed to be handled and taken care of. Doctors have to remember various medicines available for diagnosis and sometimes miss better alternatives as they can't remember them at that time.

1.5 Project Features:-

When the hospital considers applying this approach, it is necessary to learn how to develop a hospital management system. Planning and setting priorities is one of the important stages. It outlines the functions and benefits that the medical institution expects to get at the final point. The qualified developers usually suggest the list of the recommended hospital management system project modules. They will ensure the efficient administration of your medical institution.

Their number might differ depending on the clinic needs, however, it usually includes somebasic hospital information system modules.

Patient management

It is used to control patient flow. It can be used to register them, get the data of the patients' health condition, view the treatment and check the medical history and reports.

Appointment module in hospital management

Appointment module in hospital management arranges the schedule of doctors due to thepatients' application. It helps to organize the availability of medical specialists at any convenient time. Some hospital can even offer remote visits when you need immediate assistance.

Facility management

The facility management module is responsible for tracking and maintaining the room availability, the

Report management part stores the already processed detailed information. This modulehelps management collect, analyze and view the performance data in a comprehensive format. The business inteligence subsystem helps define problematic aspects and successfully eliminate them to keep the business profitability as well the high customer satisfaction level.

Helpdesk & support

Helpdesk support module specializes in handling different issues, problems, and requests. Itensures that the operations are maintained properly, the data is valid and reported in accordance.

MODULES:

The entire project mainly consists of 4 modules, which are

- ❖ Admin module
- ❖ User module (patient)
- ❖ Doctor module
- ❖ Accountant module

Admin module:

- manage department of hospitals, user, doctor, accounts.
- watch appointment of doctors.
- watch transaction reports of patient payment
- watch diagnosis report

user module(patient):

- View appointment list and status with doctors
- View prescription details
- View medication from doctor
- Manage own profile

Doctor module:

- Manage patient. account opening and updating
- Create, manage appointment with patient
- Issue for operation of patients and creates operation report
- Manage own profile

Accountant module:

- Watch history of patients
- Manage own profile
- Check for anointment .

1.6FEASIBILITY STUDY

The feasibility of the project is analyzed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed system is not a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential.

Three key considerations involved in the feasibility analysis are:

1.6.1 Economic Feasibility

This study is carried out to check the economic impact will have on the system will have on the organization. The amount of fund that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customize products have to be purchased.

1.6.2 Technical Feasibility

This study is carried out to check the technical feasibility, that is,the technical requirements of the system. Any system developed must not have a high demand on the available available technical resources. This will lead to high demands being placed on the client. The developed system must have a modest requirement, as only minimal or null changes for the implementing this system.

1.6.3 Operational Feasibility

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system.

1.7REQUIREMENT SPECIFICATION

✧

INTRODUCTION:

To be used efficiently, all computer software needs certain hardware components or the other software resources to be present on a computer. These pre-requisites are known as(computer) system requirements and are often used as a guideline as opposed to an absolute rule. Most software defines two sets of system requirements: minimum and recommended. With increasing demand for higher processing power and resources in newer versions of software, system requirements tend to increase over time. Industry analysts suggest that this trend plays a bigger part in driving upgrades to existing computer systems than technological advancements.

HARDWARE REQUIREMENTS:

The most common set of requirements defined by any operating system or software application is the physical computer resources, also known as hardware. A hardware requirements list is often accompanied by a hardware compatibility list (HCL), especially in case of operating systems. An HCL lists tested, compatibility and sometimes incompatible hardware devices for a particular operating system or application. The following sub-sections discuss the various aspects of hardware requirements.

HARDWARE REQUIREMENTS FOR PRESENT PROJECT:

PROCESSOR : Intel dual Core ,i3

RAM : 4 GB

HARD DISK : 1 TB

SOFTWARE REQUIREMENTS:

Software Requirements deal with defining software resource requirements and pre-requisites that need to be installed on a computer to provide optimal functioning of an application. These requirements or pre-requisites are generally not included in the software installation package and need to be installed separately before the software is installed.

SOFTWARE REQUIREMENTS FOR PRESENT PROJECT:

OPERATING SYSTEM : Windows 7/ XP/8/10

FRONT END : Html,css.

SERVER SIDE SCRIPT : PYTHON with Django

DATABASE : MYsql/SQLlite

CHAPTER 2: LITERATURE REVIEW

2.1 Quantitative Analysis

While in the past site selection may have been based on intuition, a wide spectrum of techniques is used for site selection and potential and current market study. This may include data analysis, sales forecasting, general area analysis of economic and demographic conditions, potential competition and growth, or simply checklists. One of the most effective and comprehensive techniques used by geographers for site evaluate is gravity modelling [4].

Quantitative research can be defined as any research that uses of numbers as the basis for generating inferences about the phenomenon under study. The statistical approaches to sampling, measurement, and data analysis, are a hallmark of quantitative research; statistics are genuinely relevant to quantitative approaches because it involves statistical modeling of the interrelationships between variables. Among the variety of methodologies and data analysis strategies that are employed in quantitative research, there is the relational or correlational research strategy [1]. Furthermore, correlational research is in charge of investigating the nature of the relationship between the variables (or factors) and getting and testing the theoretical model that might explain the resultant correlation.

When there are two quantitative variables (of interval on ration scale of measurement), it is possible to validate their relationship through mathematics and geometry statistical tests. If the mathematical qualities of a line are used to calculate the systematic change in the scores of a dependent variable (y) from an independent variable (x), its correlation is being calculated.

The procedure to overcome the best estimates of a variable y, taking into account its relationship with a variable x, is known as simple or bivariate linear correlation and regression analysis. This procedure consists of applying the formulas to a straight line to get y-intercept.

2.2 Competitor Analysis

Competitor restaurants can help in better understanding the restaurant location demographics. However, competitor restaurant can pose threat to the restaurant based on similar concept. Complimentary restaurants are restaurants which have different restaurant concepts but similar price points. These complimentary restaurants can help in creating a market for the proposed restaurant [3].

2.3 Neighborhood Analysis

The infrastructure of the neighborhood area is a key aspect in location analysis. The future growth of the proposed restaurant can be predicted depending on the presence of educational institutions, movie hall, and many others in that area [3].

In this project, we are using the Competitor Analysis Technique with the Quantitative (statistical & geometrical) approach.

Chapter 3 : Preliminary Design

3.1 SYSTEM DESIGN:

Systems design is the process of defining the architecture, product design, modules, interfaces, and data for a system to satisfy specified requirements.

