Healthcare Management System

A PROJECT REPORT

SUBMITTED BY

UTKARSH GANGAL

(University Roll No:1900290149103)

Submitted in partial fulfillment of the Requirements for the Degree of

MASTER OF COMPUTER APPLICATIONS

Under the Supervision of

Ms.

ASSISTANT PROFESSOR KIET Group of Institution, Ghaziabad



FACULTY OF MCA
DR. APJ ABDUL KALAM TECHNICAL UNIVERSITY
LUCKNOW

(Formerly Uttar Pradesh Technical University, Lucknow)

DECLARATION

We hereby declare that the work presented in this report entitled "HEALTHCARE

MANAGEMENT SYSTEM ", was carried out by us. We have not submitted the

matter embodied in this report for the award of any other degree or diploma of any

other University or Institute.

We have given due credit to the original authors/sources for all the words, ideas,

diagrams, graphics, computer programs, experiments, results, that are not my

original contribution. We have used quotation marks to identify verbatim sentences

and given credit to the original authors/sources.

Name and Roll. No. :

Utkarsh Gangal (University Roll No.1900290149103)

Branch:

M.C.A. 6th Semester

Utkarsh Gangal

(Candidate Signature)

ACKNOWLEGMENT

Here, I gladly present this project report on ".Healthcare Management System" as part of the 6th semester MCA Master in Computer Applications. I take this occasion to thank God, almighty for blessing me with his grace and taking our endeavor to a successful culmination. I extend my sincere and heartfelt thanks to me esteemed guide, Ms. for providing me with the right guidance and advice at the crucial junctures and for showing me the right way. I have many understanding friends, who have helped me a lot on many critical conditions. Finally, my sincere thanks go to my family members and all those who have directly and indirectly provided me moral support and other kind of help. Without their support, completion of this work would not have been possible in time. They keep my life filled with enjoyment and happiness.

Utkarsh Gangal

Certificate

Certified that **Utkarsh Gangal** (**University Roll No.1900290149103**), have carried out the project work having "Healthcare Management System" for Master of Computer Applications from Dr. A.P.J. Abdul Kalam Technical University (AKTU) (formerly UPTU), Technical University, Lucknow under my supervision. The project report embodies original work, and studies are carried out by the student himself/herself and the contents of the project report do not form the basis for the award of any other degree to the candidate or to anybody else from this or any other University/Institution.

| Date: | Utkarsh gangal (University Roll No. 1900290149103) |
|---|--|
| This is to certify that the above statement made by the candid Date: | late is correct to the best of my knowledge. |
| | Mr. Vipin Kumar Associate Professor Department of Computer Applications KIET Group of Institutions, Ghaziabad |
| Signature of Internal Examiner | Signature of External Examiner |

Dr. Ajay Shrivastava Head, Department of Computer Applications KIET Group of Institutions, Ghaziabad

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Abstract

"Healthcare Management System" is a web application developed to provide essential medical services online to users irrespective of their location. Users can connect through their home internet to get these services. The motivation to build the system is that very few or no doctors are available at remote locations and people have to travel a long distance to get appointment from doctors. This system provides the power of direct interaction with doctors of our choice. Using this web application, patients will able to fill online form in just few seconds and can take appointment to the doctors online without visiting them. This system reduces the manual work at Health care centers. This system provides list of doctors along with their details so that user can easily interact with the doctor of particular field or area.

The computerization of the system will help greatly in maintaining of proper information about the patients records and doctors currently available in any particular area. This will also help people to get proper healthcare support from specialist doctor

CHAPTER:-I

Introduction

Health care management system is a web application developed to assist in management of patients and providing users an easy way to take online appointments from doctors. The main aim of developing "HEALTH CARE MANAGEMENT SYSTEM" is to computerize the Tradition way of providing health services. This System is designed for people/users and doctors to provide an efficient way for their interaction. The project Healthcare Management system includes registration of patients and doctors, storing their details into the system, and also online appointment of doctors. Healthcare is a field in which accurate record keeping and communication are critical. The software has the facility to give a unique id for every patient and stores the details of every patient automatically. With the increase of demand in hospitals, we need effective data management system for handling patient(s) data, doctor(s) data and treatment details in an effective way. It deals with the collection of patient's information, diagnosis details, etc. User can search availability of a doctor and the details of their specialization field using their id.

The main intention of introducing this system is to reduce the manual work at Health centers. It would also help in the complexity of maintaining the records manually and thus less time is wasted on paperwork. The system allows doctor to register themselves and enter the details about their health center and the details about the timing at which they are available to take appointments. User can login into the System using a username and password and search doctors in particular area. To develop a Healthcare Management system, we take care of patient registration, doctor's information and timings at which the doctors are available for treatment of their patients. Admin maintains overall data in the database. The main

functions 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, doctor details, and appointment details while system output is to get these details on to the screen. Every sort of task is performed by the admin, such as registering doctors and patients, enquiries, and complaints etc. it reduces paper work and burden of file storage. Healthcare Management System is powerful, flexible, and easy to use and is designed and developed to deliver real conceivable benefits to people.

To develop a Health Center Management system, we take care of patient registration, drug information and concerns such as drug enquiries and complaints.

