iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 10 **Issue:** VI **Month of publication:** June 2022

DOI: https://doi.org/10.22214/ijraset.2022.43686

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue VI June 2022- Available at www.ijraset.com

Advanced Hospital Management System

Rohit Gopal Misal[1], Mujahid Ramzan Sanaafrin[2], Lakhan Baban Bagade[3], Mrunal Rahul Gadade[4], Subhanali Shaikh Sayyad[5]
[1, 2, 3, 4, 5]*Department of Computer Science Engineering, SBERCT's BIT Barshi*

Abstract: ***Advanced Hospital Management System provides the benefits of streamlined operations, enhanced administration & control, superior patient care, strict cost control and improved profitability. IHMS is powerful, flexible, and easy to use and is designed and developed to deliver real conceivable benefits to hospitals. More importantly it is backed by reliable and dependable support. The project 'Advanced Hospital Management System' is based on the database, object oriented and networking techniques. As there are many areas where we keep the records in database for which we are using MY SQL software which is one of the best and the easiest software to keep our information. This project uses JAVA as the front-end software which is an Object-Oriented Programming and has connectivity with MY SQL. Advanced Hospital Management System is custom built to meet the specific requirement of the mid and large size hospitals across the globe. All the required modules and features have been particularly built to just fit in to your requirement This package has been widely accepted by the clients in India and overseas. Not stopping only to this but they are highly satisfied and appreciating. Entire application is web based and built on 3 tier architecture using the latest technologies. The sound database of the application makes it more users friendly and expandable. The package is highly customizable and can be modified as per the needs and requirements of our clients. Prolonged study of the functionalities of the hospital and its specific requirement has given it a wonderful shape both technically and usability wise. It covers all the required modules right from Patient Registration, Medicine details, Doctor, Wards, , Admin, Store, Patient appointment, bill payment, record modification, discharge details etc.***

I. INTRODUCTION

The project Advanced 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 Advanced 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. Advanced Hospital Management System is powerful, flexible, and easy to use and is designed and developed to deliver real conceivable benefits to hospitals. Advanced Hospital Management System is designed for multispecialty hospitals, to cover a wide range of hospital administration and management processes. It is an integrated end-to-end Advanced 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. Advanced 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. Advanced Hospital Management System enables you to develop your organization and improve its effectiveness and quality of work. Human Body is a very complex and sophisticated structure and comprises of millions of functions. All these complicated functions have been understood by man him, pan-by-pan their research and experiments. As science and technology progressed, medicine became an integral Wt of the research. Gradually, medical science became an entirely new branch of science. As of today, the Health Sector comprises of medical institutions i.e., Hospitals, HOSPITALs etc. research and development institutions and medical colleges. Thus, the Health sector aims at providing the best medical facilities to the common man Managing the key processes efficiently is critical to the success of the hospital helps you manage your processes.

A. Detailed Problem Definition

Since Hospital is associated with the lives of common people and their day-to-day routines so I decided to work on this project.
The manual handling of the record is time consuming and highly prone to error. The purpose of this project is to automate or make online, the process of day-to-day activities like Room activities, Admission of New Patient, Discharge of Patient, Assign a Doctor, and finally compute the bill etc.

©IJRASET: All Rights are Reserved

I have tried my best to make the complicated process Advanced Hospital Management System as simple as possible using Structured & Modular technique & Menu oriented interface. I have tried to design the software in such a way that user may not have any difficulty in using this package & funher expansion is possible without much effort. Even though I cannot claim that this work to be entirely exhaustive, the main purpose of my exercise is perform each Hospital's activity In computerized way rather than manually which is time consuming.

I am confident that this software package can be readily used by non-programming personal avoiding human handled chance of error.

B. *Justification of the Problem*

1) *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 inconvenience and wastage of time.
2) *Lack of Immediate Information Storage:* The information generated by various transactions takes time and efforts to be stored at right places.
3) *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.
4) *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.

C. *Objective*

Hospital is the essential part of our lives, providing best medical facilities to people suffering from various ailments, which may be due to change in climatic conditions, increased work-load, emotional trauma stress etc. It is necessary for the hospitals to keep track of its day-to-day activities & records of its patients, doctors, nurses, ward boys and other staff personals that keep the hospital running ^{o} smoothly & successfully.