3.2 UML Design

The Unified Modeling Language (UML) is a standard language for specifying, visualizing, constructing, and documenting the software system and its components. It is a graphical language , which provides a vocabulary and set of semantics and rules. The UML focuses on the conceptual and physical representation of the system. It captures the decisions and understandings about systems that must be constructed. It is used to understand, design, configure, maintain, and control information about the systems.

The UML is a language for:

Visualizing
Specifying
Constructing
Documenting

Visualizing

Through UML we see or visualize an existing system and ultimately we visualize how the system is going to be after implementation. Unless we think, we cannot implement. UML helps to visualize, how the components of the system communicate and interact with each other.

Specifying

Specifying means building, models that are precise, unambiguous and complete UML addresses the specification of all the important analysis design, implementation decisions that must be made in developing and deploying a software system.

Constructing

UML models can be directly connected to a variety of programming language through mapping a model from UML to a programming language like JAVA or C++ or VB. Forward Engineering and Reverse Engineering is possible through UML.

The Deliverable of a project apart from coding are some Artifacts, which are critical in controlling, measuringand communicating about a system during its developing requirements, architecture, desire, source code, project plans, tests, prototypes re leasers, etc...

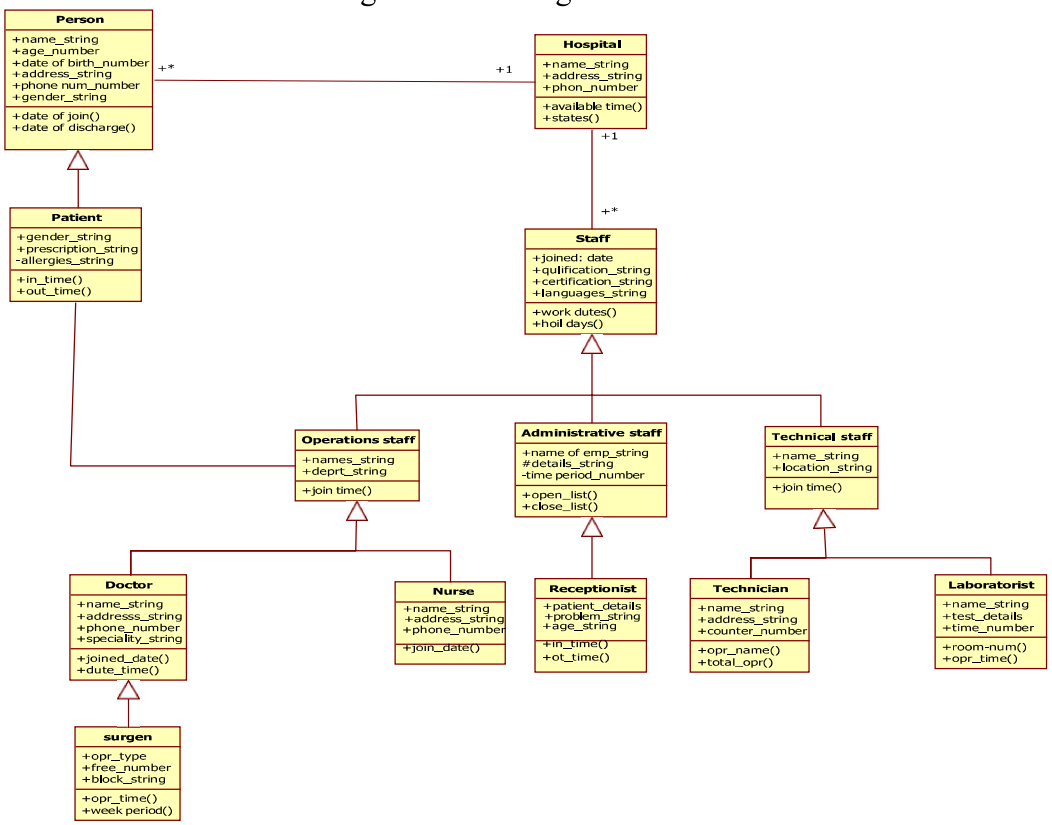
UML Diagram

A diagram is the graphical presentation of a set of elements, most often rendered as a connected graph of vertices and arcs . you draw diagram to visualize a system from different perspective, so a diagram is a projection into a system. For all but most trivial systems, a diagram represents an elided view of the elements that make up a system. The same element may appear in all diagrams, only a few diagrams , or in no diagrams at all. In theory, a diagram may contain any combination of things and relationships. In practice, however, a small number of common combinations arise, which are consistent with the five most useful views that comprise the architecture of a software-intensive system. For this reason, the UML includes nine such diagrams:

1. Class diagram
2. Sequence diagram
3. Collaboration diagram
4. State chart diagram
5. Component diagram
6. Deployment diagram

A Class is a category or group of things that has similar attributes and common behavior. A Rectangle is the icon that represents the class it is divided into three areas. The upper most area contains the name, the middle; area contains the attributes and the lowest areas show the operations. Class diagrams provides the representation that developers work from. Class diagrams help on the analysis side, too.

Fig.2.1 Class Diagram



Sequence diagram:

A **Sequence Diagram** is an interaction diagram that emphasis the time ordering of messages; a collaboration diagram is an interaction diagram that emphasizes the structural organization of the objects that send and receive messages. Sequence diagrams and collaboration diagrams are isomorphic, meaning that you can take one and transform it into the other.