The current manual system is slow laborious and error prone to computerize the same for quicker efficient results and customer satisfaction

CHAPTER:-II

LITERATURE VIEW

"A heathcare Management System based on real-time data capture and intelligent decision making" Author(s): Musa, A. Lancashire Bus. Sch., Univ. of Central Lancashire, Preston, UK Yusuf, Y, Meckel.M. Systems and Informatics (ICSAI), 2012 International Conference One of the major challenges existing heathcare Management System face is around operational efficiency and wait times between different processes, departments and persons. This paper highlights such limitations of existing systems and proposes a RFID(Radio Frequency ID) and wireless sensor based, location and information management framework that facilitates real time tracking of hospital assets, personnel and patients as they move through pre-set procedures as part of daily activities of the hospitals. The system covers the visual simulation and providing ability to analyse the ongoing operations so they can be corrected to achieve increased process efficiency and service levels. b) "Study on information system of health care services management in hospital" Author(s): Daiping Hu, Antai Sch. of Manage., Shanghai Jiaotong Univ., China Weiguo Xu; Huizhang Shen; Mengyu Li. Services Systems and Services Management, 2005. Proceedings of ICSSSM '05. 2005 International Conference This paper reviews the HIS (Hospital Information Systems) which are widely used in many hospitals in China mainly to provide easier and faster way for daily medical tasks /activities with a GUI And provides for overcoming some of the limitations of HIS, eg. HIS aims at improving quality of health care services but do not have way of evaluating /measuring those. So this paper proposes HSMS (Hospital Services Management System) which aims at improving quality of services, identifying cost reduction areas,

analyses and evaluate /rate heath care services . The ability to evaluate the services facilitates hospital achieve higher Customer satisfaction scores and get a competitive edge against those hospitals which score less or use HIS and do not have ways of promoting the quality of their services. c) "Specification of a Reference Model for the Domain Layer of a Hospital Information System"Author(s): Gudrun Hübner-Blodera , Elske Ammenwertha , Birgit Brigl b , Alfred Winter b a Institute for Health Information Systems,UMIT – University for Health Sciences, Medical Informatics and Technology, Hall in Tyrol, Austria b Institute for Medical Informatics, Statistics and Epidemiology, University of Leipzig, Germany, ENMI, 2005. Many enterprise projects get scrapped due to high costs involved in initial planning requirement gathering and design phase. The costs in this phase become unmanageable due to lot of unknown factors.

CHAPTER:- III

ADVANTAGES TO BOTH END USERS & DEVELOPERS

The system is useful in various ways as the information about the patients who are taking the free services from the health center all the details are already stored in the database, so the service is done in no time. All the information about the drugs are also maintained in the database

• GOALS AND OBJECTIVES:

- 1. Service should be provided to patients in an efficient manner.
- 2. OPNO number receipt is issued instantly when patient apply for OP receipt.
- **3.** Enquiry details about the drugs are to be maintained in the proper way etc.
- **4.** Daily records are maintained such that the drugs are taken from the MAIN STORES are dispatched in the proper way.
- **5.** Each and every patient record should be maintained in systematic manner so that the searching process will be easy.

CHAPTER:- IV

SYSTEM ANALYSIS

• EXISTING SYSTEM

Under manual system, you have to first wait in line to take appointment for the doctors and wait for your time to have meet with them and discuss on your health problems. People have to face many difficulties in this situation as they have to travel long distances to take appointments and wait for long time to meet doctors. Sometimes people are unable to meet doctors because of long queue of patients waiting before them.

- ❖ In existing e-Healthcare systems has focused on record keeping and databases.
- ❖ It has also focused on access and security for recording and communicating healthcare information
- Human errors are more by exploiting electronic communication and record keeping.

PROPOSED SYSTEM

- ❖ This system aims to reduce human errors by exploiting electronic communication and record keeping, and by providing user-friendly input and output capabilities.
- ❖ Modern technology is use to expose the functionality of our e-healthcare system as Web Services based on the Service Oriented Architecture, so that both humans and applications can use the services provided.
- ❖ It provides services that involve patients, physicians, nurses and pharmacists as well as medical monitoring devices, whereas their framework focuses specifically on the use of medical monitoring devices.
- ❖ In order to overcome the drawbacks in existing system, this system has been developed for online appointment of doctors. The proposed system is a webbased application which is available all the time.
- The system consists of three actors and they are Admin, Patients or Users and Doctors, Admin are the super user that maintains overall record of patients and doctors, Users can register themselves to the system which is validated by admin and then they can access the facilities provided by system. Doctors can also register themselves to system which is further validated by admin.
- ❖ Patients can also know which doctor is best in particular field in any location which helps to get proper treatments and health support.

ADVANTAGES OF PROPOSED SYSTEM

***** Better User Interface:

The proposed system is user fri

endly because the retrieval and storing of data is fast and data is maintained efficiently. Moreover, the graphical user interface is provided in the proposed system, which provides user to deal with the system very easily.

Online appointments:

Users can easily search available doctors and take appointments online without visiting them.

***** Less paper work required:

The proposed system requires very less paper work. All the data is stored into the computer immediately. Moreover, work becomes very easy because there is no need to keep data on papers.