But keeping track of all the activities and their records on paper is very cumbersome and tenor prone. It also is very inefficient and a time-consuming process Observing the continuous increase in population and number of people visiting the hospital. Recording and maintaining all these records is highly unreliable, inefficient and error-prone. I t is also not economically & technically feasible to maintain these records on paper.

Thus, keeping the working of the manual system as the basis of our project. We have developed an automated version of the manual system, named as "Administration support system for medical institutions".

The main aim of our project is to provide a paper-less hospital up to 90%. It also aims at providing low-cost reliable automation of the existing systems. The system also provides excellent security of data at every level of user-system interaction and also provides robust & reliable storage and backup facilities.

D. *Advantages*

The software helps to handle the entire administration of hospitals and healthcare facilities. Typically, such a software includes various modules that help doctors manage their assignments and schedules, carry out patient registration, maintain store inventory records, keep track of medicine, administration, maintain blood bank (with available blood type) details, individual record of patients with their test reports, nursing and housekeeping service details, financial information, including final billing & payments, insurance details and much more.

After the customized software is implemented and integrated into the system, patient care and hospital administration become an easy job.

E. *Scope*

The proposed software product is the Advanced Hospital Management System (HMS). The system will be used in any hospital, clinic, dispensary or pathology labs. Clinic, dispensary or pathology to get the information from the patients and then storing that data for future usages.

The current system in use is a paper-based system. It is too slow and cannot provide updated lists of patients within reasonable timeframe. The intention of the system is to reduce over-time pay and increase the number of patients that can be treated accurately. Requirement statements in these documents are both functional and non-functional.

F. Base Paper

1) *Hospital Management System using Web Technology:* Today's web-based technology offers many online services in almost every field. Every major industry is converting and establishing a digital front for all their major operations to get closer to the booming digital market. In today's world the information flow is very fast and redundant means won't add to the betterment of the individual or the organization that's using them. Online connectivity is now a must for all the well organized and well managed establishments
2) *Hospital Management System:* The study is important to the hospital patients since they could have medical information without experiencing delays and incorrect information. If they wanted to access their medical history, they would not be going through a difficult process. The hospital especially the pharmacy and billing department would not go through a lot of paper reports when it comes to payments and accounting records. The use of paper would still be there but it could be reduced so that excessive paper loads would not be a problem
3) *Hospital Management System (IHMS):* An Advanced hospital information management system was developed to assist the patient at the front desk of a hospital. The patient will be able to learn about the doctors, appointment times, relevant departments, laboratory tests and the specific medicine about his/her medical situation. System will provide an Advanced front desk information service for the patients at the hospital entrance. It will also provide software assistance for the doctors to diagnose easily and rapidly by using the program's decision mechanism.

II. ANALYSIS

A. Project Plan

Project planning is part of project management, which relates to the use of schedules such as Gantt charts to plan and subsequently repolt progress within the project environment. Initially, the project scope is defined and the appropriate methods for completing the project are determined. Following this step, the durations for the various tasks necessary to complete the work are listed and grouped into a work breakdown structure. The logical dependencies between tasks are defined using an activity network diagram that enables identification of the critical path.

1) *Methodology:* We have used Iterative and Incremental Development model (IID) for our project development. This development approach is also referred to as Iterative Waterfall Development approach. Iterative and Incremental Development is a software development process developed in response to the more traditional waterfall model. This model is designed to take care of such big project. The large and complicate project chiefly demand better development and testing procedure. The waterfall model is well known for its repeated testing process. Hence, I choose the waterfall model for developing my software.

