Design and Implementation a Patient Friendly and Easy Hospital Management System

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APPROVAL

The project titled "**Design and Implementation a Patient Friendly and Easy Hospital Management System**" submitted by Md. Mejanur Rahman (CSE1901016134), Md. Mostofa kamal (CSE1901016133), Rubayet Jwena (CSE1901016140), Md. Rajaul Karim (CSE1703012074)to the Department of Computer Science and Engineering, Sonargaon University (SU), has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering and approved as to its style and contents.

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DECLARATION

We, hereby, declare that the work presented in this report is the outcome of the investigation performed by us under the supervision of **Arifur Rahaman, Assistant Professor & Coordinator,** Department of Computer Science and Engineering, Sonargaon University, Dhaka, Bangladesh. We reaffirm that no part of this project has been or is being submitted elsewhere for the award of any degree or diploma.

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ABSTRACT

The project Hospital Management system includes registration of patients, storing their details into the system. The software has the facility to give a unique id for every patient and stores the details of every patient. The Hospital Management System can be entered using a username and password. It is accessible either by an administrator. 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 make the data processing very fast. The venture Hospital Management framework incorporates enrollment of patients, putting away their subtleties into the framework, and furthermore mechanized charging in the drug store, and labs. The product has the office to consequently give an extraordinary id for each persistent and stores the subtleties of each and every patient and the staff. It incorporates a hunt office to know the ongoing status of each room. Client can look through accessibility of a specialist and the subtleties of a patient utilizing the id. The Hospital Management System can be placed utilizing a username and secret word. It is available either by an executive or assistant. No one but they can add information into the data set. The information can be recovered without any problem. The connection point is very easy to understand. The information is all around safeguarded for individual use and makes the information handling exceptionally quick.A structure is a significant piece of Visual Basic application, which permits the client to enter the information as well as view the outcome. A control is an item that we attract on a structure to empower or upgrade client cooperation with an application.

ACKNOWLEDGMENT

At the very beginning, we would like to express my deepest gratitude to the Almighty Allah for giving us the ability and the strength to finish the task successfully within the schedule time.

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We are also thankful to all our teachers during our whole education, for exposing us to the beauty of learning.

Finally, our deepest gratitude and love to my parents for their support, encouragement, and endless love.

LIST OF ABBREVIATIONS

CDF   Context Flow Diagram

DFD   Data Flow Diagram

GUI   Graphical user interface

HCL   Hardware Compatibility List

HMS   Hospital Management Software

HTML   Hypertext Markup Language

IDE   Integrated Development Environment

O-Net   Output Network

R-Net   Refine Network

SDLC   Software Development Life Cycle

SQL   Structured Query Language

SRS   Software Requirement Specification

UI   User interface

UML   Unified Modeling Language

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CHAPTER 1

INTRODUCTION TO HOSPITAL MANAGEMENT SYSTEM

1.1 Introduction

A one of a kind cloud-based hospital management framework for the two patients and hospital stuffs (Doctors, Management). The essential focus of this plan is to make hospital experience better compared to us presently have. Hospital is where nobody readily needs to visit except for there are times when we really want to. The old arrangement of hospitals is not very easy to understand. The first huge stem is hanging tight in the line for extended periods of time. There are bunches of different issues that makes your hospital experience terrible. Our primary center is to make people groups life more straightforward in the hour of need.

We are attempting to plan such a framework that will decrease a ton of administrative work and save people groups time. Existing programming: You will track down hospital management framework programming in different hospitals in our country. They have extraordinary highlights to help the hospital however that doesn't permit the patients to deal with their own information. This gave us the beginning inspiration to construct a framework [1] where the framework will work for all.

To defeat those constraint, we are attempting to construct an informal communication like site for hospitals that will help everybody working in the hospital and their patients. We should examine about the framework in subtleties and perceive how it will help us. There are no such things that emerges with practically no impediments except for we centered to survive everything we could manage. Our fundamental center was to decide the elements for the patients. They are the enormous local area of this framework and they have the right to get the generally out of this framework. There is no question that our current frameworks don't give us the office to check for our data connected with our hospital reports and other significant records for instance remedies and test reports. In the event that this record is near us, we can basically be in some harmony. We never again need to stress over conveying those reports and obviously it will help us the best as far as losing those valuable reports and cause problems. The help will be colossal thus will be the advantage. Ideally this will give us the advantage that we are anticipating.

1.2 Problem Introduction

Absence of prompt recoveries: - The data is extremely challenging to recover and to find specific data like-E.g. -To learn about the patient's set of experiences, the client needs to go through different registers. This results in convenience and wastage of time.

Absence of quick data stockpiling: - The data produced by different exchanges takes time and endeavors to be put away at perfect spot.

Absence of brief refreshing: - Different changes to data like patient subtleties or vaccination subtleties of youngster are hard to make as desk work is involved [2].

Mistake inclined manual estimation: - Manual estimations are mistake inclined and take a great deal of time this might result in wrong data. For instance, computation of patient's bill in view of different medicines.

Planning of precise and brief reports: - This turns into a troublesome undertaking as data is hard to gather from different register.

1.3 Extent of The Project

1) Information about Patients is finished simply by composing the Patients name, age and orientation. Whenever the Patient comes up his data is put away newly.
2) Bills are produced by recording cost for every office gave to Patient on as separate sheet and finally they all are summarized.
3) Diagnosis data to patients is by and large recorded on the report, which contains Patient data. It is annihilated after a time span to diminish the paper load in the workplace.
4) Immunization records of youngsters are kept up with in pre-arranged sheets, which are kept in a record.
5) Information about different infections isn't kept as any archive. Specialists themselves finish this work by recalling different meds.