A Easy analysis of data:

Storing and retrieving of information is easy. This results in fast processing of data.

CHAPTER:- V

5. FEASIBILITY 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:

• 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 customized products have to be purchased.

• 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 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.

• 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.

CHAPTER:-VII

PROBLEM DEFINITION

This system is designed in the favor of solving health related problem. Under manual system, there are lots of problems because lack of information. A patient if he is unaware about any location or he does not have any knowledge regarding where is the hospital nearby to him/her and if the person does not have knowledge about the specialized doctors or hospital so in that condition situation may be in critical and it may be happen that due to lack of information regarding all these he has to suffer from colossal loss.

There may be some condition arises when the Patient have to wait in queue for longer time to take appointment of the doctors. People have to face many difficulties in this situation as they have to travel long distances to take appointments and wait for long time to meet doctors. Sometimes people are unable to meet doctors or unable to take appointment because of long queue or he/she can't reach on time due to long distance or do not know the exact time that when the booking for appointment will be going to start.

By using our "HEALTHCARE MANAGEMENT SYSTEM" a web-based application this problem will be resolved with a higher efficiency rate with the help of online appointment and information regarding nearest hospital, doctors in their locality and also info about specialized disease is easily available

"HEALTHCARE MANAGEMENT SYSTEM" web application is supremacy over traditional patterns to finding a doctor and waiting for longer period for appointments to meet a doctor. In this system we are providing easier and informative user interface.

It is a web application so the person who is suffering is able to book his appointments from a remote area. They must have an active internet connection and a basic knowledge of the computer device. In this system there the person is able to find the information about which doctor/Hospital is in his location.

There is also feedback form in which a beneficiary can give their feedback according to their own experience one more important feature is a doctor can also provide their details from a specific area so that admin is able to verify the Information and add that details to this website so that it helps more patients for their treatment in that specified area.

CHAPTER:- VIII

SYSTEM REQUIREMENTS

• 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 : Dual core and above

Processor speed : 1.4 GHz Onwards

Cache size : 512 KB

RAM : 4 GB (Minimum)

Hard disk : Minimum (50 GB)

Monitor : SVGA Color 15"

• SOFTWARE REQUIREMENTS

A major element in building a system is the section 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 allow 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.

Front end tool : JSP, HTML, CSS as scripting language

Backend : JAVA(Servlet), MY-SQL

Operating system : Windows 7-10

Client Side : HTML, CSS, JSP

IDE : Eclipse, NetBeans

• DESIGN CONSTRAINTS:

This Health Center Management System require huge resources as Hundreds of the patients will require the services instantly, quick response time are needed. The database should also be very large and robust to maintain very huge patients and drugs data.

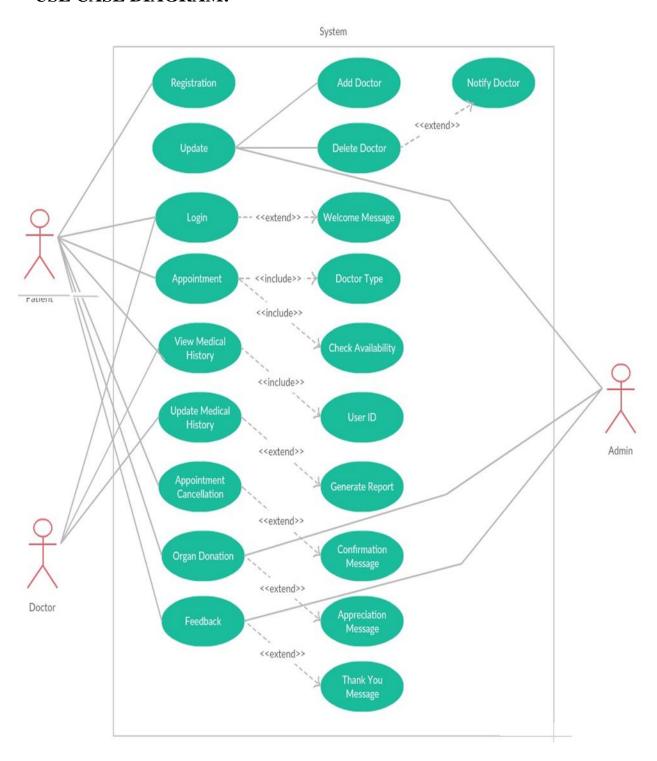
• SYSTEM FEATURES:

A distributed e-healthcare system can help solve this conundrum. Medical monitoring devices worn by the patient, and frequent electronic communication between the patient and a nurse, can ensure that the prescribed treatment is being followed and that the patient is making good progress.

