



**Dr. Virendra Swarup Institute of Computer Studies**

(An Institute of Computer Application & Management)

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*Synopsis On*

## **HOSPITAL MANAGEMENT SYSTEM**

**Submitted to:**

Mr. Anshu Batham

Project Head (BCA Dept )

**Submitted by:**

**Name:** Aviral Shukla

**Roll no :** 0903372

**Sem:** BCA 5<sup>th</sup> Sem

**Sec:** E

## EXECUTIVE SUMMARY

- Hospital Management System provides the benefits of streamlined operations, enhanced administration & control, superior patient care, strict cost control and improved profitability. HMS 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 '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.
- 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.

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## **INTRODUCTION TO THE STUDY**

### **● Introduction:**

● Human Body is a very complex and sophisticated structure and comprises of millions of functions. All these complicated functions have been understood by man him, part-by-part their research and experiments. As science and technology progressed, medicine became an integral part of the research. Gradually, medical science became an entirely new branch of science. As of today, the Health Sector comprises of Medical institutions i.e. Hospitals, HOSPITALS etc. research and development institutions and medical colleges. Thus, the Health sector aims at providing the best medical facilities to the common man. Still being a developing nation India has seen a tremendous growth of the Health sector in the field of research as well as in the field of development of numerous large- and small-scale Hospital institutions still lacking in inter-structure facilities. Government of India has still aimed at providing medical facilities by establishing hospital. The basic working of various hospitals in India is still on paper as compared to hospitals in European countries where computers have been put in to assist the hospital personals their work. The concept of automation of the administration and management of hospital is now being implemented in India also, with large hospitals like APPOLLO and AIIMS in Delhi, ESCORTS in Chennai, having automated their existing system.

## DEFINITION OF PROBLEM:

Since HOSPITAL is associated with the lives of common people and their day-to-day routines so I decided to work on this project.

- The manual handling of the record is time consuming and highly prone to error. The purpose of this project is to automate or make online, the process of day-to-day activities like Room activities, Admission of New Patient, Discharge of Patient, Assign a Doctor, and finally compute the bill etc.

I have tried my best to make the complicated process **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 & further expansion is possible without much effort. Even though I cannot claim that this work to be entirely exhaustive, the main purpose of my exercise is

### **DRAWBACKS OF CURRENT MANUAL- SYSTEM**

1. The current manual system has a lot of paper work and it does not deal with old and new car purchase and sale.
2. To maintain the records of sale and service manually, is a Time-consuming job.
3. With the increase in database, it will become a massive job to maintain the database.
4. 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.
5. The retrieval of records of previously registered patients will be a tedious job.
6. Lack of security for the records, anyone disarrange the records of your system.
7. If someone want to check the details of the available doctors the previous system does not provide any necessary detail of this type.

### **ESTABLISH THE NEED OF NEW SYSTEM**

1. Problem of Reliability: Current system is not reliable. It seems to vary in quality from one month to the next. Sometimes it gives good output, but some times the output is worst.
2. Problem of Accuracy: There are too many mistakes in reports.
3. Problem of timeliness: In the current system the reports and output produced is mostly late and in most of the cases it is useless because it is not on time.
4. Problem of Validity: The output and reports mostly contains misleading information. The customer's information is sometimes not valid.
5. Problem of Economy: The current system is very costly. We have to spend lots of money to keep the system up and going, but still not get the desired results.
6. Problem of Capacity: The current system is suffering from problem of capacity also. The staff for organization is very less and the workload is too much. Few peoples cannot handle all the work.

## PROPOSED SYSTEM

- 1. **Employee Details:** The new proposed system stores and maintains all the employee's details.
- 2. **Calculations:** The new proposed system calculates salary and income tax automatically and it is very fast and accurate.
- 3. **Registers:** There is no need of keeping and maintaining salary and employee register manually. It remembers each and every record and we can get any report related to employee and salary at any time.
- 4. **Speed:** The new proposed system is very fast with 100% accuracy and saves time.
- 5. **Manpower:** The new proposed system needs less manpower. Less people can do the large work.
- 6. **Efficiency:** The new proposed systems complete the work of many salesperson in less time.
- 7. **Past details:** The new proposed system contains the details of every past doctor and patients for future assistance.
- 8. **Reduces redundancy:** The most important benefit of this system is that it reduces the redundancy of data within the data.

- 9. **Work load:** Reduces the work load of the data store by helping in easy updates of the products and providing them with the necessary details together with financial transactions management.
- 10. **Easy statements:** Month-end and day-end statement easily taken out without getting headaches on browsing through the day end statements.

### **NEED**

This designed the given proposed system in the JSP to automate the process of day to day activities of Hospital like Room activities, Admission of New Patient, Discharge of Patient, assign a Doctor, and finally compute the bill etc., online facilities to the multiple users etc.