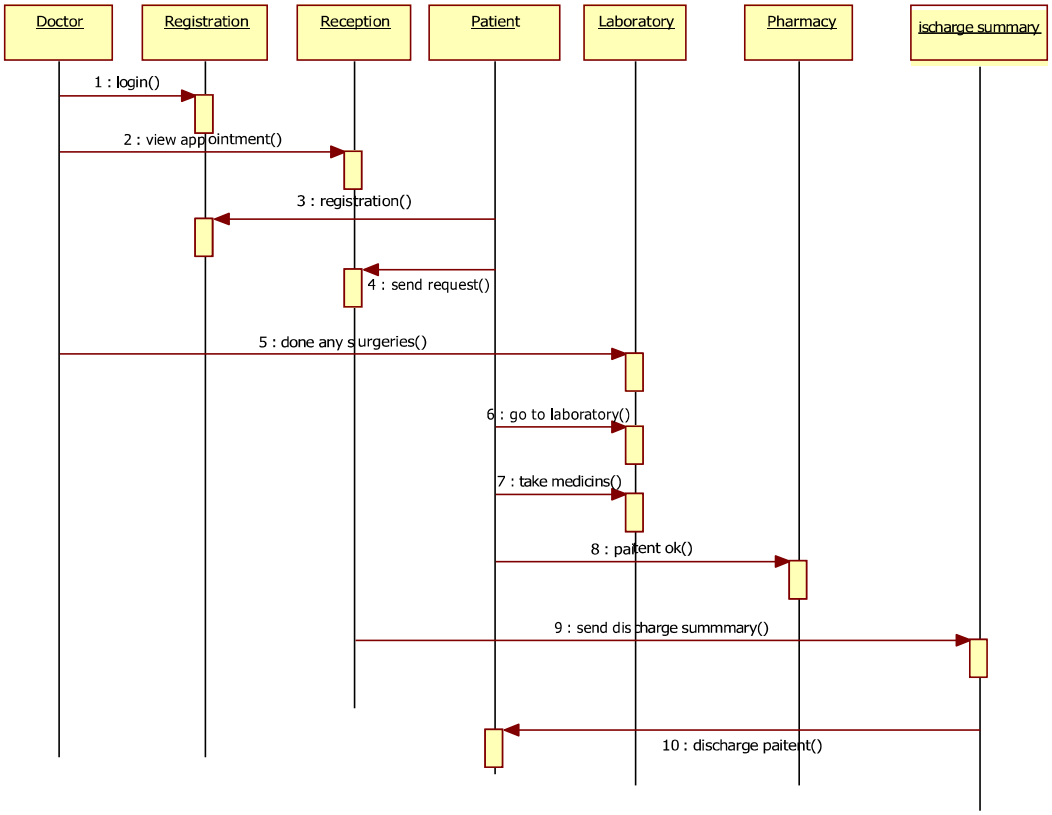


Fig 2.2 Sequence Diagram

Collaboration diagram:

A **Collaboration Diagram** also called a communication diagram or interaction diagram, is an illustration of the relationships and interactions among software objects. The concept is more than a decade old although it has been refined as modeling paradigms have evolved.

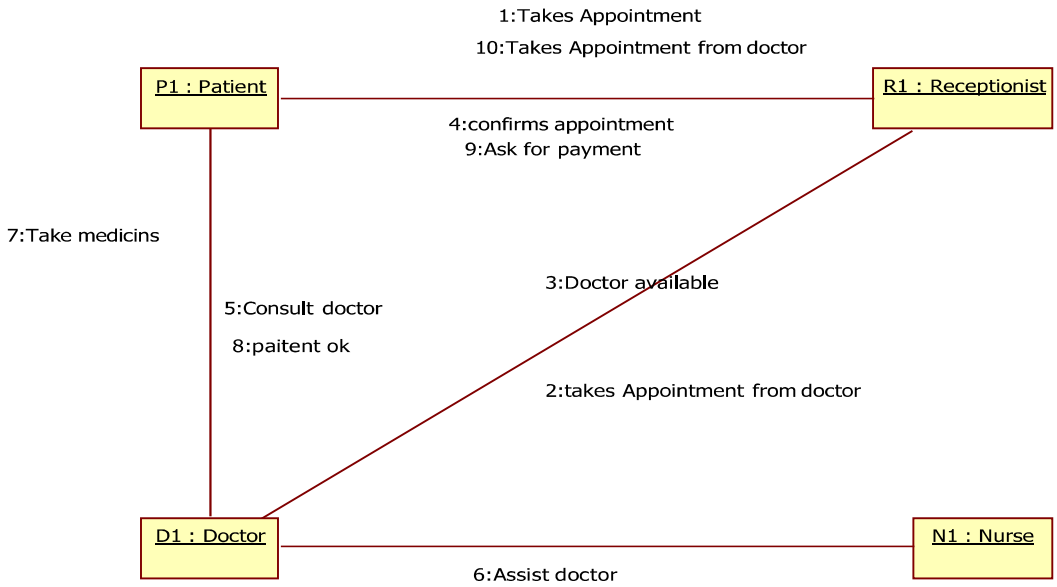


Fig 2.3 Collaboration diagram

A **Deployment Diagram** shows the configuration of run-time processing nodes and the components that live on them. Deployment diagrams address the static deployment view of architecture. They are related to component diagrams in that a node typically encloses one or more components.

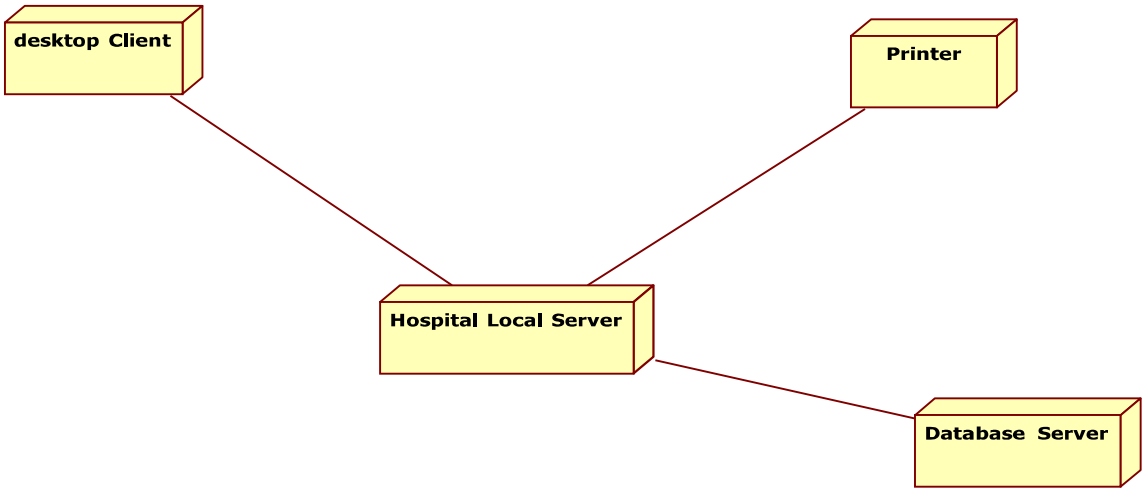


Fig2.4 Deployment Diagram

Statechart Diagrams:

The state diagram shows the states of an object and represents activities as arrows connecting the states. The Activity Diagram highlights the activities. Each activity is represented by a rounded rectangle-narrower and more oval-shaped than the state icon. An arrow represents the transition from the one activity to the next. The activity diagram has a starting point represented by filled-in circle, and an end point represented by bulls eye.