Everything this work is done physically by the assistant and other functional staff and parcel of papers are required to have been dealt with and dealt with. Specialists need to recollect different drugs accessible for determination and in some cases miss better choices as they can't recall them around then.

1.4 Motivation

We don't generally visit hospitals except if we want to however this visit doesn't constantly give us great experience. We deal with different issues there. There is mechanized hospital management framework yet they give no usefulness to us. Indeed, even the specialists don't approach their patient's information while they are at home [3].

It will be perfect for the patients to have an application that will keep them near their own information like: remedies, test reports and other significant materials. Patients will actually want to peruse every one of the specialists accessible and request arrangement for their ideal specialist. A specialist will likewise encounter the comparative benefits. This will decrease a ton of paper works and make things simple for everybody related with it. I have some private experience visiting the hospital and I moreover have accumulated insight from others by asking them and noticing them for quite a while. Individuals experience their most dreaded fear while they need to visit the hospital [4]. Nobody visits the hospital except if it is very vital. Individuals get frantic however they have nothing to do then, at that point. This gave me the ideal inspiration to fabricate something for themselves and proposition them some assistance at their most required time. I'm certain that this item would be able and will help them.

CHAPTER 2

SYSTEM ANALYSIS AND PROJECT PLANING

2.1 Existing systems

The current manual system has a lot of paper work. To maintain the records of sale and service manually, is a Time-consuming task. With the increase in database, it will become a massive task to maintain the database. Requires large quantities of file cabinets, which are huge and require quite a bit of space in the office, which can be used for storing records of previous details. The retrieval of records of previously registered patients will be a tedious task. Lack of security for the records, anyone disarrange the records of your system. If someone want to check the details of the available doctors the previous system does not provide any necessary detail of this type.

2.2 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 as well as doctors. 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.

The complete set of rules and procedures related to Hospital's day to day activities and generating report is called "Hospital Management System". It is a computerized management system. This system also keeps the records of hardware assets besides software of this organization. The proposed system will keep a track of Doctors, Patients & Receptionist. This project has GUI based software that will help in storing, updating and retrieving the information through various user-friendly menu-driven modules[5].

2.3 Goals of Proposed System

   I. The system should be easy to operate.
  II. The working in the organization will be well planned and organized.   The level of accuracy in the proposed system will be.
 III. The system should be easy to operate. The working in the organization will be well planned and organized.
 IV. The level of accuracy in the proposed system will be higher. The reliability of the proposed system will be high due to proper storage of information's.

2.4 Background Analysis

Prior to planning any framework, it is critical that the idea of the business and the manner in which it as of now works are obviously perceived. The definite assessment gives the particular information expected during planning to guarantee that every one of the client's prerequisites are satisfied. The examination or the review directed during the investigation stage is to a great extent founded on the practicality study. Maybe it wouldn't be inappropriate to say that the examination and practicality stages

cross-over. Significant level investigation starts during the plausibility study. However, examination is addressed as one period of the framework advancement lifecycle (SDLC)[6], this isn't accurate. Examination starts with framework introduction and go on until its support. Indeed, even after fruitful execution of the framework, examination might assume its part for occasional support and up degree of the framework. One of the primary drivers of task disappointments is deficient comprehension, and one of the primary drivers of insufficient comprehension of the prerequisites is the lack of common sense of framework investigation.

Different management program for management are available out there yet there any not such a large number of which gives the patients any usefulness. The hospital framework has been robotized yet the advantage isn't for all. In such a circumstance I have sorted out that there ought to be something for the patients. A few straightforward highlights for checking arrangement, requesting arrangement, remedy and test reports can lessen the problem up to 70-80%. Since there we face a difficult situation and can discover a way. So, this will permit us something that we were hanging tight for such a long time. The world is moving to web so this is the ideal opportunity to think about this. I have really looked at some hospital management framework on web and a few neighborhood programs that the hospital stuffs are utilizing close to me.

They are likewise very much planned and have rich highlights as well however nothing for the patients to be content about is there. In the event that we analyze the advantages and the fulfillment structure each place of view then we can't finish up things useful for all. In the event that a framework doesn't give help for each client bunch then it can't be amazing framework. We came out a long way with expanding benefit for all. Still there are a ton of things that can be added yet, right now this is the most we can anticipate.
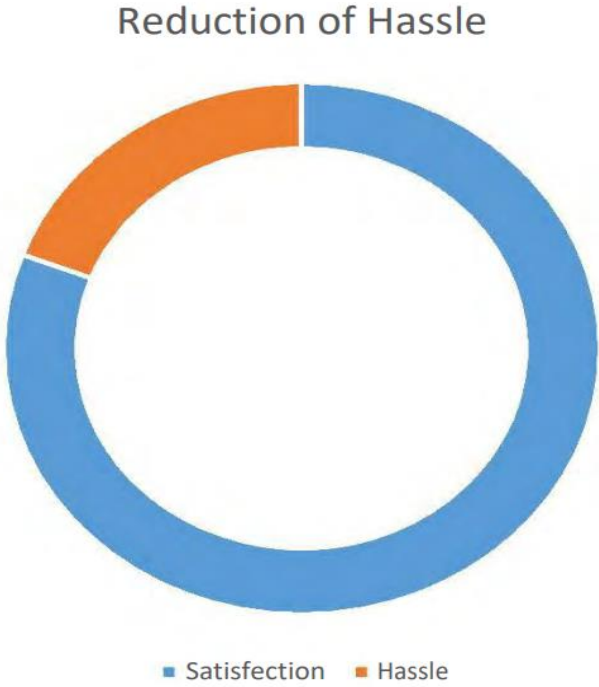
Reduction of Hassle