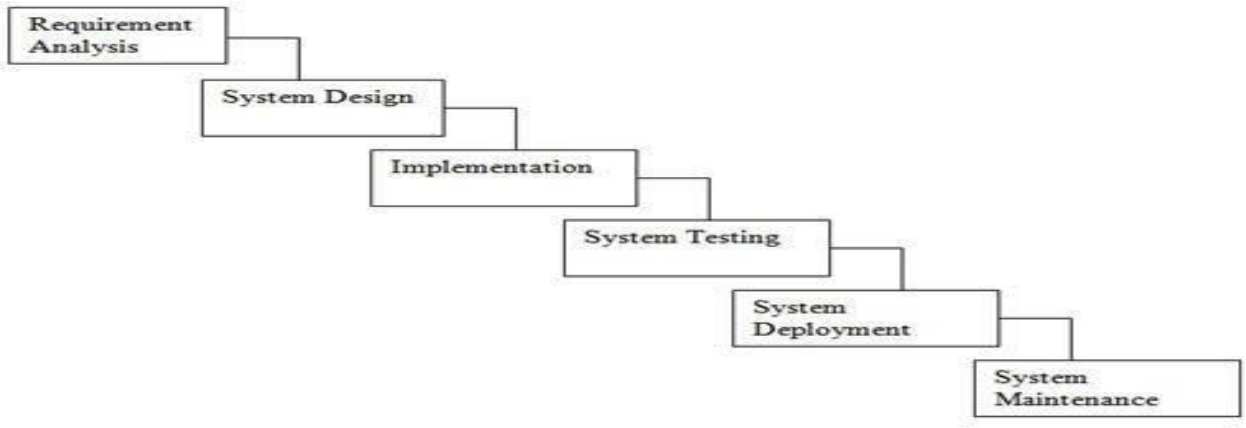


Fig. 2.1: Waterfall model

Some advantages of waterfall model:

- o Simple and easy to understand and use.
- o Easy to manage due to the rigidity of the model.
- o Phases are processed and completed one at a time o Works well for smaller projects where requirements are very well understood.

2) *Project Management Life Cycle:* The Project Management Life Cycle has four phases. Each project life cycle phase is described along with the tasks need to complete it

The four phases are

a) Initiation
b) Planning
c) Execution
d) Closure.

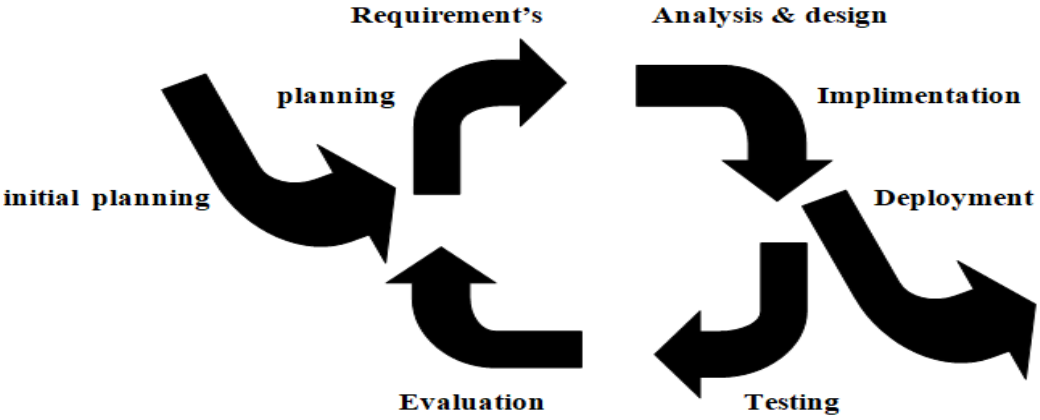


Fig 2.2 Intrative and incremental life cycle

3) *Project Plan:* Once we examine that the project is feasible, I undertake project planning. The table below describes how we planned my project.

Table 2.1 Project Plan

1	Task Name	Duration	Start	Finish
2	Planning	31 days	11/01/22	11/02/22
3	Design	28 days	12/02/22	12/03/22
4	Coding	29 days	13/03/22	13/04/22
5	Delivery	7 days	14/04/22	20/05/22

4) *Schedule Representation:* Scheduling the project tasks is an important project planning activity. It involves deciding which tasks would be taken up when. In order to schedule the project activities, a software project manager needs to do the following these rules

Gantt chart:

week	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Planning														
Design														
Coding														
Testing														
Delivery														

Fig. 2.3: Gantt chart

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue VI June 2022- Available at www.ijraset.com

B. Risk Management

Software Risk Management is a proactive approach for minimizing the uncertainty and potential loss associated with a project. Some categories of risk include product size, business impact, customerrelated, process, technology, development environment, staffing (size and experience), schedule, and cost. Risk Management is a practice with processes, methods, and tools for managing risks in a project. Risk identification is a systematic attempt to specify threats to the project plan. By identifying known and predictable risks, we can take a first step toward avoiding them when possible and controlling them, when necessary, to perform the risk identification, we categorized the risk into different categories as:

1) Technical Risk
2) Business Risk
3) Known Risk
4) Predictable Risk
5) Unpredictable
6) Project Risk

C. Background Study

System Analysis is a separation of a substance into pans for study and their Implementation and detailed examination.