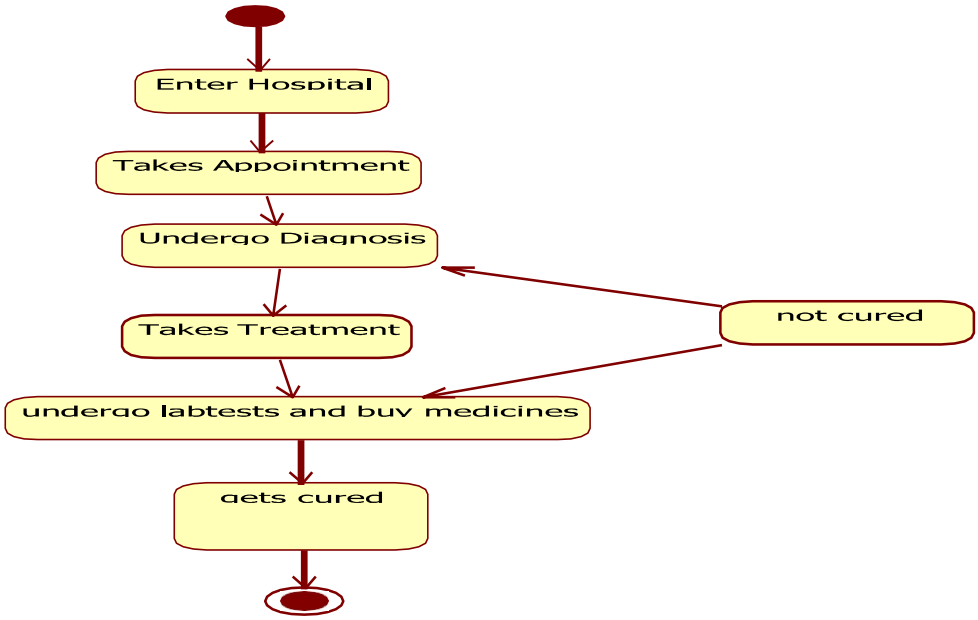


Fig2.5 Statechart Diagram

Chapter -4:Final Analysis and Design

4.1EXISTING SYSTEM:

Hospitals currently use a manual system for the management and maintenance of critical information. The current system requires numerous paper forms, with data stores spread through out the hospital management infrastructure. Often information is incomplete or does not follow management standards. Forms are often lost in transit between departments requiring a comprehensive auditing process to ensure that no vital information is lost. Multiple copies of the same information exist in the hospital and may lead to inconsistencies in data in various data stores.

4.2 PROPOSED SYSTEM:

The Hospital Management System is designed for any hospital to replace their existing manual paper based system. The new system is to control the information of patients. Room availability, staff and operating room schedules and patient invoices. These services are to be provided in an efficient, cost effective manner, with the goal of reducing the time and resources currently required for such tasks .

4.3 SOFTWARE SPECIFICATION

HTML:

HTML or **Hypertext Markup Language** is the standard markup language used to create web pages.

HTML is written in the form of HTML elements consisting of *tags* enclosed in angle brackets (like <html>). HTML tags most commonly come in pairs like <h1> and </h1>, although some tags represent *empty elements* and so are unpaired, for example <img>. The first tag in a pair is the *start tag*, and the second tag is the *end tag* (they are also called *opening tags* and *closing tags*). Though not always necessary, it is best practice to append a slash to tags which are not paired with a closing tag.

The purpose of a web browser is to read HTML documents and compose them into visible or audible web pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page. HTML describes the structure of a website semantically along with cues for presentation, making it a markup language rather than a programming language.

HTML elements form the building blocks of all websites. HTML allows images and objects to be embedded and can be used to create interactive forms. It provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. It can embed scripts written in languages such as JavaScript which affect the behavior of HTML web pages.

CASCADING STYLE SHEETS (CSS):

Cascading Style Sheets, fondly referred to as CSS, is a simple design language intended to simplify the process of making web pages presentable.

CSS handles the look and feel part of a web page. Using CSS, you can control the color of the text, the style of fonts, the spacing between paragraphs, how columns are sized and laid out, what background images or colors are used, layout designs,variations in display for different devices and screen sizes as well as a variety of other effects.

CSS is easy to learn and understand but it provides powerful control over the presentation of an HTML document. Most commonly, CSS is combined with the markup languages HTML or XHTML.

Advantages of CSS

CSS saves time − You can write CSS once and then reuse same sheet in multiple HTML pages. You can define a style for each HTML element and apply it to as many Web pages as you want.

Pages load faster − If you are using CSS, you do not need to write HTML tag attributes every time. Just write one CSS rule of a tag and apply it to all the occurrences of that tag. So less code means faster download times.

Easy maintenance − To make a global change, simply change the style, and all elements in all the web pages will be updated automatically.

Superior styles to HTML − CSS has a much wider array of attributes than HTML, so you can give a far better look to your HTML page in comparison to HTML attributes.

Multiple Device Compatibility − Style sheets allow content to be optimized for more than one type of device. By using the same HTML document, different versions of a website can be presented for handheld devices such as PDAs and cell phones or for printing.

Global web standards − Now HTML attributes are being deprecated and it is being recommended to use CSS. So its a good idea to start using CSS in all the HTML pages to make them compatible to future browsers.

MySQL:

MySQL is developed, distributed, and supported by Oracle Corporation. MySQL is a database system used on the web it runs on a server. MySQL is ideal for both small and large applications. It is very fast, reliable, and easy to use. It supports standard SQL. MySQL can be compiled on a number of platforms. The data in MySQL is stored in tables. A table is a collection of related data, and it consists of columns and rows. Databases are useful when storing information categorically.

FEATURES OF MySQL:

- Tested with a broad range of different compilers.
- Works on many different platforms.
- Tested with Purify (a commercial memory leakage detector) as well as with Val grind, a GPL tool.
- Uses multi-layered server design with independent modules.

Security:

- A privilege and password system that is very flexible and secure, and that enables host-based verification.
- Password security by encryption of all password traffic when you connect to a server.

Scalability and Limits:

- Support for large databases. We use MySQL Server with databases that contain 50 million records. We also know of users who use MySQL Server with 200,000 tables and about 5,000,000,000 rows.
- Support for up to 64 indexes per table (32 before MySQL 4.1.2). Each index may consist of 1 to 16 columns or parts of columns. The maximum index width is 767 bytes for **InnoDB** tables, or 1000 for **MyISAM**; before MySQL 4.1.2, the limit is 500 bytes. An index may use a prefix of a column for **CHAR**, **VARCHAR**, **BLOB**, or **TEXT** column types.