- a) The complete set of rules & procedures related to Hospital's day to day activities and generating report is called "HOSPITAL MANAGEMENT SYSTEM". This project gives a brief idea regarding automated Hospital activities.
- b) The following steps that give the detailed information of the need of proposed system are:

**Performance:** During past several decades, the hospital management system is supposed to maintain manual handling of all the hospital daily activities. The manual handling of the record is time consuming and highly prone to error. To improve the performance of the hospital management system, the computerized hospital management system is to be undertaken. The computerized hospital project is fully computerized and user friendly even that any of the hospital's members can see the patient's report and the doctor's report.

**Efficiency:** The basic need of the project is efficiency. The project should be efficient so that whenever a new patient is admitted, and automatically a bed is assigned and also a doctor is assigned to the patient according to the patient's disease. And if any patient is

getting discharged, the bed assigned to him/her should automatically free in the computer.

**Control:** The complete control of the project is under the hands of authorized person who has the password to access this project and illegal access is not supposed to deal with. All the control is under the administrator and the other members have the rights to just see the records not to change any transaction or entry.

**Security:** Security is the main criteria for the proposed system. Since illegal access may corrupt the database and it will affect not only the hospital but also it also affects the patient's life. So security has to be given in this project.

**SOFTWARE & HARDWARE REQUIREMENTS:**

**HARDWARE**

- Processor** : Pentium 2.4 GHz or above
- Memory** : 256 MB RAM or above
- Cache Memory** : 128 KB or above
- Hard Disk** : 3 GB or above [at least 3 MB free space required]
- Pen Drive** : 5 GB
- Printer** : Laser Printer

**SOFTWARE**

- Operating System** : Windows XP (Professional).
- Front-End Tool** : JSP, Servlets, Java Script
- Back-End** : My Sql

### FRONT END

We have implemented JavaScript for all the Client-side validations. Client-side JavaScript is designed to reside inside HTML document & ensure they run properly. It is object based, event driven, platform independent. These are important parts of any Web application to implement Client-side Validations and the invalid data is not submitted. The form is not submitted until user fills in correct data. It is extremely useful to restrict mistakes by user.

### BACK END

We have used My Sql. My Sql provides efficient/effective solution for major database tech.

- Large database and space management.
- Many concurrent database users.
- High transaction processing requirement
- High Availability
- Industry accepted standards
- Manageable security
- Portability

## AIMS & OBJECTIVES OF THE STUDY

### **Objective:**

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

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

Thus keeping the working of the manual system as the basis of our project. We have developed an automated version of the manual system, named as "ADMINISTRATION SUPPORT SYSTEM FOR MEDICAL INSTITUTIONS".

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

### **AIM:**

The aim of the study to fully related with Hospital Management system.

- The Software is for the automation of Hospital Management System.
- It maintains two levels of users: -
  - Administrator Level
  - User Level
- The Software includes: -
  - Maintaining Patient details.
  - Providing Prescription, Precautions and Diet advice.
  - Providing and maintaining all kinds of tests for a patient.
  - Billing and Report generation.

## LITERATURE REVIEW

One of the major challenges existing hospital management systems face is around operational efficiency and wait times between different processes, departments and persons. This 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 analyze the ongoing operations so they can be corrected to achieve increased process efficiency and service levels.

This 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 proposes HSMS (Hospital Services Management System) which aims at improving quality of services, identifying cost reduction areas, analyses and evaluate /rate health care services. The ability to evaluate the services facilitates hospital achieve higher Customer satisfaction scores and get a competitive edge against those hospitals which scoreless or use HIS and do not have ways of promoting the quality of their services.

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. Like lack of Subject area expertise, lack of knowledge on different Hospital enterprise functions

- 1) Patient admission
- 2) Patient Treatment planning
- 3) Order Entry
- 4) Execution of diagnostic and treatment procedures
- 5) Administrative documentation
- 6) Billing
- 7) Clinical documentation
- 8) Discharge and
- 9) Referral to specialized medical institutions,

lack of knowledge /experience on the entity's types involved (example: patient, Clinical finding), their roles and responsibilities and the relationships /associations between different enterprise function and /or entity types. This aims at creating a reference data model that will serve as a generic starting point for any new HIS development projects so costs involved in studying and analyzing current state and coming up with gaps analysis and additional requirements can be significantly reduced. The model is Hierarchical in nature that is it is divided into 3 levels of sub models and units so a choice for full or partial implementation can be offered based on the requirements.

This focuses more on needs of hospital manager and the ecosystem in which he/she operates. The internal and external Environment shaping factors ESFs that bear an impact or association on daily hospital activities and decision-making process that the hospital manager has to go through in each situation. Some of the challenges that this ecosystem needs to

work on are high demand pressure, greater customer satisfaction level and low profit margins.

This more so contributes to Planning, Design and development aspects of any Hospital management system by highlighting ESFs that should be considered. The external and internal factors the author mentions are: The public at large, Law and policy makers, Funders, Medical suppliers the biggest of which are pharmaceutical companies, the scientific community, the software development community. Internal influencer authors can obviously also be at play in terms of what services are provided by the hospital and how they are provided. These can include: the skills and experience of staff, internal business strategies such as competition and subsidization, Soft factors such as morale and culture, Equipment availability.