Before designs any system, it is important that the nature of the business and the way it currently operates are clearly understood. The detailed examination provides the specific data required during designing in order to ensure that all the client's requirements are fulfilled. The investigation or the study conducted during the analysis phase is largely based on the feasibility study. Rather it would not be wrong to say that the analysis and feasibility phases overlap. High-level analysis begins during the feasibility study. Though analysis is represented as one phase of the system development life cycle (SDLC), this is not use. Analysis begins with system initialization and continues until its maintenance, even after successful implementation of the system, analysis may play its role for periodic maintenance and up gradation of the system. One of the main causes of project failures is inadequate understanding, and one of the main causes of inadequate understanding of the requirements is the poor planning of system analysis

D. Software Quality Attribute

1) *Reliability:* This application is a reliable product that produces fast & verified output of all its process.
2) *Availability:* This application will be available to use and help them to carry their operations conveniently.
3) *Security:* This application will be designed in a maintainable manner. It will be easy to incorporate new requirements in the individual modules.

E. Scope of Working

The proposed software product is the Advanced Hospital Management System (HMS). The system will be used in any hospital, clinic, dispensary or pathology labs. Clinic, dispensary or pathology to get the information from the patients and then storing that data for future usages, The current system 111 use is a paper-based system. It is too slow and cannot provide updated lists of patients within reasonable timeframe. The intention of the system is to reduce over-time pay and increase the number of patients that can be treated accurately. Requirement statement in these documents are both functional and non-functional.

F. Feasibility

1) *Technical Feasibility:* This is concerned with specifying equipment and software that will successfully satisfy the user requirement; the technical needs of the system may vary considerably, but might include:

The facility to produce outputs in a given time:

a) Response time under conditions.
b) Ability to process a certain volume of transaction at a particular seep.
c) Facility to communicate data to distant location.
2) Operational Feasibility: It is mainly related to human organization and political aspects. The points to be considered are:
a) What changes will be brought with the system?
b) What organizational structures are distributed?
c) What new skills will be required? Do the existing staff members have these skills? If not, can then the trained due course of time

©IJRASET: All Rights are Reserved

3) *Economic Feasibility:* Economic analysis is the most frequently used technique for evaluating the effectiveness of a proposed system. More frequently known as cost/benefit system and compare them with costs. If benefits outweigh costs, a decision is taken to design and implement the system.
4) *Management Feasibility:* It is a determination of whether a proposed project will be acceptable to management. If does not accept a project of gives a negligible support to it; the analyst will tend to view the project as a no feasible one.
5) *Social Feasibility:* Social feasibility is a determination of whether the project will be acceptable to the people or not. This determination typically examines the probability of the project accepted by the group directly affected by the proposed system change.