CONNECTIVITY:

Clients can connect to MySQL Server using several protocols:

- Clients can connect using TCP/IP sockets on any platform.
- On Windows systems in the NT family (NT, 2000, XP, 2003, or Vista), clients can connect using named pipes if the server is started with the --enable-named-pipe option. In MySQL 4.1 and higher, Windows servers also support shared-memory connections if started with the --shared-memory option. Clients can connect through shared memory by using the --protocol=memory option.
- On UNIX systems, clients can connect using Unix domain socket files.

LOCALIZATION:

- The server can provide error messages to clients in many languages.
- All data is saved in the chosen character set.

CLIENTS AND TOOLS:

- MySQL includes several client and utility programs. These include both command-line programs such as **mysqldump** and **mysqladmin**, and graphical programs such as MySQL Workbench.
- MySQL Server has built-in support for SQL statements to check, optimize, and repair tables. These statements are available from the command line through the **mysqlcheck** client. MySQL also

WHY TO USE MySQL:

- Leading open source RDBMS
- Ease of use – No frills
- Fast
- Robust
- Security
- Multiple OS support
- Free
- Technical support
- Support large database– up to 50 million rows, file size limit up to 8 Million TB

PYTHON:

Python is a general-purpose interpreted, interactive, object-oriented, and high-level programming language. It was created by Guido van Rossum during 1985- 1990. Like Perl, Python source code is also available under the GNU General Public License (GPL). This **tutorial** gives enough understanding on **Python programming** language.

Why to use Python?

Python is a high-level, interpreted, interactive and object-oriented scripting language. Python is designed to be highly readable. It uses English keywords frequently where as other languages use punctuation, and it has fewer syntactical constructions than other languages.

Python is a MUST for students and working professionals to become a great Software Engineer specially when they are working in Web Development Domain. I will list down some of the key advantages of learning Python:

Python is Interpreted − Python is processed at runtime by the interpreter. You do not need to compile your program before executing it. This is similar to PERL and PHP.

Python is Interactive − You can actually sit at a Python prompt and interact with the interpreter directly to write your programs.

Python is Object-Oriented − Python supports Object-Oriented style or technique of programming that encapsulates code within objects.

Python is a Beginner's Language − Python is a great language for the beginner-level programmers and supports the development of a wide range of applications from simple text processing to WWW browsers to games.

Characteristics of Python

Following are important characteristics of **Python Programming** −

It supports functional and structured programming methods as well as OOP.

It can be used as a scripting language or can be compiled to byte-code for building large applications.

It provides very high-level dynamic data types and supports dynamic type checking.

It supports automatic garbage collection.

It can be easily integrated with C, C++, COM, ActiveX, CORBA, and Java.

Django Tutorial:

Django is a web development framework that assists in building and maintaining quality web applications. Django helps eliminate repetitive tasks making the development process an easy and time saving experience. This tutorial gives a complete understanding of Django.

Why Django Framework ?

- Excellent documentation and high scalability.
- Used by Top MNCs and Companies, such as Instagram, Disqus, Spotify, Youtube, Bitbucket, Dropbox, etc. and the list is never-ending.
- Easiest Framework to learn, rapid development and Batteries fully included.The last but not least reason to learn Django is Python, Python has huge library and features such as Web Scrapping, Machine Learning, Image Processing, Scientific Computing, etc. One can integrate it all this with web application and do lots and lots of advance stuff.

Problem Faced:

Most hospitals are still facing several challenges with Hospital Management System because some of them are still using manual processes, while those who are using computerized method are also facing the challenge of adjusting to it. Like:

- The high cost of software development and deployment.
- Complex design in terms of User Interface and User Experience (UI/UX Design)
- Fear of data security breach.
- Difficulty in migrating from manual processes, because both staff and patients are used to the manual

- Lack of IT-friendly medical personnel is also presenting several challenges.
- A Huge influx of patients visiting government hospitals makes the process of migrating to automated processes highly difficult. They do not have the patience to wait for registration and data entry and often fail to understand the functioning of automated processes.

Limitations of Existing System:-

- Lack of security of data
- Time consuming.
- Consumes large volume of paper work.
- Manual work
- No direct role for the higher officials.

CHAPTER 5: Testing

5.1 INTRODUCTION TO SYSTEM TESTING:

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub assemblies, assemblies and/or a finished product It is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

TYPES OF TESTING:

Unit testing:

Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program inputs produce valid outputs. All decision branches and internal code flow should be validated. It is the testing of individual software units of the application .it is done after the completion of an individual unit before integration. This is a structural testing, that relies on knowledge of its construction and is invasive. Unit tests perform basic tests at component level and test a specific business process, application, and/or system configuration. Unit tests ensure that each unique path of a business process performs accurately to the documented specifications and contains clearly defined inputs and expected results.

Integration testing:

Integration tests are designed to test integrated software components to determine if they actually run as one program. Testing is event driven and is more concerned with the basic outcome of screens or fields. Integration tests demonstrate that although the components were individually satisfaction, as shown by successfully unit testing, the combination of components is correct and consistent. Integration testing is specifically aimed at exposing the problems that arise from the combination of components.

Functional test:

Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system documentation, and user manuals.

Functional testing is centered on the following items:

Valid Input : identified classes of valid input must be accepted.

Invalid Input : identified classes of invalid input must be rejected.

Functions : identified functions must be exercised.

Output : identified classes of application outputs must be exercised.

Systems/Procedures: interfacing systems or procedures must be invoked.

Organization and preparation of functional tests is focused on requirements, key functions, or special test cases. In addition, systematic coverage pertaining to identify Business process flows; data fields, predefined processes, and successive processes must be considered for testing. Before functional testing is complete, additional tests are identified and the effective value of current tests is determined.

System Test:

System testing ensures that the entire integrated software system meets requirements. It tests a configuration to ensure known and predictable results. An example of system testing is the configuration oriented system integration test. System testing is based on process descriptions and flows, emphasizing pre-driven process links and integration points.

White Box Testing:

White Box Testing is a testing in which in which the software tester has knowledge of the inner workings, structure and language of the software, or at least its purpose. It is purpose. It is used to test areas that cannot be reached from a black box level.

Black Box Testing:

Black Box Testing is testing the software without any knowledge of the inner workings, structure or language of the module being tested. Black box tests, as most other kinds of tests, must be written from a definitive source document, such as specification or requirements document, such as specification or requirements document. It is a testing in which the software under test is treated, as a black box .you cannot "see" into it. The test provides inputs and responds to outputs without considering how the software works.