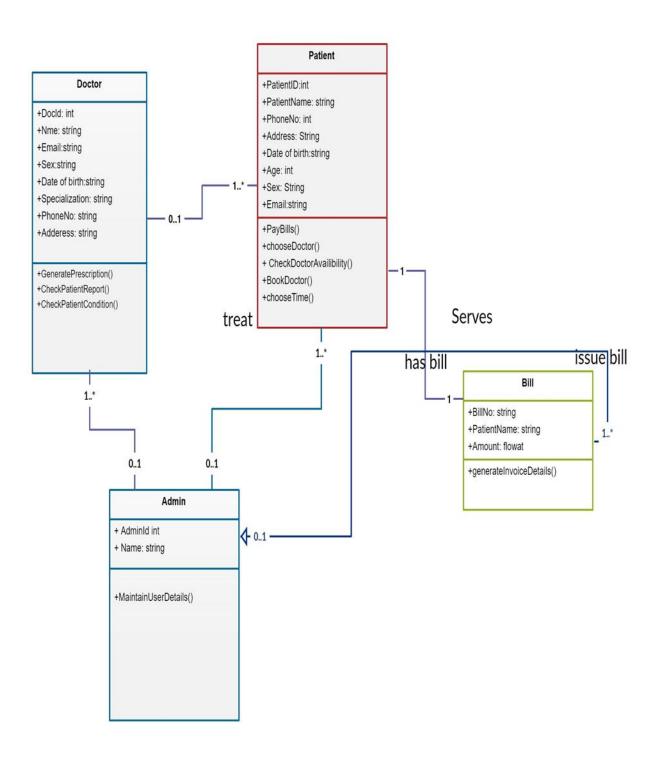
CHAPTER:- IX

SYSTEM OVERVIEW

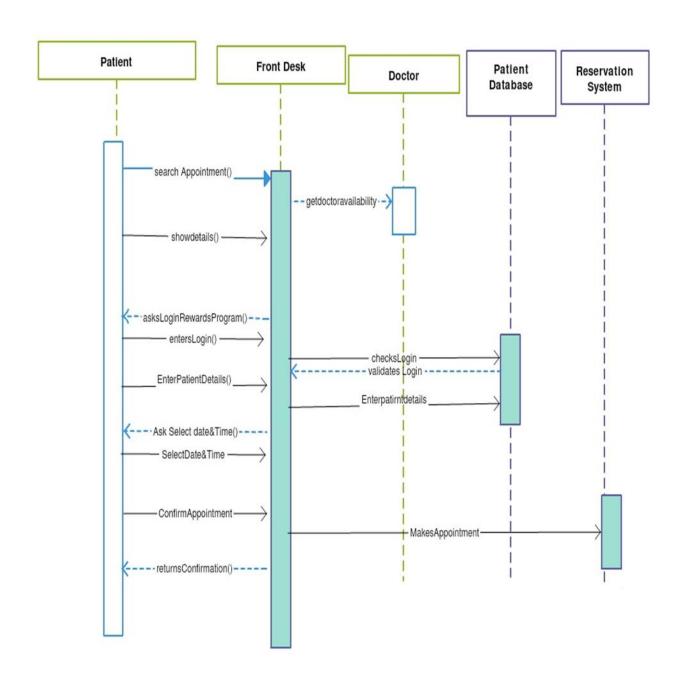
• USE CASE DIAGRAM:



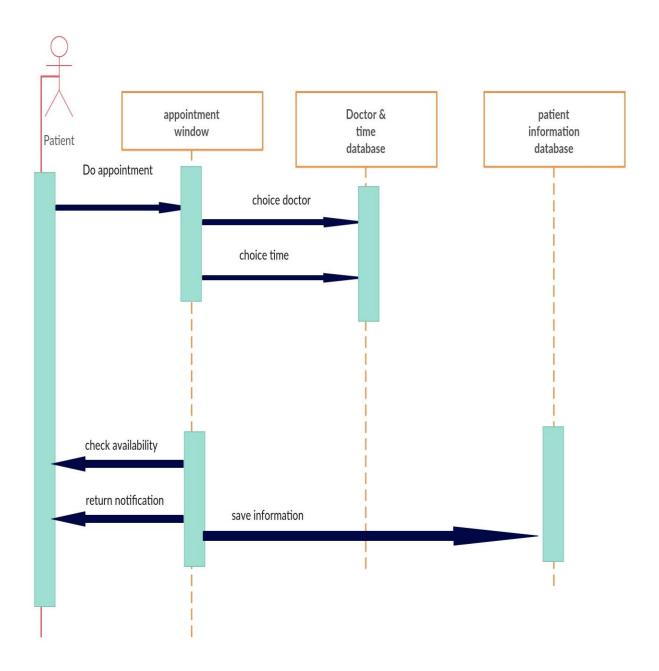
• CLASS DIAGRAM:



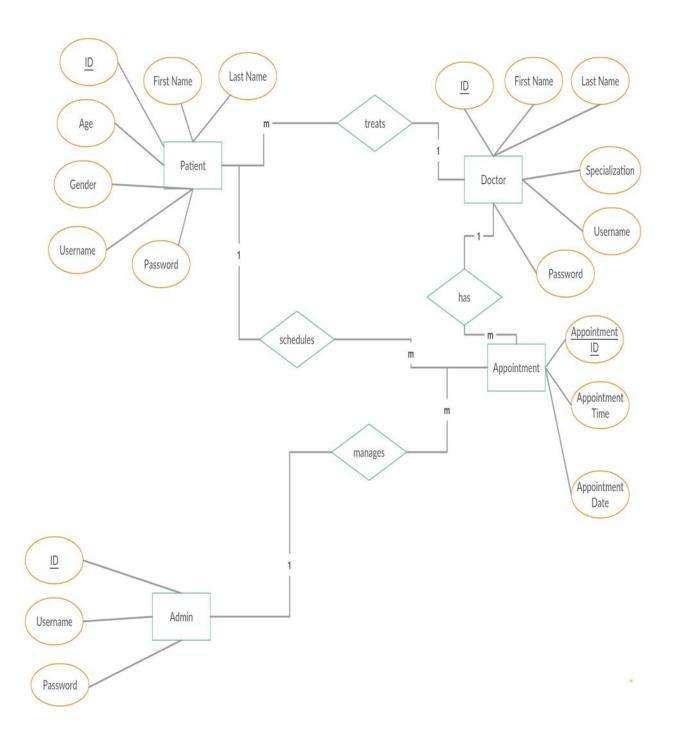
• SEQUENCE DIAGRAM (1):



• SEQUENCE DIAGRAM (2):



• ER DIAGRAM:



• USE CASE DEFINITION AND DIAGRAM:

A use case diagram at its simplest is a representation of a user's interaction with the system that shows the relationship between the user and the different use cases in which the user is involved. A use case diagram can identify the different types of users of a system and the different use cases and will often be accompanied by other types of diagrams as well. The purpose of use case diagram is to capture the dynamic aspect of a system. However, this definition is too generic to describe the purpose, as other four diagrams (activity, sequence, collaboration, and State chart) also have the same purpose. We will look into some specific purpose, which will distinguish it from other four diagrams. Use case diagrams are used to gather the requirements of a system including internal and external aspects. These requirements are mostly design requirements. Hence, when a system is analyzed to gather its functionalities, use cases are prepared and actors are identified. When the initial task is complete, use case diagrams are modelled to present the outside view.

• Purpose of Use Case Diagrams:

The purpose of use case diagram is to capture the dynamic aspect of a system. However, this definition is too generic to describe the purpose, as other four diagrams (activity, sequence, collaboration, and state chart) also have the same purpose. We will look into some specific purpose, which will distinguish it from other four diagrams.

Use case diagrams are used to gather the requirements of a system including internal and external influences. These requirements are mostly design requirements. Hence, when a system is analyzed to gather its functionalities, use cases are prepared and actors are identified.

When the initial task is complete, use case diagrams are modelled to present the outside view.

In brief, the purposes of use case diagrams can be said to be as follows –

- **\$** Used to gather the requirements of a system.
- ❖ Used to get an outside view of a system.
- ❖ Identify the external and internal factors influencing the system.
- Use case Symbols:
- ❖ Shows the interaction among the actors of system



Actor specifies a role played by a user or any other system that interacts with the subject.

Use case is a list of steps, typically defining interactions between an actor and a system, to achieve a goal.



❖ Package is used to group elements, and to provide a namespace for the grouped elements.



❖ Objects are model elements that represent instances of a class or of classes.



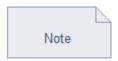
❖ Interfaces are model elements that define sets of operations that other model elements, such as classes, or components must implement.



❖ Constraint is an extension mechanism that enables you to refine the semantics of a UML model element.



* Note: contains comments or textual information.



CHAPTER:-X

MODULE DESCRIPTION

• MODULE DESCRIPTION:

The system is proposed to have the following modules along with the functional requirements.

• ADMINISTRATOR MODULE:

Administrator should login with email id and password to maintain and update all details of system. Administrator can add or delete doctors in system. Administrator is responsible for verifying doctor credentials before adding them in system. Administrator is also responsible for maintaining all patient and doctor records. Administrator can view all doctors, patients and also feedback provided by the patients using the system.

• DOCTOR MODULE:

A doctor must register with the system through admin. Doctors can manage or update their profiles. Doctors can view their current appointments to patients, e-prescriptions, and view patient's history. Doctor can also cancel any appointment of their patients.

• APPOINTMENT & FEEDBACK MODULE:

***** APPOINTMENT:

module allows patients to search doctors in the particular location and book appointments to them. Patients can also view their previous appointments records.

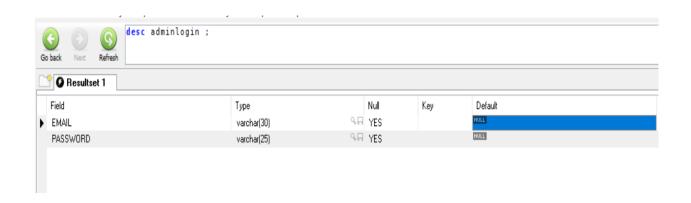
***** FEEDBACK:

module allows patients to send their feedback to system so that admin can improve system according to feedbacks received.