## **RESEARCH METHODOLOGY**

This contains the detail of methodology selected by the researcher in order to assess the impact of health care provider participation in management of Hospital OPD on outpatient satisfaction in Tertiary Care Public & Private Hospitals in Jaipur. The first part of the study, a literature is reviewed on Health Care Providers of OPD and Patients of OPD and it is found that in most of the studies where health care providers participated in management the services become improved and patients are more satisfied. Outpatient work is important and interesting if medical and paramedical staff plays a leading role in OPD clinics.

It is imperative to have effective co-operation between the medical services and support services in OPD. Doctor's and staff behavior play important role in patient satisfaction. The chapter deals with the steps which are adopted to achieve the objectives of the study. The steps of the study are discussed in chronological sequence, starting from research design to the details of methodology adopted for the analysis of the different types of response.

This study is an exploratory research based in a large measure on the collection of primary data and also the secondary sources. The study is on "Health Care Providers Participation in OPD Management with Special Reference to Tertiary Care Public & Private Hospitals in Jaipur: An Analytical Study" which particularly covers the OPD of Public Private Hospitals. For the purpose of this study the research design adopted is as follows:

- a. In the absence of availability of any research material on this topic information is collected from the following literature. The literature surveys have helped to sort out the statement related to Health Care Providers

Participation in OPD Management and develop the questionnaire.

- b. Articles and research papers related to Health Care Providers Participation in OPD Management and patient satisfaction published in national and international journals.
- c. Reference books on hospital management and Health Care Providers Participation in OPD Management.
- d. Online reports and e-books Research Methodology 87
- e. Newspaper and Magazines.
- f. Primary data is collected through survey method with the help of the instrument called close ended questionnaire. Data is collected from health care providers and Patients who either work or visit in public & private hospitals OPD of Jaipur.
- g. Data obtained is analyzed using SPSS, Microsoft office word, excel and PowerPoint to study and measure the respondents

## **MODULES**

The limited time and resources have restricted us to incorporate, in this project, only main activities that are performed in a HOSPITAL Management System, but utmost care has been taken to make the system efficient and user friendly. “HOSPITAL Management System” has been designed to computerize the following functions that are performed by the system:

1. On Line Appointments for the Patients
  - a. Admission of New Patient
2. Free Medical Advice For the Patients
3. Discharge Detail Functions
  - a. Discharge of Patient
  - b. Doctor Assigning related to Patient's Disease
4. Training Courses Provided by the Hospital
5. Statement of Patient Details
  - a. Admitted Patient
  - b. Discharged Patient
  - c. Doctor Details
6. Total number of Patients admitted in the Hospital
7. Doctors available in the Hospital

8. Preventive Health Checkups
9. Administrator Links
  - a. Login Form
  - b. To add new doctors in the site
  - c. List of patients
  - d. List of Doctors

## SYSTEM ANALYSIS

### **PRINCIPLES OF SYSTEM ANALYSIS:**

#### **PRINCIPLES:**

- Understand the problem before you begin to create the analysis model.
- Develop prototypes that enable a user to understand how human machine interaction will occur.
- Record the origin of and the reason for every requirement.
- Use multiple views of requirements like building data, function and behavioral models.
- Work to eliminate ambiguity

System Analysis is a separation of a substance into parts for study and their implementation and detailed examination.

Before designing any system it is important that the nature of the business and the way it currently operates are clearly understood. The detailed examination provides the specific data required during designing in order to ensure that all the client's requirements are fulfilled. The investigation or the study conducted during the analysis phase is largely based on the feasibility study. Rather it would not be wrong to say that the analysis and feasibility phases overlap. High-level analysis begins during the feasibility study. Though analysis is represented as one phase of the system development life cycle (SDLC), this is not true. Analysis begins with system

initialization and continues until its maintenance. Even after successful implementation of the system, analysis may play its role for periodic maintenance and up gradation of the different phase of software development life cycle is shown on next page.