III. DESIGN

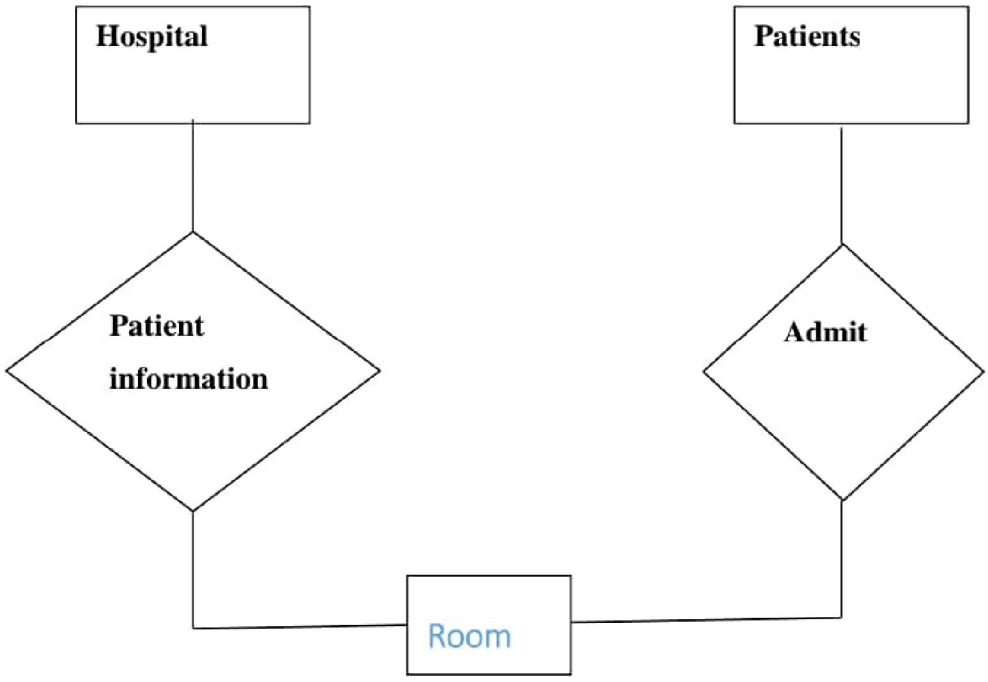
A. *Database Design*

Database design is the process of producing a detailed data model of database. This data model contains all the need logical and physical design choices and physical storage parameters needed to generate a design in a data definition language, which can then be used to create a database. A fully attributed data model contains detailed attributes for each entity.

The term database design can be used to describe many different parts of the design of an overall database system. Principally, and most correctly, it can be thought of as the logical design of the base data structure used to store the data. In the relational model these are the tables and views. In an object database the entities and relationships map directly to object classes and named relationships. However, the term database design could also be used to apply to the overall process of designing, not just the base data structure, but also the forms and queries used as part of the overall database application within the database management system.

B. *E-R Diagram of Advanced Hospital Management System*

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



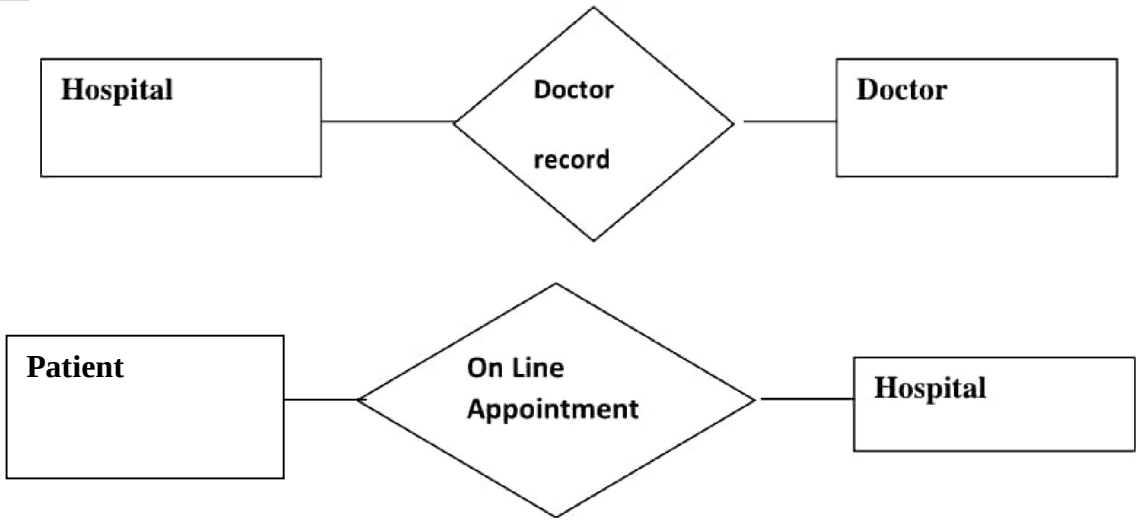


Fig. 4.1: E-R Diagram of Online Marketplace

C. Database Schema of Advanced Hospital Management System

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

1) *Physical Database Schema:* This schema pertains to the actual storage of data and its form of storage like files, indices, etc. It defines how the data will be stored in a secondary storage.
2) *Logical Database Schema:* This schema defines all the logical constraints that need to be applied on the data stored. It defines tables, views, and integrity constraints.
3) *List of Tables:*

a) Admin
b) Users
c) Patients
d) Physician
e) Services
f) Transactions
g) User details
h) Room
i) Discounts
j) Appointment ll. Doctors
k) Doctor specialization.