■ Satisfaction ■ Hassle

Fig 2.1: Reduction of Hassel for Hospital Management

2.5 Scope of working

The proposed programming item is the Hospital Management Software (HMS). The framework will be use racket any hospital, facility, dispensary or pathology labs. Center, dispensary or pathology to get the data from the patients and afterward putting away that information for future uses. The ongoing framework being used is a paper-based framework. It is excessively sluggish and can't give refreshed arrangements of patients inside sensible time span. The expectation of the framework is to diminish over the long run pay and increment the quantity of patients that can be dealt with precisely [7]. Necessity articulations in these reports are both useful an don-practical

CHAPTER 3

FEASIBILITY STUDY

3.1 Specialized Feasibility

This is worried about determining hardware and programming that will effectively fulfill the client prerequisite; the specialized requirements of the framework might differ impressively, however could include: The office to create yields in a given time:

1. Reaction time under conditions.
2. Capacity to handle a specific volume of exchange at a specific seep.
3. Office to impart information to far off area.

3.2 Operational Feasibility

It is for the most part connected with human association and political viewpoints. The focuses to be considered are:

1. What changes will be brought with the system?
2. What authoritative designs are distributed?
3. What new abilities will be required?

Do the current staff individuals have these abilities? If not, bottle the prepared proper method of time.

3.3 Economic Feasibility

Monetary investigation is the most often involved strategy for assessing the viability of a proposed framework. All the more often known as cost/benefit framework and contrast them and expenses. In the event that advantages offset costs, a choice is taken to plan and execute the framework.

3.4 Management Feasibility

It is an assurance of whether a proposed venture will be satisfactory to management. On the off chance that doesn't acknowledge a task of gives an unimportant help to it; the investigator will generally see the venture as a no plausible one.

3.5 Social Feasibility

Social feasibility is an assurance of regardless of whether the undertaking will be OK to individuals. This assurance normally looks at the likelihood of the task acknowledged by the gathering straightforwardly impacted by the proposed framework change.

CHAPTER 4

REQUIREMENT SPECIFICATION

4.1 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 [8]. 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

4.2 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 [9].

Hardware Requirements for Present Project:

Processor: Intel Core i3 or latest generation.
RAM: 1 GB
Hard Disk: 80 Gb

4.3 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/ 8 / 10
Front End: PHP, HTML, CSS, JAVASCIRPT, Local Server (XAMPP)
Side Script Database: MySQL

CHAPTER 5

ABOUT UML & PROCESS

5.1 UML Design

The Unified Modeling Language (UML) is a standard language for indicating, picturing, building, and reporting the product framework and its parts. It is a graphical language, which gives a jargon and set of semantics and rules. The UML centers around the applied and actual portrayal of the framework. It catches the choices and understandings about frameworks that should be developed. It is utilized to figure out, plan, arrange, keep up with, and control data about the frameworks.
The UML is a language for: Visualizing, Specifying, Constructing, Documenting, Imagining [10].

Through UML we see or imagine a current framework and at last we picture how the framework will be after execution. Except if we think, we can't carry out. UML assists with imagining, how the parts of the framework convey and cooperate with one another.
1. Indicating: Determining implies building, models that are exact, unambiguous and complete UML tends to the detail of all the significant examination plan, execution choices that should be made in creating and sending a product framework.
2. Building: UML models can be straightforwardly associated with an assortment of programming language through planning a model from UML to a programming language like JAVA or C++ or VB. Forward Engineering and Reverse Engineering is conceivable through UML.
3. Reporting: The Deliverables of a venture separated from coding are a few Artifacts, which are basic in controlling, estimating and conveying about a framework during its developing requirements, engineering, want, source code, project plans, tests, model's releasers.

5.2 UML Diagram

A chart is the graphical show of a bunch of components, most frequently delivered as an associated diagram of vertices and bends. you attract outline to envision a framework according to alternate point of view, so a graph is a projection into a framework. For everything except most minor frameworks, a graph addresses an omitted perspective on the components that make up a framework. A similar component might show up in all graphs, a couple of outlines, or in no charts by any means. In principle, a chart might contain any mix of things and connections. Practically speaking, notwithstanding, few normal mixes emerge, which are reliable with the five most helpful perspectives that involve the engineering of a product serious framework. Consequently, the UML incorporates nine such charts.
* Class Diagram
* Object diagram
* Use case diagram
* Sequence diagram
* Collaboration diagram
* State chart diagram