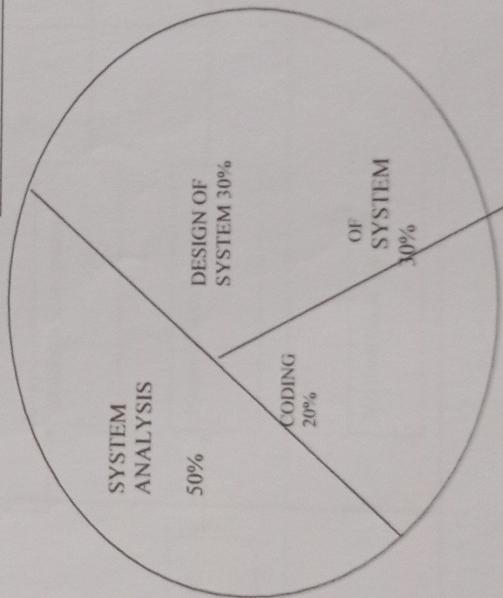
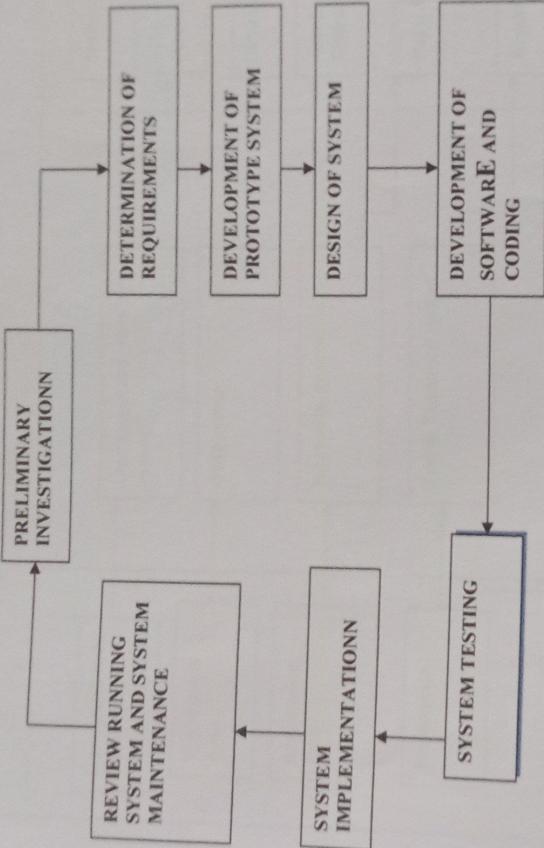