Unit Testing:

Unit testing is usually conducted as part of a combined code and unit test phase of the software lifecycle, although it is not uncommon for coding and unit testing to be conducted as two distinct phases.

Test strategy and approach

Field testing will be performed manually and functional tests will be written in detail.

Test objectives

- All field entries must work properly.
- Pages must be activated from the identified link.

- The entry screen, messages and responses must not be delayed.

Features to be tested

Verify that the entries are of the correct format

- No duplicate entries should be allowed
- All links should take the user to the correct page.

Integration Testing:

Software integration testing is the incremental integration testing of two or more integrated software components on a single platform to produce failures caused by interface defects.

The task of the integration test is to check that components or software applications, e.g. components in a software system or – one step up – software applications at the company level – interact without error.

Test Results:

All the test cases mentioned above passed successfully. No defects encountered.

Acceptance Testing:

User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. It also ensures that the system meets the functional requirements.

Test Results:

All the test cases mentioned above passed successfully. No defects encountered.

CHAPTER 6: Sample Screenshots

HOMEPAGE:

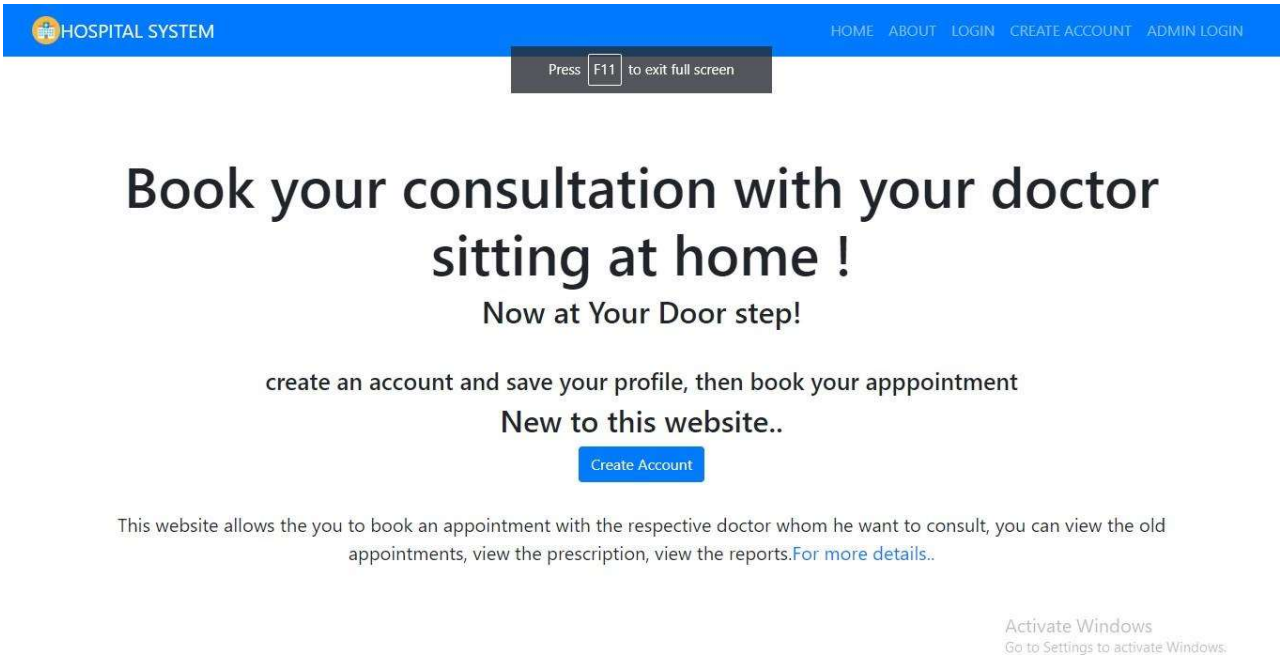
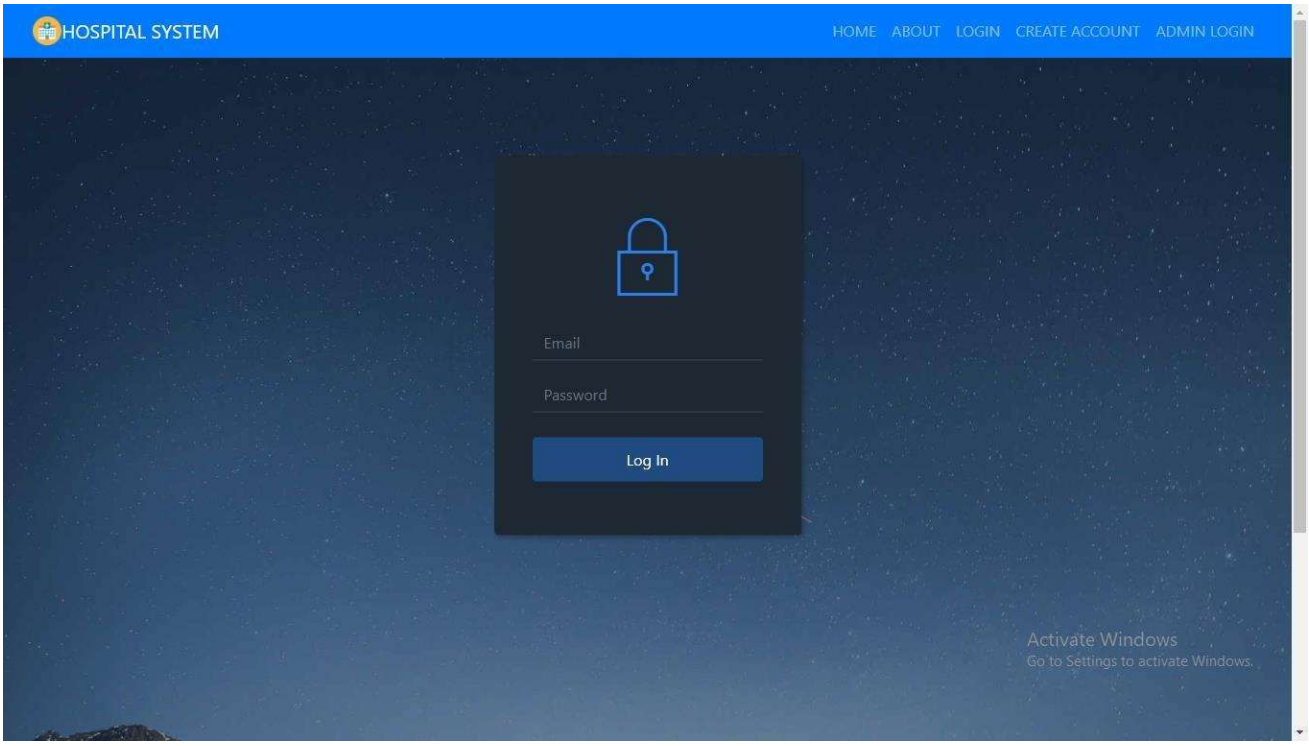