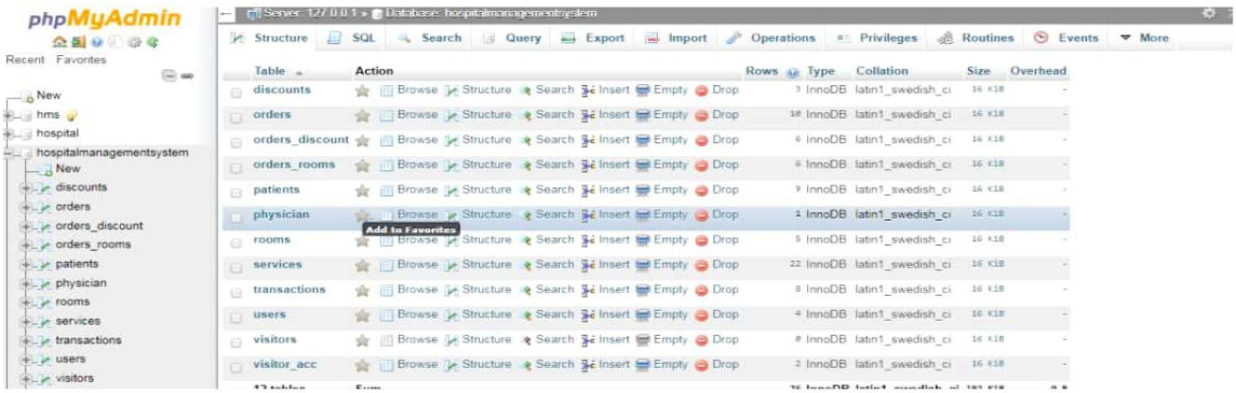
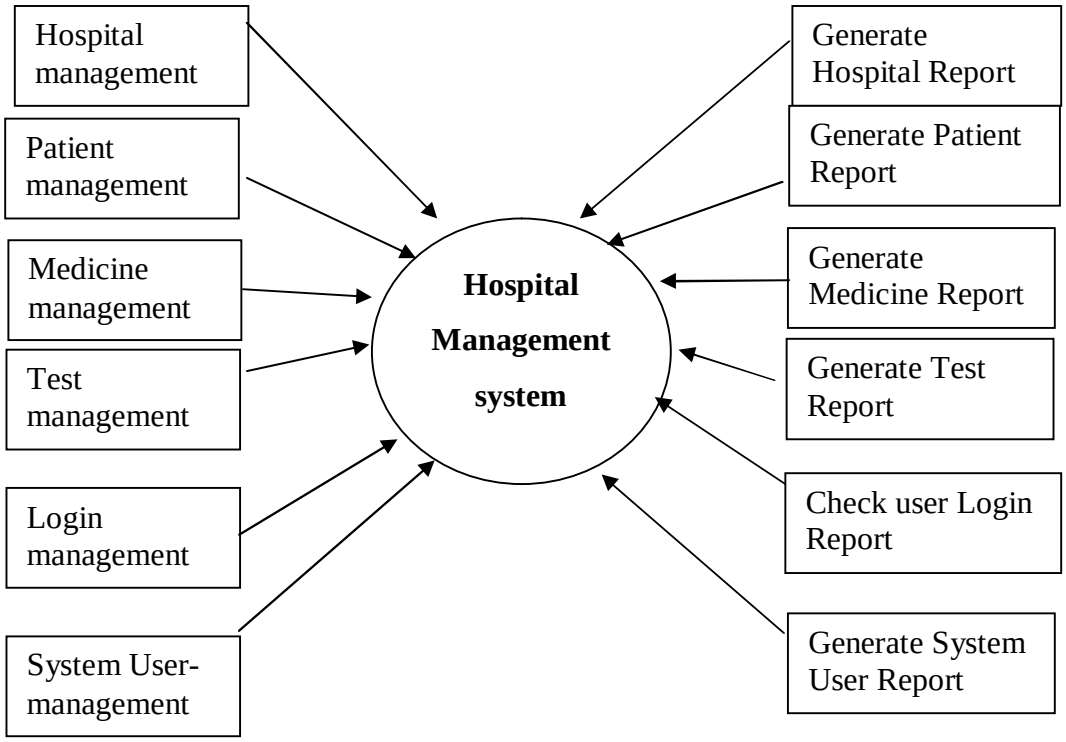