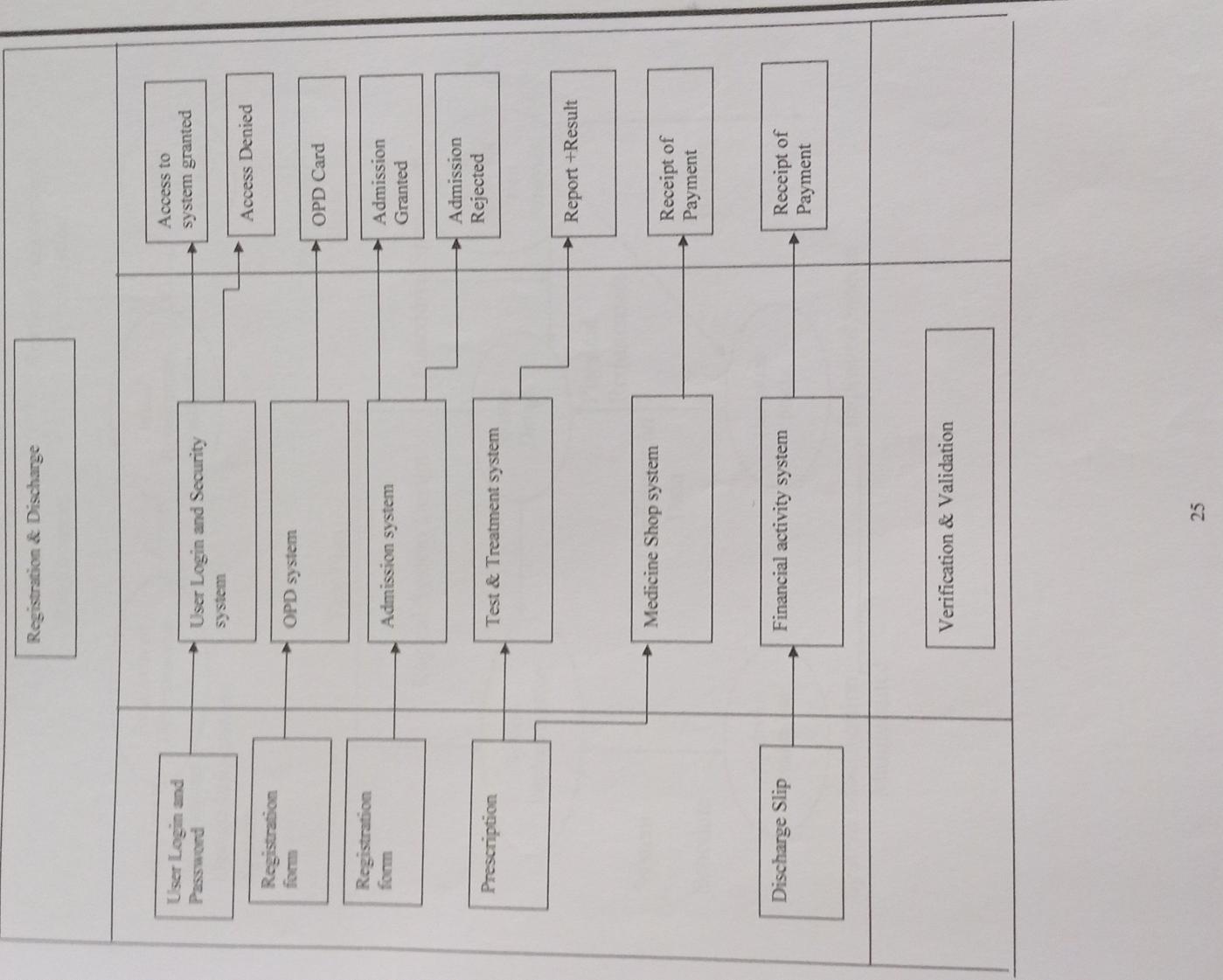
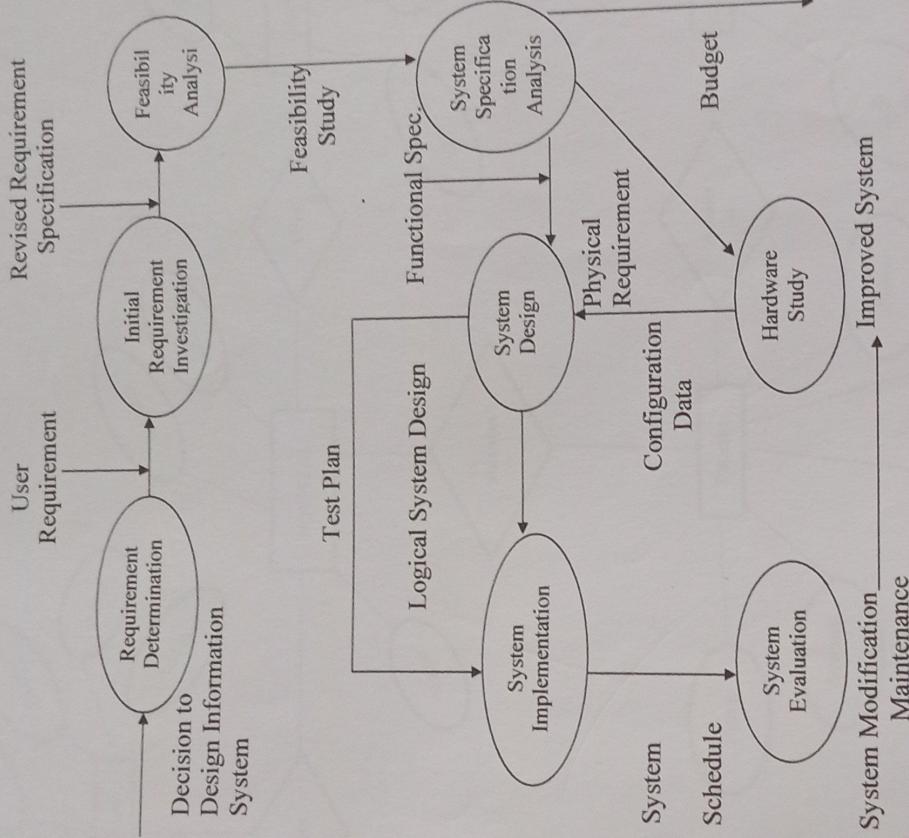