Fig 6.1 home page

LOGIN PAGE:



CREATE ACCOUNT PAGE:

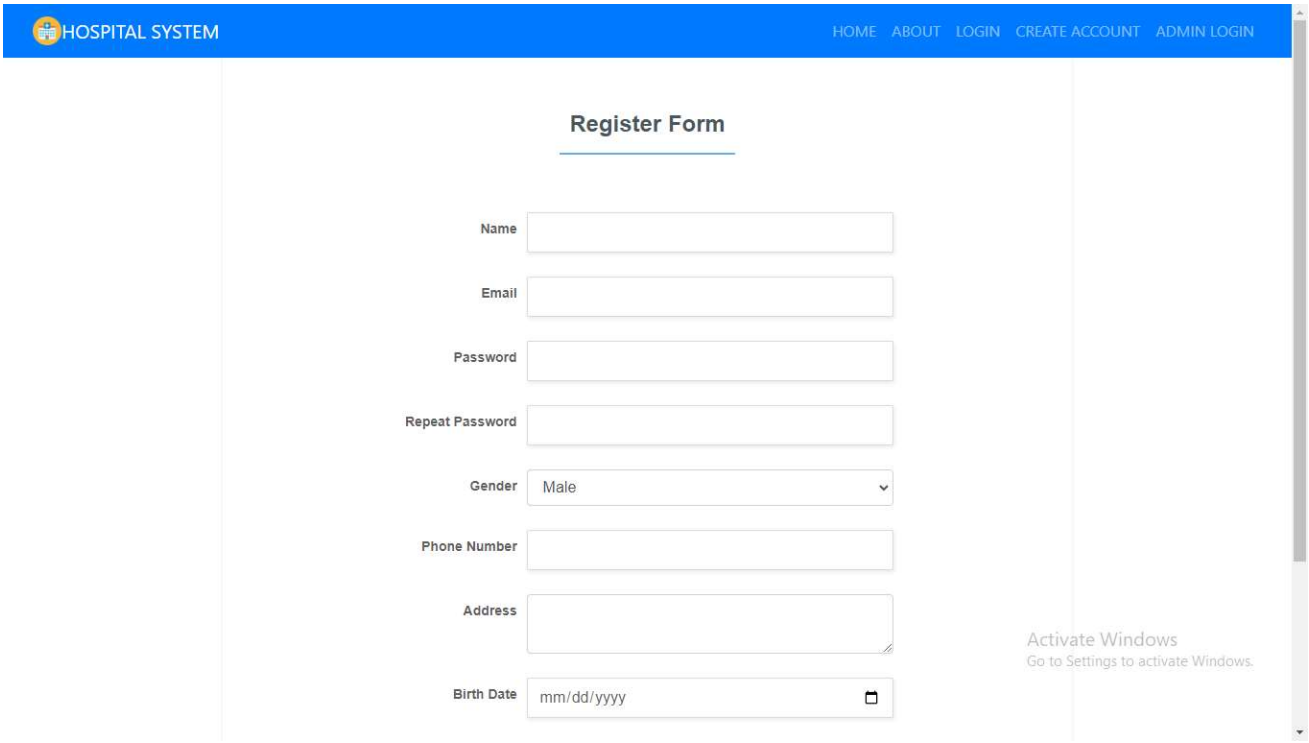


Fig 6.3Create account Page

ADMIN LOGIN PAGE :