- Activity diagram
- Component diagram
- Deployment diagram

5.3 Followed Diagram During the Project

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 field modeling language(UML) and the systems modeling language(sysML).
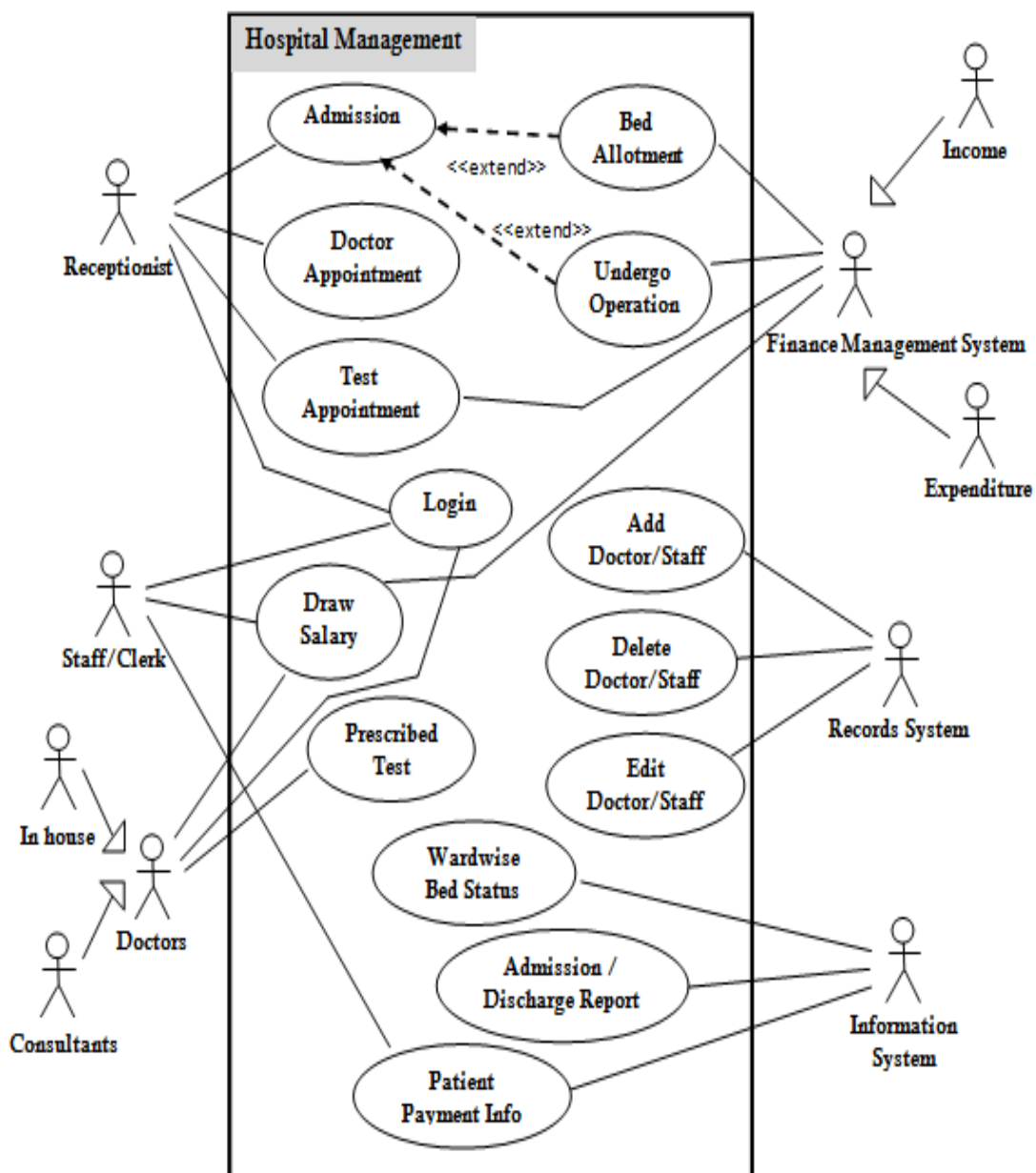
Fig 5.1: Use Case Diagram