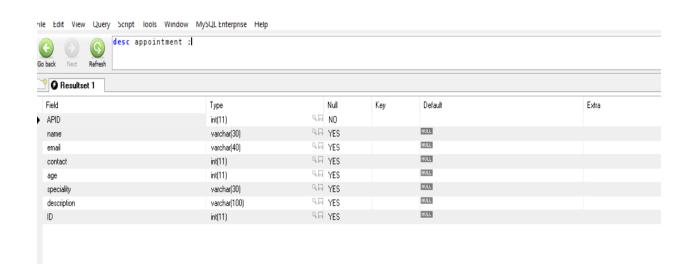
CHAPTER:- XI

DATABASE STRUCTURE

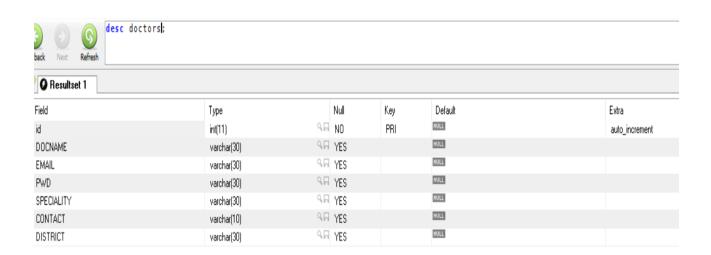
• ADMIN LOGIN:



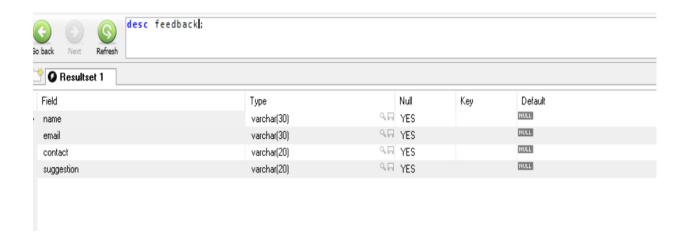
• APPOINTMENT:



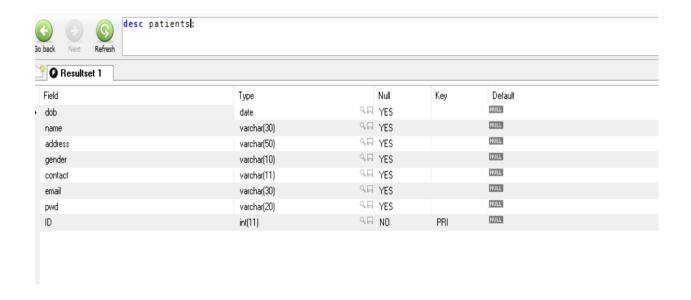
• DOCTOR:



• FEEDBACK:



• PATIENTS:



CHAPTER:- XII

SYSTEM IMPLEMENTATION AND TESTING

• SYSTEM IMPLEMENTATION:

Implementation is the stage in the project where the theoretical design is turned into a working system and is giving confidence on the new system for the users that it will work efficiently and effectively. It involves careful planning, investigation of the current system and its constraints on implementation, design of methods to achieve the changeover, an evaluation of change over methods.

Apart from planning major task of preparing the implementation are education and training of users. The implementation process begins with preparing a plan for the implementation of the system. According to this plan, the activities are to be carried out, discussions made regarding the equipment and resources and the additional equipment has to be acquired to implement the new system. In network backup system no additional resources are needed. Implementation is the final and the most important phase. The most critical stage in achieving a successful new system is giving the users confidence that the new system will work and be effective. The system can be implemented only after thorough testing is done and if it is found to be working according to the specification. This method also offers the greatest security since the old system can take over the errors are found or inability to handle certain type of transactions while using the new system.

• 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.

• UNIT TESTING:

The software units in the system 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 action as required.

• INTEGRATION TESTING:

Data can be lost across any interface, one module can have an adverse effect on another, sub functions when combined, may not produce the desired major functions. Integration testing is a systematic testing to discover errors associated within the interface. The objective is to take unit tested modules and build a program structure. All the modules are combined and tested as a whole. Here the

admin module, doctor module and patient module options are integrated and tested. This testing provides the assurance that the application is well integrated functional unit with smooth transition of data.

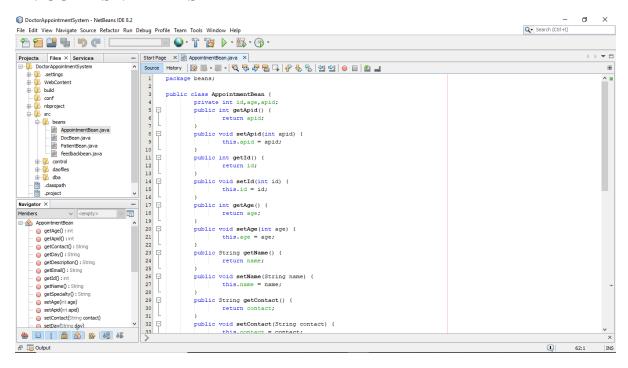
• VALIDATION TESTING:

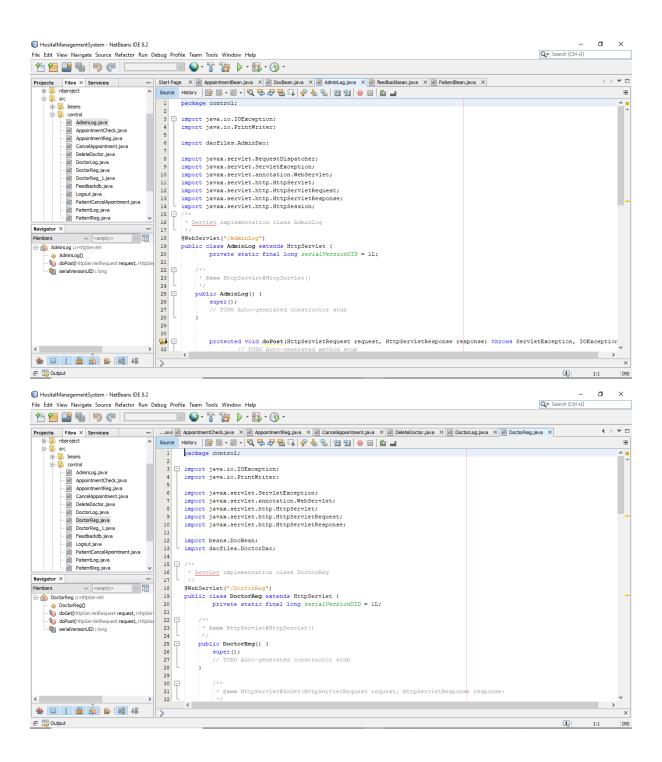
The process of evaluating software during the development process or at the end of the development process to determine whether it satisfies specified business requirements. Testing ensures that the product actually meets the client's needs. It can also be defined as to demonstrate that the product fulfills its intended use when deployed on appropriate environment.

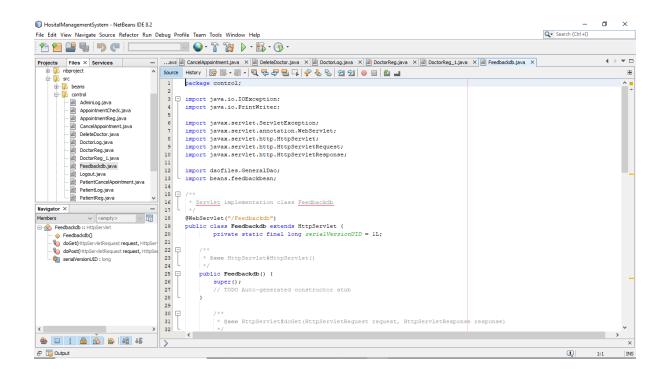
- ❖ Validation is the process of evaluating software at the end of the development process to determine whether software meets the customer expectations and requirements.
- ***** Execution of code is coming under Validation.
- ❖ Validation activity is carried out just after the Verification.
- ❖ It determines whether the software is fit for use and satisfies the business need.
- Includes all the dynamic testing techniques.
- ❖ It is basically checking of developed program based on the requirement specifications documents & files.

CHAPTER:- XIII

12. CODE SNIIPPETS



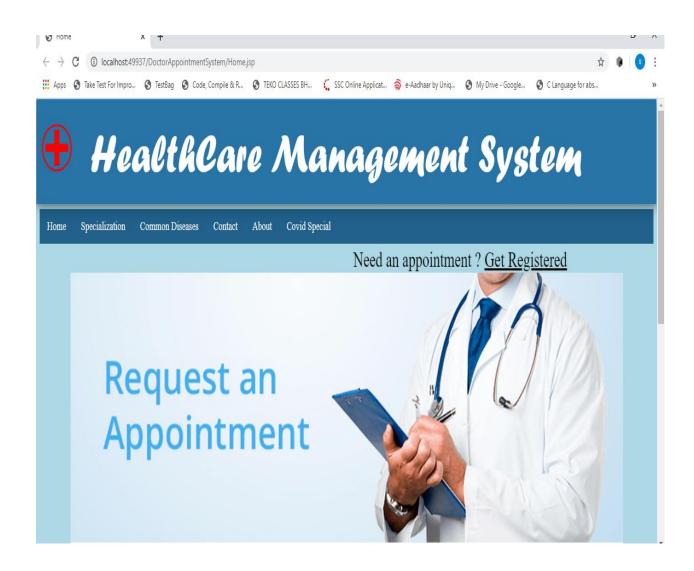




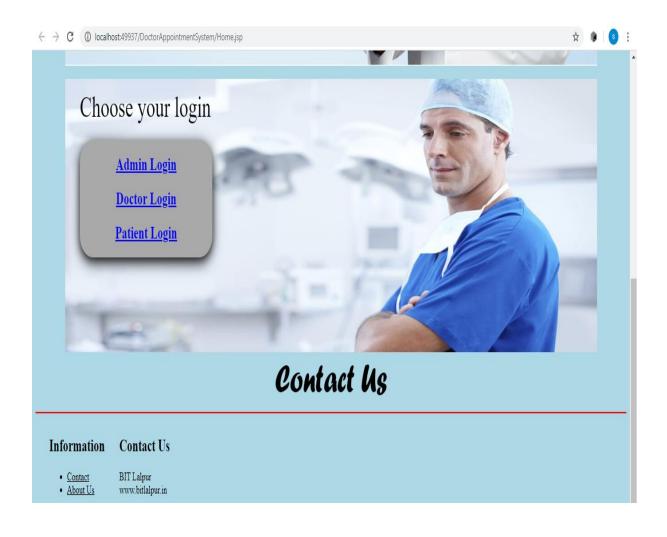
CHAPTER:- XIV

SCREENSHOTS

• HOMEPAGE:



• ADMIN HOMEPAGE:



• DOCTOR DETAILS:



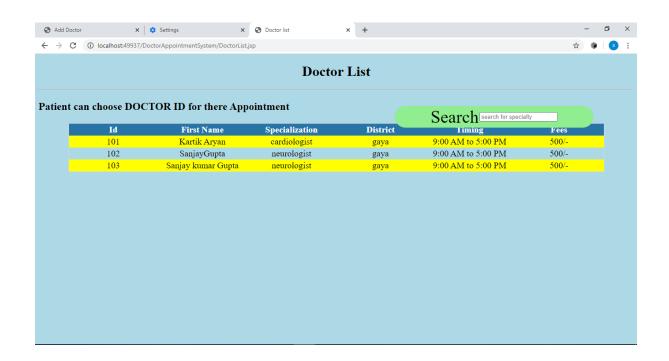
• DOCTOR LOGIN:



• DOCTOR HOMEPAGE:



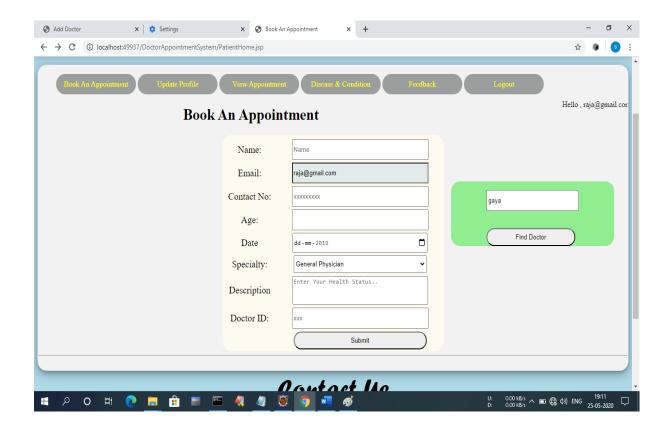
• DOCTOR LIST:



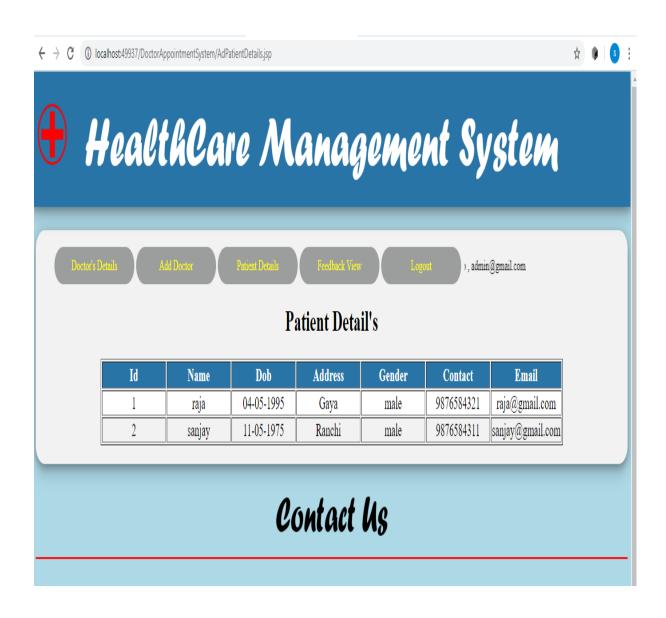
• PATIENT HOMEPAGE:



• BOOK AN APPOINTMENT:



• PATIENT DETAILS:



• ABOUT:



• COMMON DISEASE:



CHAPTER:- XV

CONCLUSION

The whole systems activities are divided into three major parts like patients, doctors, and admin. Each one has their own role to perform and system respond accordingly. Several agents have been created using web services and inter agent communication is done. Ontologies in form of xml are used for storing information. Different ontologies have been created for different purpose. For implementing the system .Net technologies like ASP.Net, C#, jQuery, Ajax, CSS are used. Current Dialog patient conversation and News part are dynamic and it is a part of Content Management System (CMS). Some parts used CMS concept and works exactly like them. In CMS also xml files are used for managing the states and information. In this system ontology plays similar role.

The system comprises of following features:

- Management of Doctors
- Management of Patients
- Management of Schedules of Doctor

- Management of Patients Appointments
- Management of Patient Doctor Dialogs

- Services supported by hospitals
- Managing Reports
- Feedbacks Management
- Inquiry Management
- Specialty Management
- Searching Information
- Managing useful information in form of News
- Management of Patient's previous visit and its information

CHAPTER:- XVI

FUTURE SCOPE

There are also few features which can be integrated with this system to make it more flexible. Below list shows the future points to be consider.

- Directly getting the images for CT Scan or X-Rays from connected device
- Mapped with Insurance Companies for claim processing
- Billing of patient
- Blood Bank Information Management
- Producing ECG using connected device
- Video Conferencing facility for remote areas for treatments
- Hangout for different doctors and patients at different locations

CHAPTER:-XVII

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