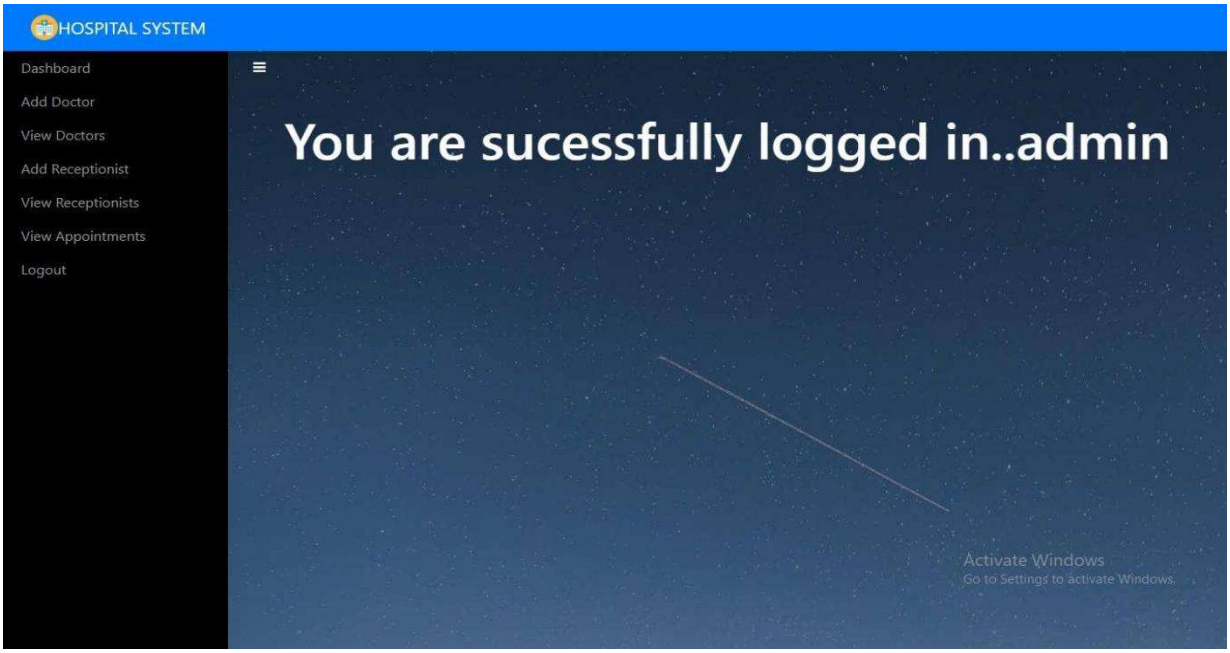


Fig 6.4 Admin Login Page

Patientloginpage:-

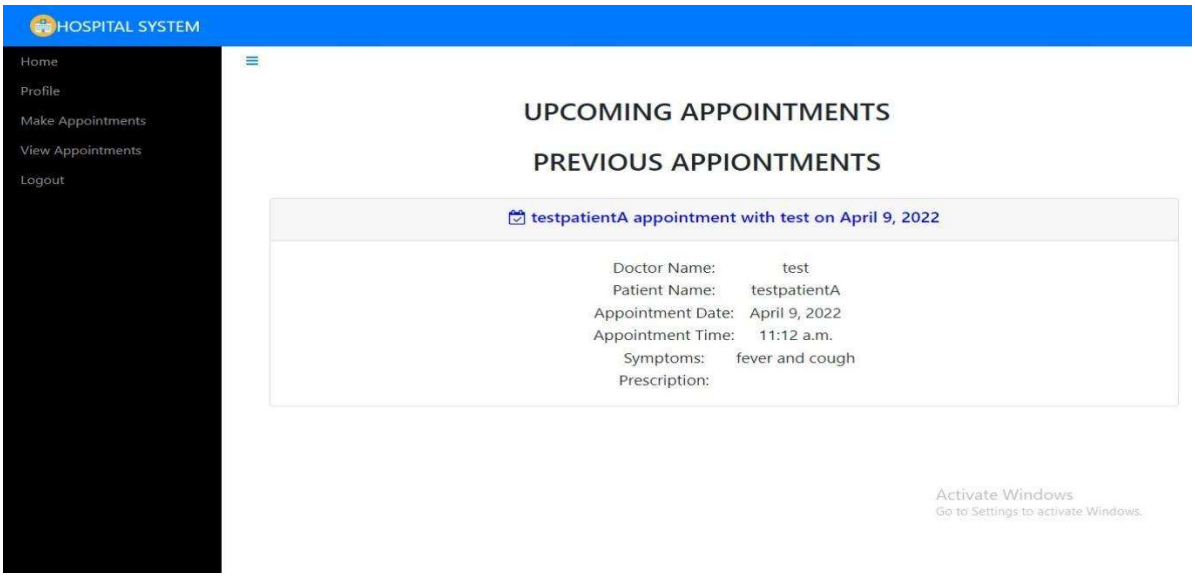


Fig 6.5 Patient Login Page

About page:-

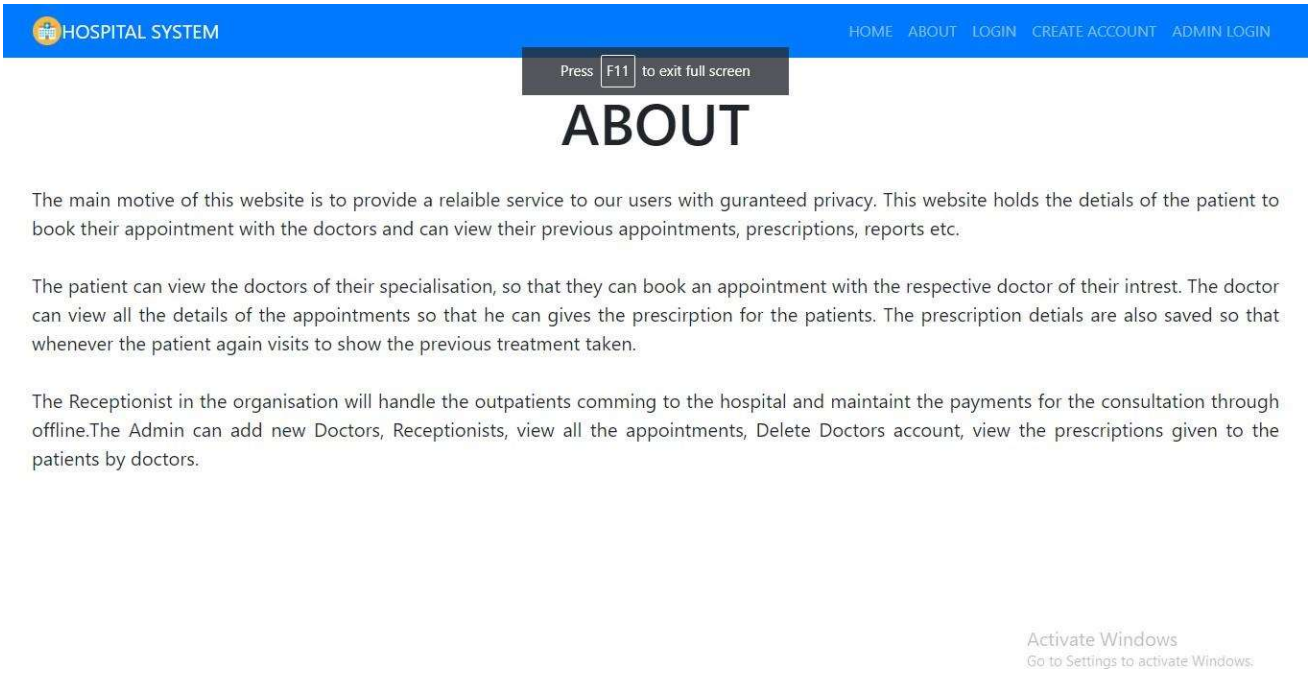


Fig 6.6 About Page

Chapter 7:Conclusion

Since we are entering details of the patients electronically in the" Hospital Management System", data will be secured. Using this application we can retrieve patient's history with a single click. Thus processing information will be faster. It guarantees accurate maintenance of Patient details. It easily reduces the book keeping task and thus reduces the human effort and increases accuracy speed.

Recommendation:

Recommendation 1. The Indian Food and Drug Administration and the Office of the National Coordinator for Health Information Technology should collaborate to regulate, certify, and monitor health care applications and systems that integrate medical devices and health information technologies. As part of the certification process, the agencies should require evidence that manufacturers have followed existing accessibility and usability guidelines and have applied user-centered design and validation methods during development of the product.

Recommendation 2. The Office of the National Coordinator for Health Information Technology, in collaboration with the National Institute of Standards and Technology and the Agency for Healthcare Research and Quality, should establish design guidelines and standards, based on existing accessibility and usability guidelines, for content, accessibility, functionality, and usability of consumer health information technologies related to home-based health care.

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