5.4 E-R Diagram
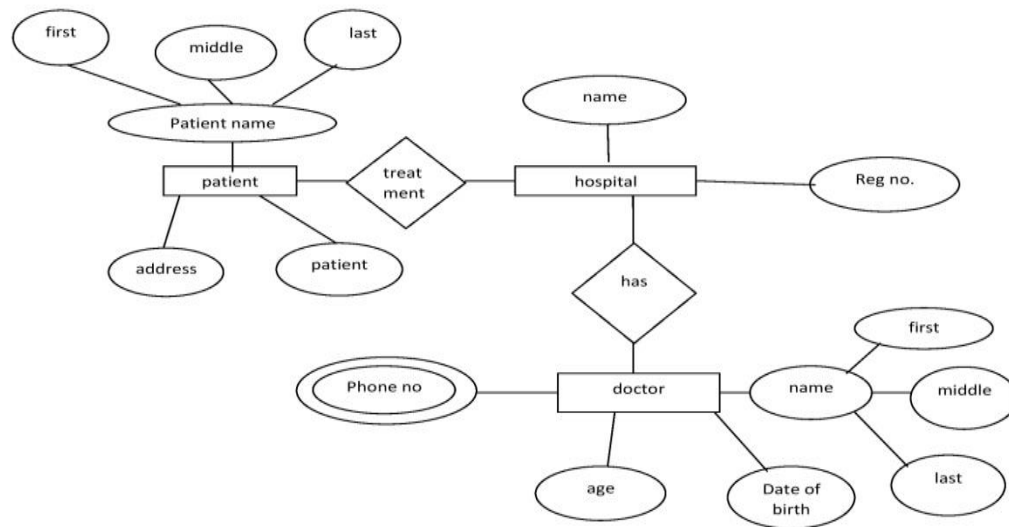
Fig: E-R diagram

Fig 5.2: E-R Diagram

5.5 Data Flow Diagram

The context diagram is the most abstract data flow representation of a system. It represents the entire system as a single bubble and. The various external entities with which the system interacts and the data flows occurring between the system and the external entities are also represented. The name context diagram is well justified because it represents the context in which the system is to exist i.e. The external entities (users) that would interact with the system and specific data items they would be receiving from the system**.**
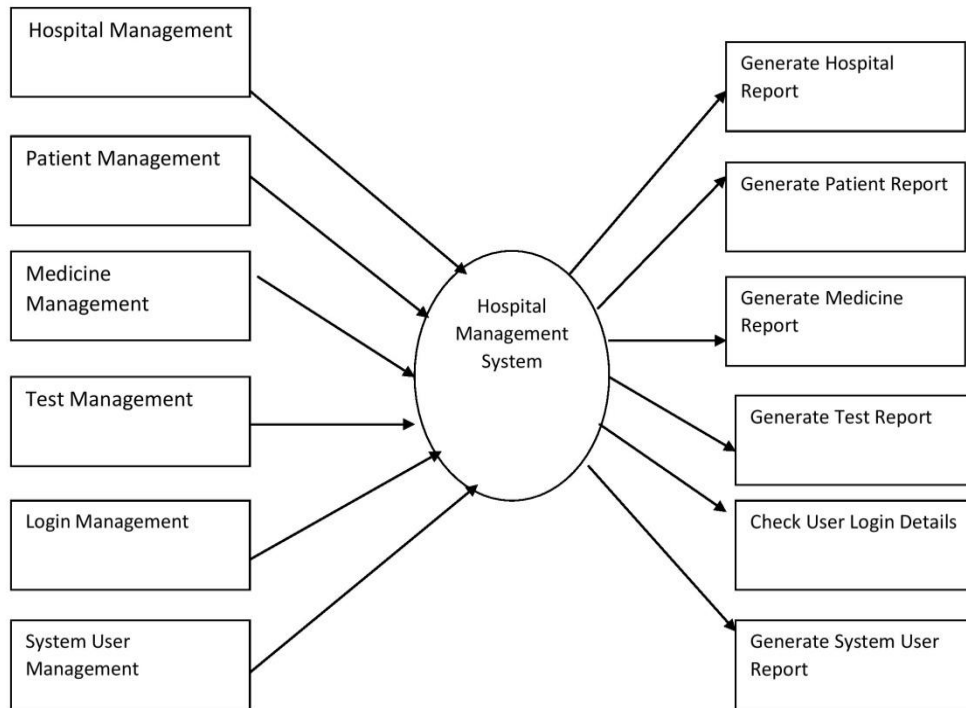
First Level DFD – Hospital Management System

Fig 5.3: Data Flow Diagram

CHAPTER 6

SYSTEM DESIGN

6.1 Starting with Implementation

Implementation is the stage of the project when the theoretical design is turned out into a working system. Thus, it can be considered to be the most critical stage in achieving a successful new system and in giving the user, confidence that the new system will work and be effective. The implementation stage involves careful planning, investigation of the existing system and its constraints on implementation, designing of methods to achieve changeover and evaluation of changeover methods.

6.2 Using Xampp Server

Any web site that uses server-side language requires a server to run. Sounds pretty obvious spelled out like that, right? It's right there in the name... server-side language.