Fig.4.2: Database schema of Online Marketplace

D. Data Flow Diagram of Advanced Hospital Management System

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 - Advanced Hospital Management System

Fig. 4.3: Data flow diagram of online marketplace

IV. CODING

A. Software Used

1) Php My Admin
2) Xampp
3) Windows 7+

B. Hardware Specifications

COMPONENT	MINIMUM REQUIREMENT
Processor	64-bit, four-core, 2.5 GHz minimum per core
RAM	4 GB for developer or evaluation use
Hard disk	80 B

E. Programming Languages

1) *PHP:* PHP is a general-purpose scripting language geared toward web development.
2) *MySQL:* MySQL is an open-source relational database management system.
3) *HTML:* The Hypertext Markup Language or HTML is the standard markup language for documents designed to be displayed in a web browser.
4) *Java Script:* JavaScript, often abbreviated JS, is a programming language that is one of the core technologies of the World Wide Web, alongside HTML and CSS. Over 97% of websites use JavaScript on the client side for web page behavior,
5) *CSS:* Cascading Style Sheets is a style sheet language used for describing the presentation of a document written in a markup language such as HTML.

V. SYSTEM IMPLEMENTATION

A. Implementation

Implementation is the process of having system personal check out and provides new equipment's into use, train the user to install a new application and construct any files of data needed to use it. There are three types of implementations. Implementation of computer system to replace a manual system.

To problem encountered are covering files, training user, creating accurate files and verifying print outs for integrity. Implementation of a new computer system to replace an existing one. This is usually difficult conversion. If not properly planned, there can be many problems.

So large computer system many take as long as a year to convert. Implementation of a modified application to replace the existing one using the same computer. This type of conversing is relatively easy to handle, usually there are no major change in the file. Our project is yet to be implemented.

B. 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.

C. Functional Requirement

This system interface is divided into two section

1) *Administrator Interface*

a) Administrator can delete any post.
b) Administrator can verify user account.

2) *User Interface*

a) User can browse all ads without any account.
b) For post an ad needs to create an account
c) User can update/edit their own account.
d) Log in and log out system.
e) To create a new account user must be needs to verify his email with verification code.
f) If any user forgets his/her password he/she can recovery his account with verify his email and create a new password.

VI. SYSTEM TESTING

A. Integration 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. It is crucial to test each modules effect on the entire program model. After integration testing the project works successfully.

B. Unit Testing

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

C. System Testing

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

D. Acceptance Testing

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

E. Recovery Testing

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

F. Functional Testing

Functional Testing also known as functional completeness testing. Functional Testing involves trying to think of any possible missing functions. Testers might make a list of additional functionalities that a product could to improve it during functional testing.

G. Hardware/Software Testing

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.

H. Security 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

VII. CONCLUSIONS

This project has been a rewarding experience in more than one way. The entire project work has enlightened us in the following areas.

1) We have gained an insight into the working of the HOSPITAL. This represents a typical real-world situation.
2) Our understanding of database design has been strengthened this is because in order to generate the final reports of database designing has to be properly followed.
3) Scheduling a project and adhering to that schedule creates a strong sense of time management.
4) Sense of teamwork has developed and confidence of handling real life project has increased to a great extent.
5) Initially, there were problem with the validation but with discussions, we were to implement validations.

A. Limitations of the System

1) Online payment is not available at this version.
2) Data delete & edit system is not available for all section.
3) Loss of data due to mismanagement.