FIG: SHOWING GENERAL LIFE CYCLE PROCESS AND PERCENTAGE OF TIME DEVOTED

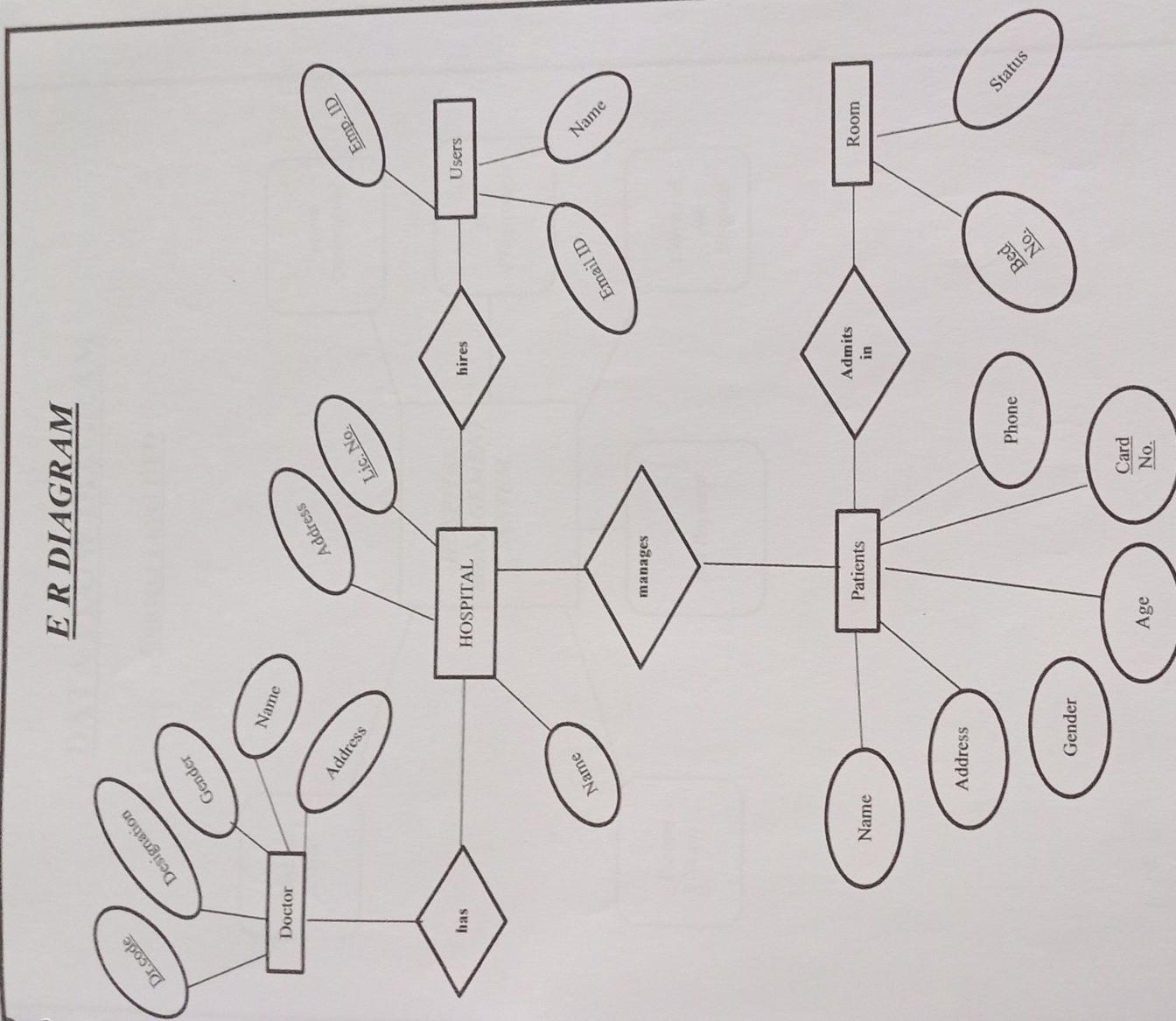
### ACD (Architectural Context Diagram)