So, now you're wondering what a server-side language is, and whether or not you're using one. Well, if you're building a web site that uses even the simplest of databases, then you're using a server-side language [11]. It's just code that's processed on the server before being sent to website visitors. For example, PHP or ASP or Cold Fusion.

There are all sorts of languages out there. So I'm not going to go into which server-side language is best for you, which one you should use, or even how to pick the best one in this article. I will tell you that they all require a server to run. So regardless of your experience and expertise at any or all of the server-side languages, you cannot preview that site you're working on until it is living in a server environment.

There are two server environments to choose from: local and remote. A local server is, as you might have guessed, hosted locally on your own computer while a remote server is hosted elsewhere. It might be a paid hosting plan, another computer on a local area network, or even a free hosting plan; regardless, a remote server is a server that is not on your computer.

So, which type is best for testing? That's really up to you. We prefer the local server route, and that's what we are going to focus on today. But We often encourage my clients to also set up remote testing servers, which we will also cover today.

6.3 User Interface

User interface (UI) plan is the cycle architects use to assemble interfaces in programming or automated gadgets, zeroing in on looks or style [12]. Fashioners mean to make interfaces which clients see as simple to utilize and pleasurable. UI configuration alludes to graphical UIs and different structures — e.g., voice-controlled interfaces.
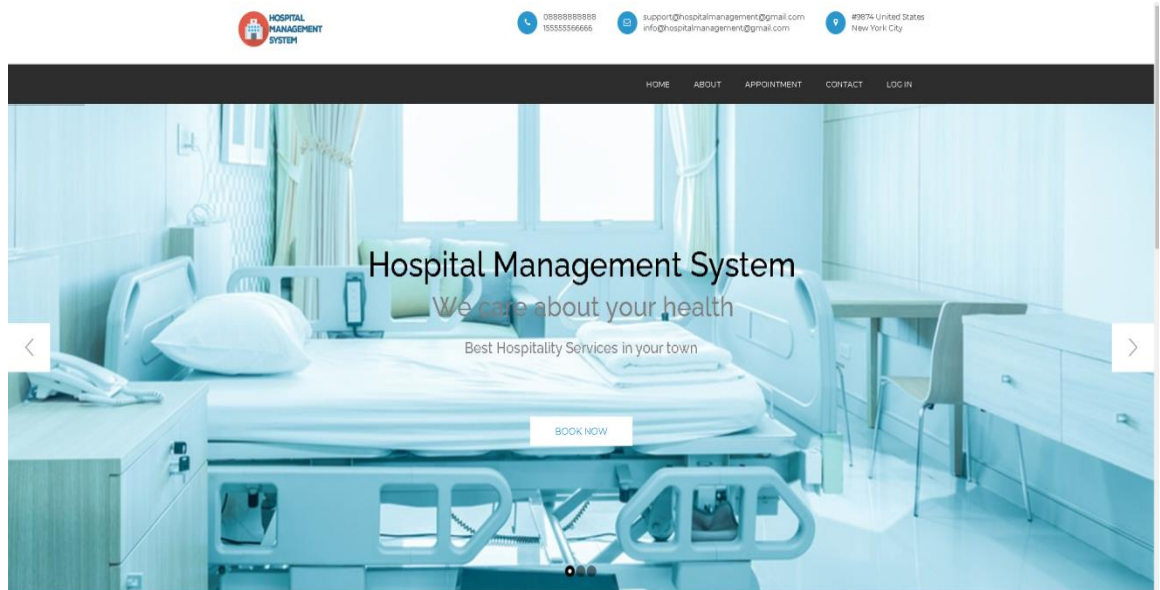
Fig 6.1: Home Page
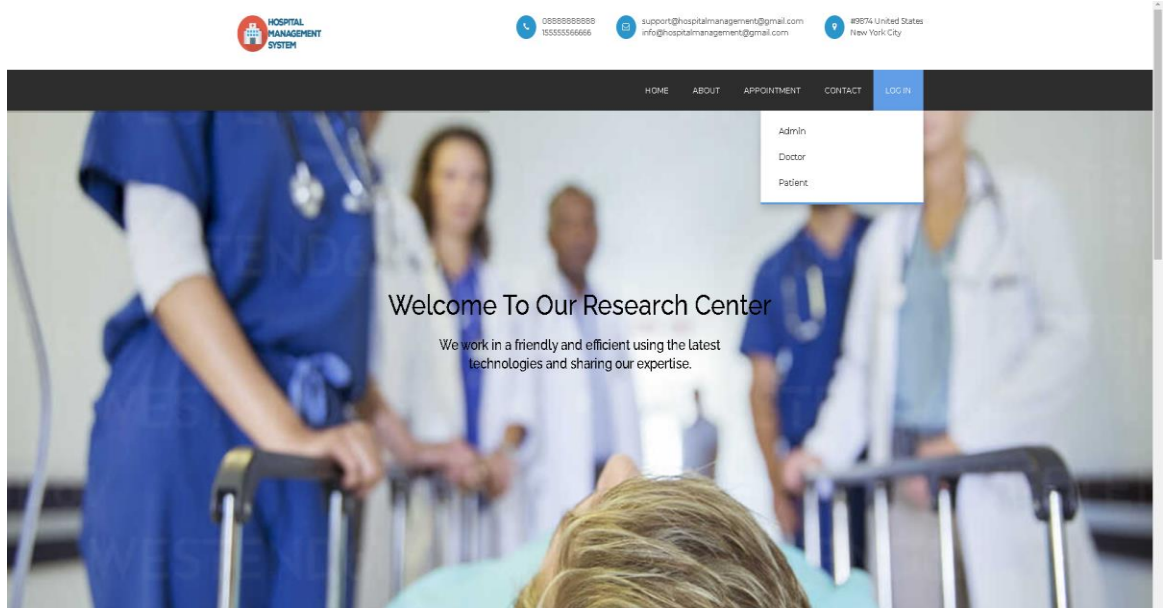
6.4 Login Interface:

Fig 6.2: Login Interface

For login interface we've added 3 different options for individual users, like: Admin, Doctor, Patient. Those are different panel for different users. The admin panel is only for the developers and designers of the software. The Doctors can check his / her patient list form their panel. Even they are able to set a meet with his/ her own patient. As like doctor patient are also able to set appointment with the doctor.
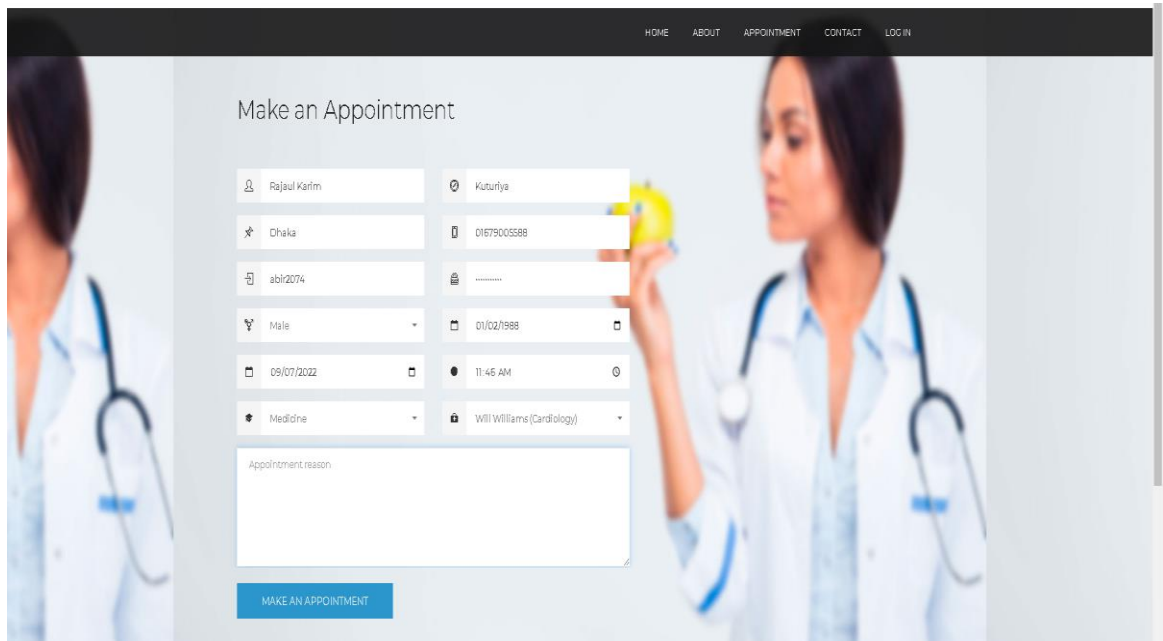
Some other pages are added in the next page:
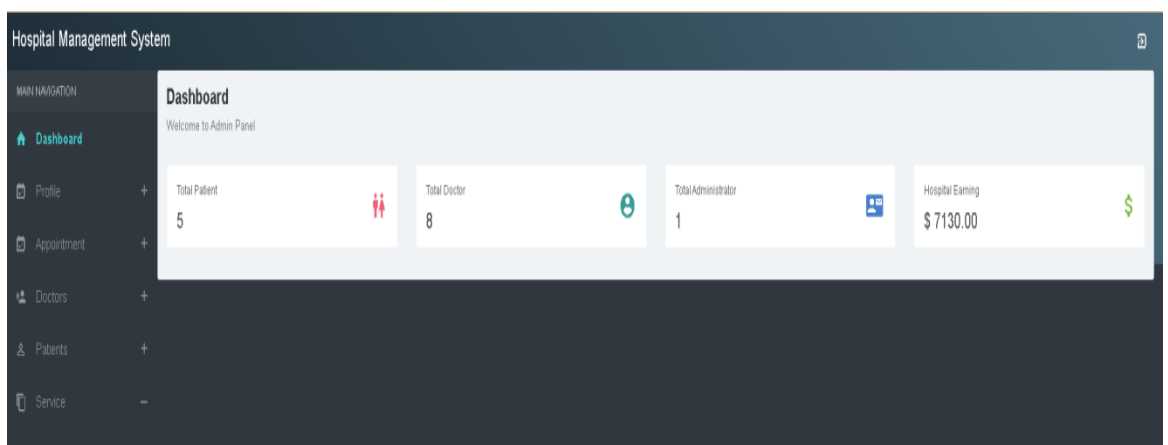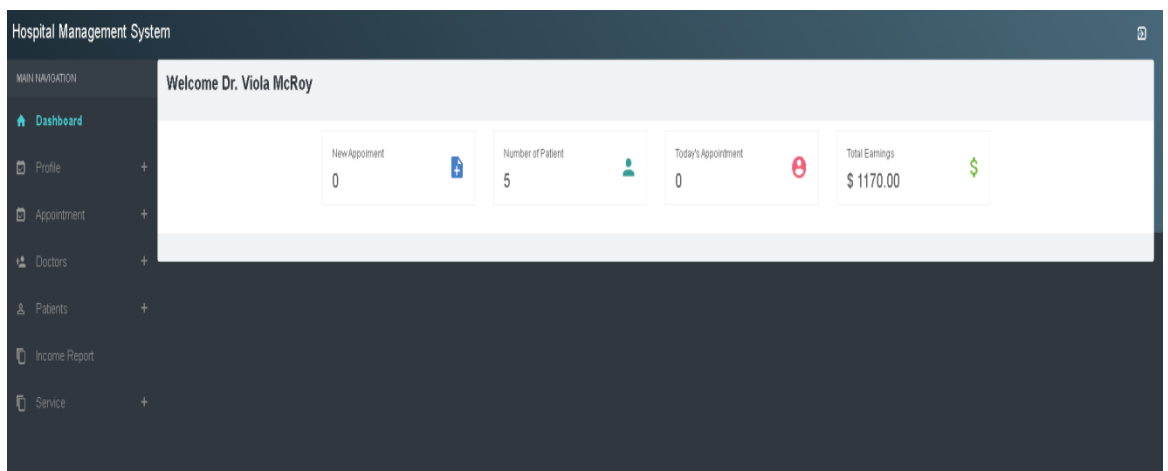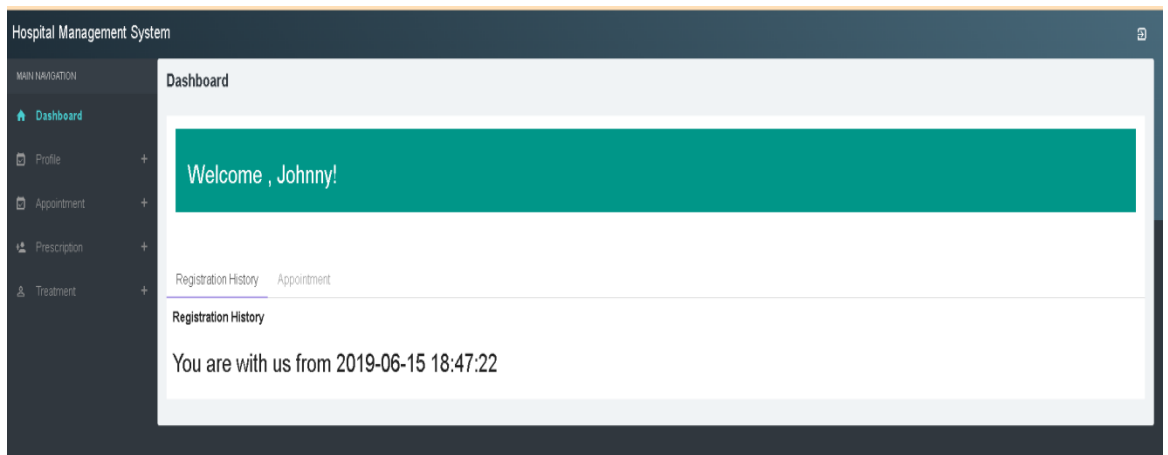
Fig 6.3: Admin Dashboard

6.5 Making an Appointment:

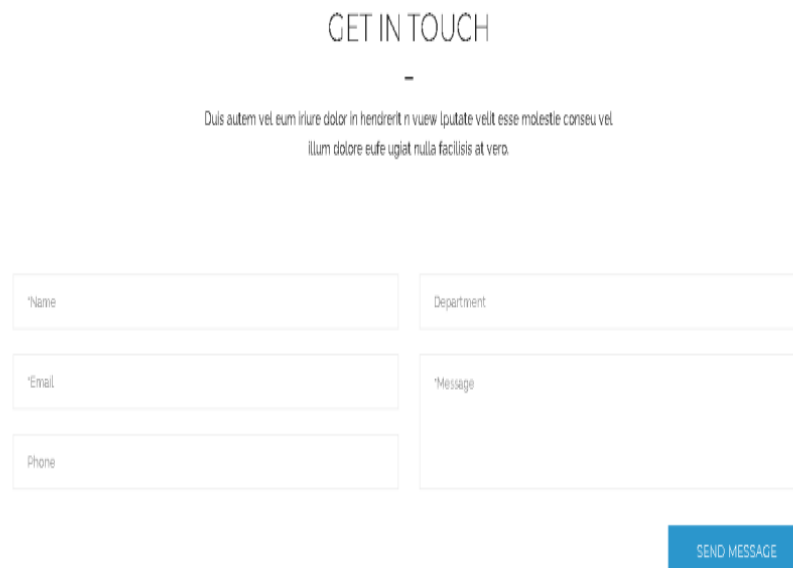Fig 6.4: Make an Appointment

Here a patient can make an appointment with his/her doctor with those details. We tried to add all facilities those are crucial for a patent to complete an appointment.