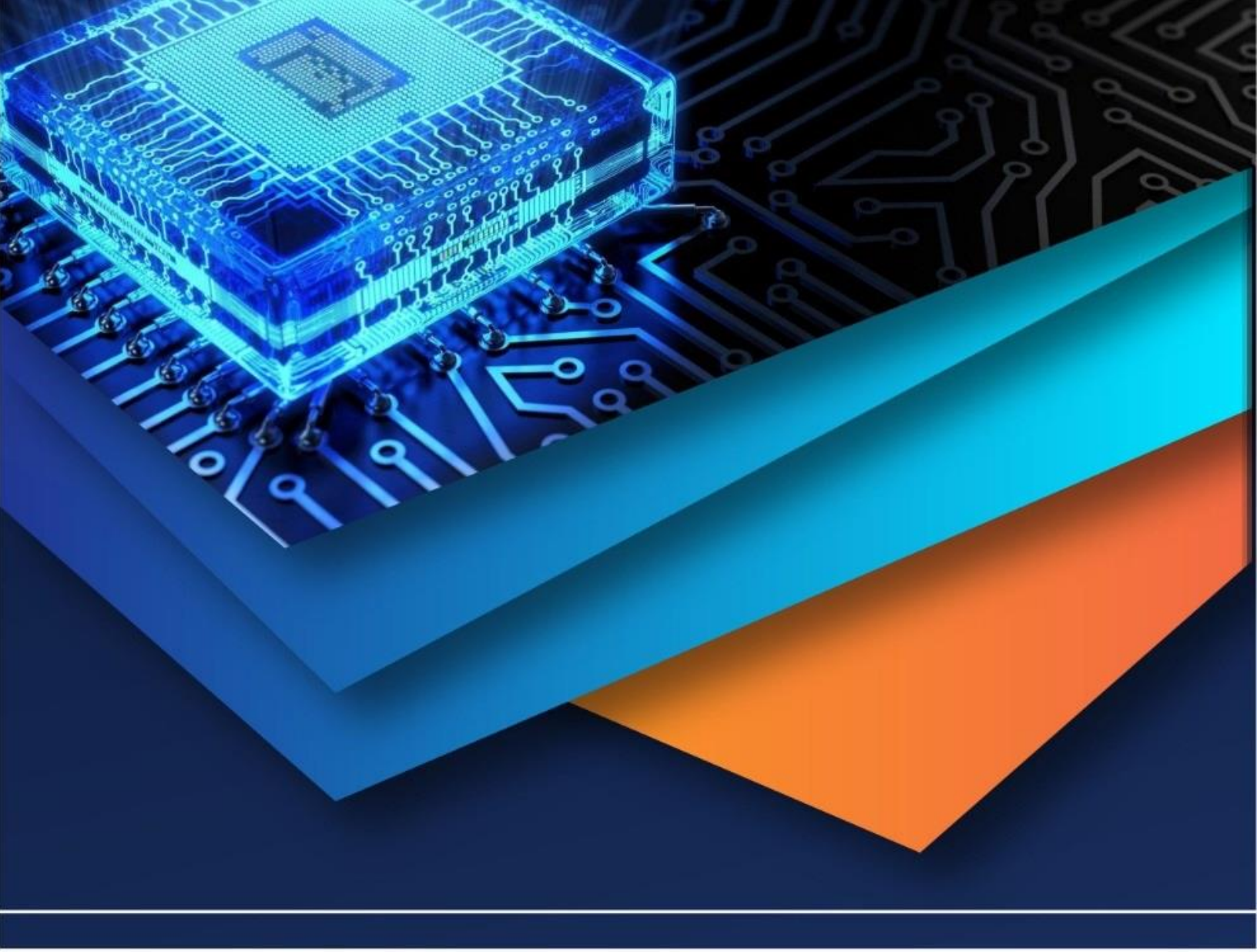
B. Future Plan

1) Diagnostics billing system.

REFERENCES

[1] Deepak Thomas "Beginning PHP 4 Databases", Worx Press Ltd. Paperback-17, October, 2002.70-130 pp.
[2] Matt Doyle, "Beginning PHP 5.3, 2nd edition", October 2009. 150-270 pp.
[3] Luke Welling, Laura Thomson. Sam's PHP and MySQL Web Development, 2nd edition, Paperback- 20 February, 2003. 105-209 pp.

[4] W. Jason Gilmore "Beginning PHP 5 and MySQL 5 from Novice to Professional SECOND EDITION", Jul 9, 2008.100-150 pp.
[5] Abraham Silber Schatz, Henry F. Korte and S. Sudarshan "Sixth Edition Database System Concepts released", January 28, 2010. 206-253 pp.
[6] Server-Side Scriptinghttp://php.net/manual/en/index.php, Last accessed on 12/15/2017at 2:33pm
[7] HTML &CSS https://www.w3schools.com/
[8] Bootstraphttp://getbootstrap.com/
[9] https://stackoverflow.com/
[10] https://www.youtube.com/
[11] https://en.wikipedia.org/



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)