## SYSTEM DEVELOPMENT LIFE CYCLE

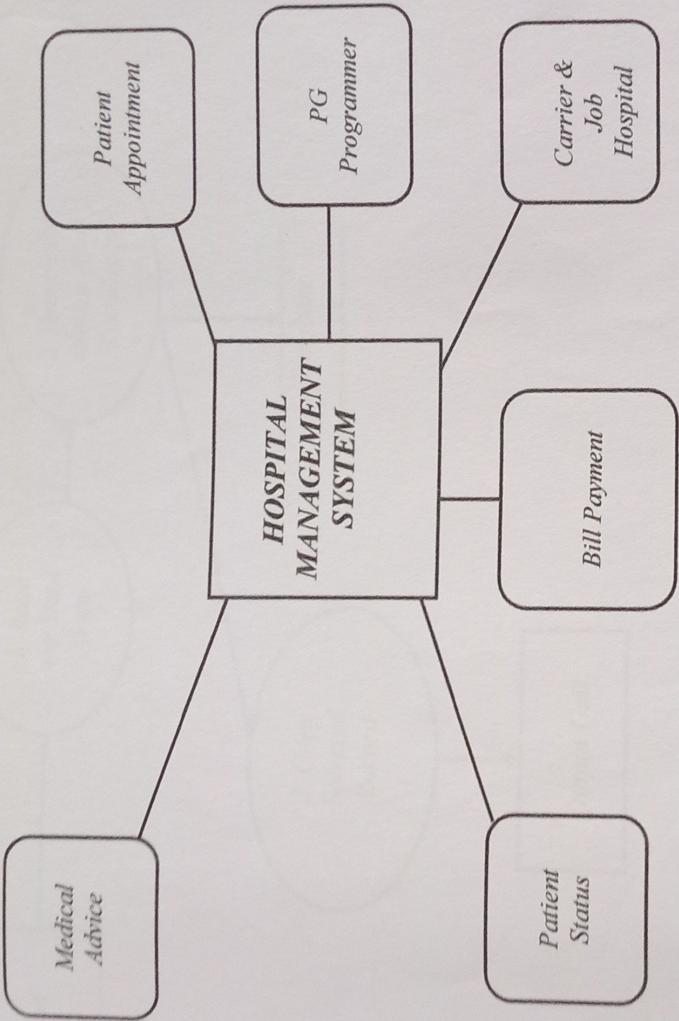


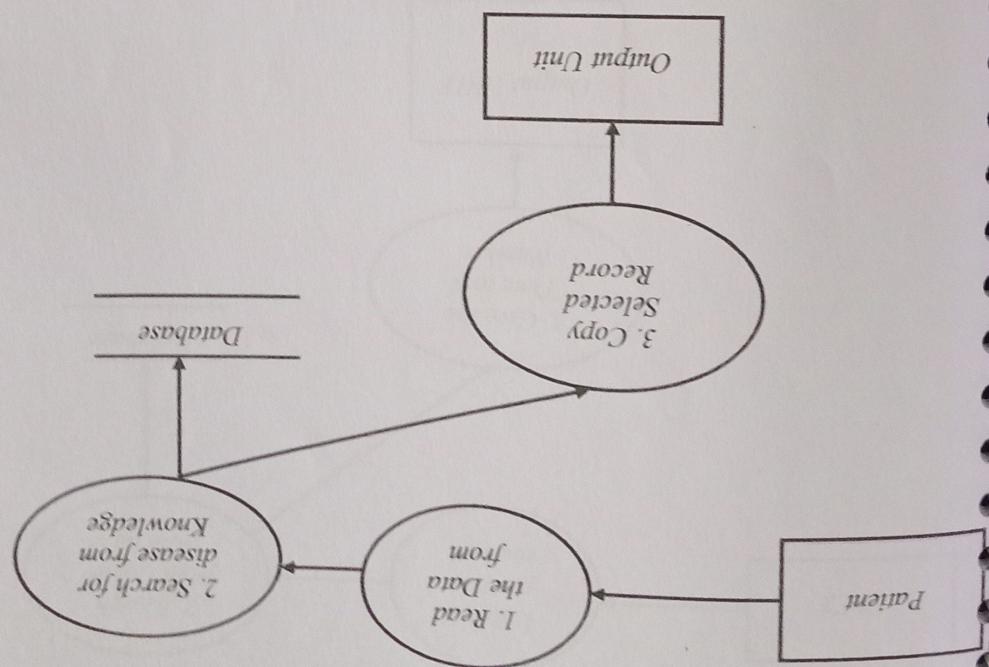
## ER DIAGRAM



## DATA FLOW DIAGRAM

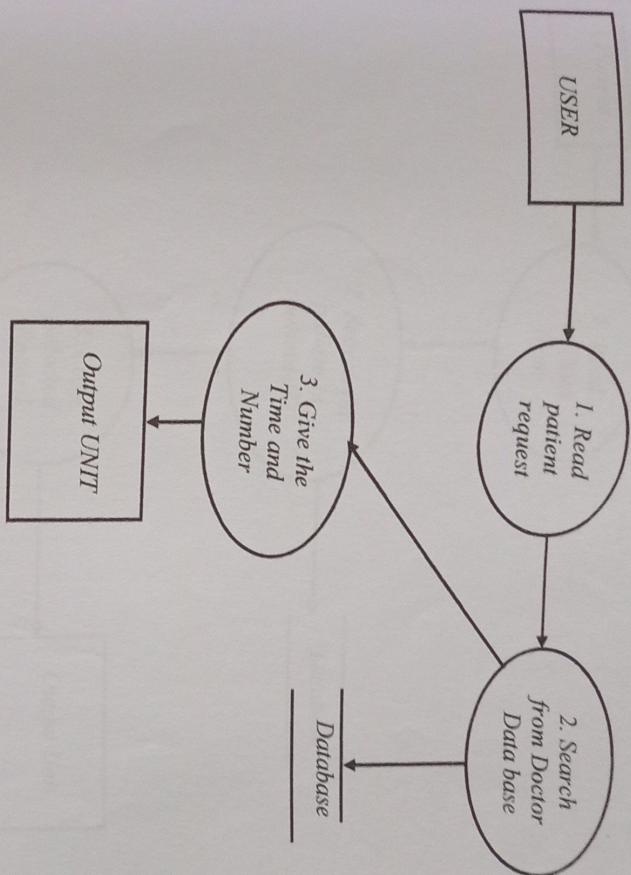