6.6 Get in Touch

It's the option to contact the administrator directly for a patent or any person.

6.7 Maintaining Database

A site support plan is a far-reaching interior record utilized by your IT division, frameworks improvements engineers, and other server-side specialists to guarantee that your site (and its going with servers) are stayed up with the latest, secure and quick. Basically, it's your organization's go-to direct for keeping your site working at top execution [13].

6.8 Functions of Project

Functions are bet declared between the <Head> tag of HTML page. Functions are called by user-initiated events. Seems reasonable to keep the functions between the <Head>tags. They are loaded first before a user can do anything that might call a function. Scripts can be placed between inside comment fields to ensure that older browser do not display the script itself.<html><head>

<script language="JavaScript">

function pushbutton (){

alert ("Hello!");

}</script></head><body><form>

<input type=" button" name="Button1" value="push me" onclick="pushbutton ()">

</form></body></html>

If we want to test this one immediately and you are using a Java Script enabled browser then please go ahead and push the button. This script will create a button and when

you press it a window will pop up saying "hello!".

In fact, we have a lot of possibilities just by adding functions to our scripts.

The common browsers transmit the form information by either method: here's the complete

tag including the GET transmission method attribute for the previous form

Example:

<Form method =GET action=URL/upfdate.pl>

………

</form>

Input elements.

Use the <input> tag to define any one of a number of common form elements including text fields multiple choice lists click able images and submission buttons. There are many attributers for this tag only that types and name attributes are required for each element, each type of input element uses only a subset of the followed attributes. Additional <input> attributes may be required based upon which type of the form element you specify.

Submit button:

The submit button (<input type=submit>) does what its name implies, settings in motion the form's submission to the server from the browser. We many have more than submit buttons will be added to the parameter list the browser sends along to the server.

Example

< Input type ="submit">

<Input type="submit" value="submit" name="name">

Reset button:

The reset button if firm <input> button is nearly self- explanatory; it lets the user reset erase or set to some default value all elements in the form. By default, the browser displays a reset button

worth the label "reset". We can change that by specifying a value attribute with tour own button label.

CHAPTER 7

IMPLEMENTATION & TESTING

7.1 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 [14]. 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.

7.2 Implementation Environment

The implementation view of software requirement presents the real-world manifestation of processing functions and information structures. This computerized system is specified in a manner that dictates accommodation of certain implementation details. The implementation environment of the developed system facilitates multiple users to use this system simultaneously. The user interfaces are designed keeping in mind that the users of this system are familiar to using GUI-based systems. Thus, we restricted ourselves to developing a GUI-based system so that it becomes easier for the end user to get acquainted to the developed system.

7.3 System Testing

Integration testing done before, during and after integration of a new module into the main software package. This involves testing of each individual code module. One piece of software can contain several modules which are often created by several different programmers [15]. It is crucial to test each modules effect on the entire program model. After integration testing the project works successfully.

Unit testing performed on each module or block of code during development. Unit testing is normally done by the programmer who writes the code.

System testing done by a professional testing agent on the completed software product before it is introduced to the market.

Acceptance testing is a beta testing of the product done by the actual end user.

Recovery testing is done to demonstrate a software salutation is reliable, trustworthy and can successfully recoup form possible crashes.

IBM refers to Hardware/Software testing as "HW/SW Testing". This is when the tester focuses his/her attention on the interactions between the hardware and software during system testing.

Security Testing is a variant of Software Testing which ensures, that system and applications in an organization, are free from any loopholes that may cause a big loss. Security testing of any system is about finding all possible loopholes and weaknesses of the system which might result into a loss of information at the hands of the employees or outsiders of the Organization

CHAPTER 8

CONCLUSION AND FUTURE WORKS

8.1 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.

Hospital Management System is essential for maintaining detail about the Doctor, Patient, Hospital staff etc. we understand that by using of Hospital Management System project the work became very easy and we save lot of time. Hospital administrators would be able to significantly improve the operational control and thus streamline operations. This would enable to improve the response time to the demands of patient care because it automates the process of collecting, collating and retrieving patient information. Accounting sometimes becomes awfully pathetic and complex. This product will eliminate any such complexity.

8.2 Future Works

This application avoids the manual work and the problems concern with it. It is an easy way to obtain the information regarding the various travel services that are present in our System.

Well, I and my team member have worked hard in order to present an improved website better than the existing one's regarding the information about the various activities. Still, we found out that the project can be done in a better way. Primarily, in this system patient login and then go to reception. By using this patient will send request for consulting the doctor. Reception will set the date for doctor appointments. After that doctor see his appointments and see the patients, surgeries also done. The next enhancement is; we will develop online services. That mean, if patient have any problems he can send his problem to the doctor through internet from his home, then doctor will send reply to him. In this patient have some login name and password.

We have some limitations too. For future work we wanted to reduce those limitations below:

- Online payment is not available at this version.
- Data delete & edit system is not available for all section.
- User account not verified by Mobile SMS not available in this system.
- Loss of data due to mismanagement.

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