### Context Level DFD



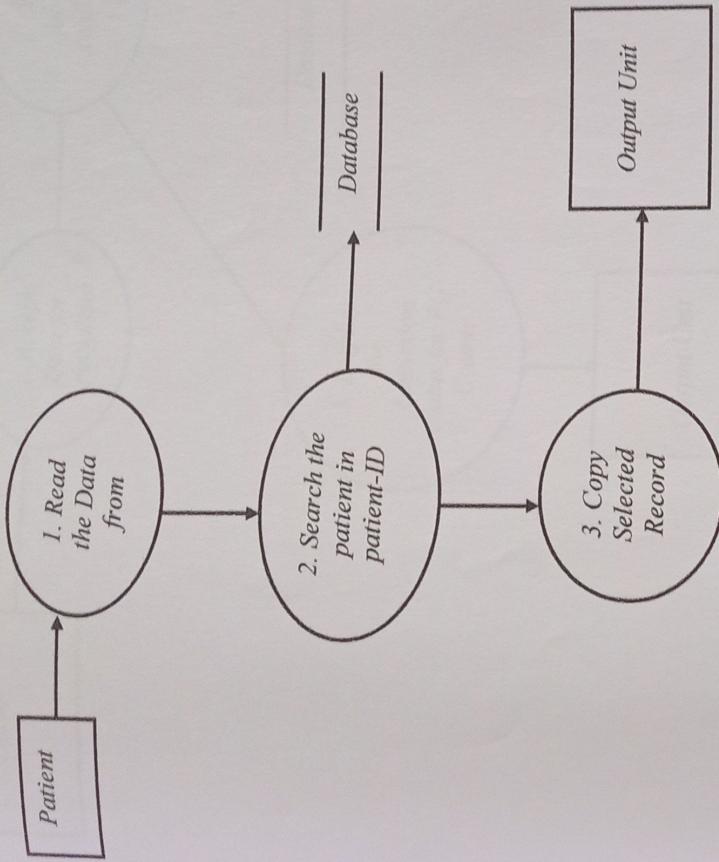


DFD for Medical Advice

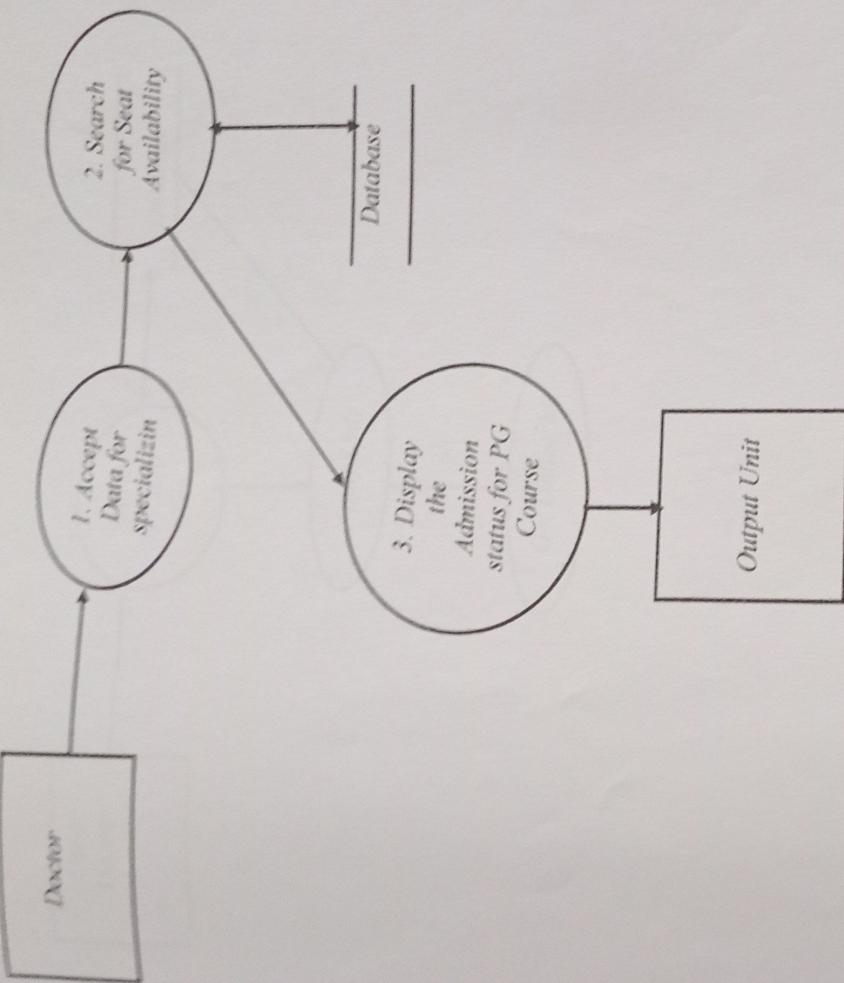
### DFD for Patient Appointment



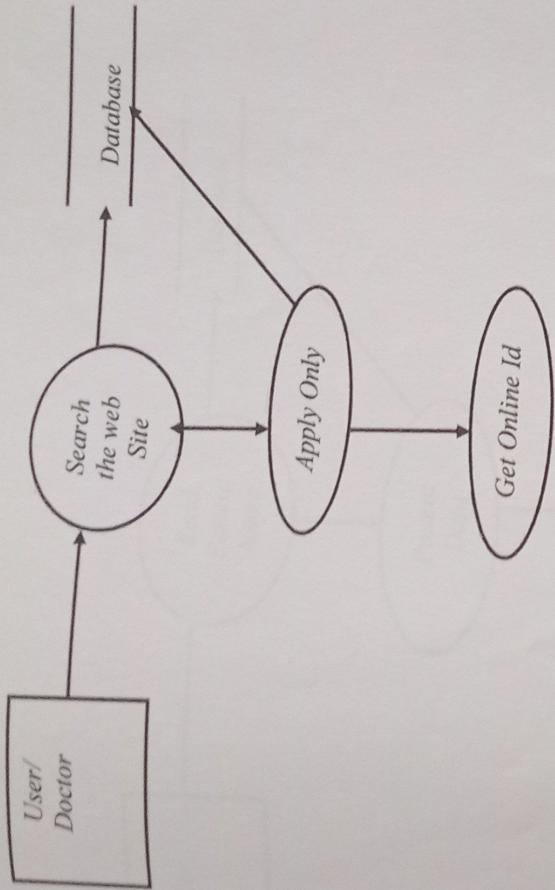
### DFD for Patient Search



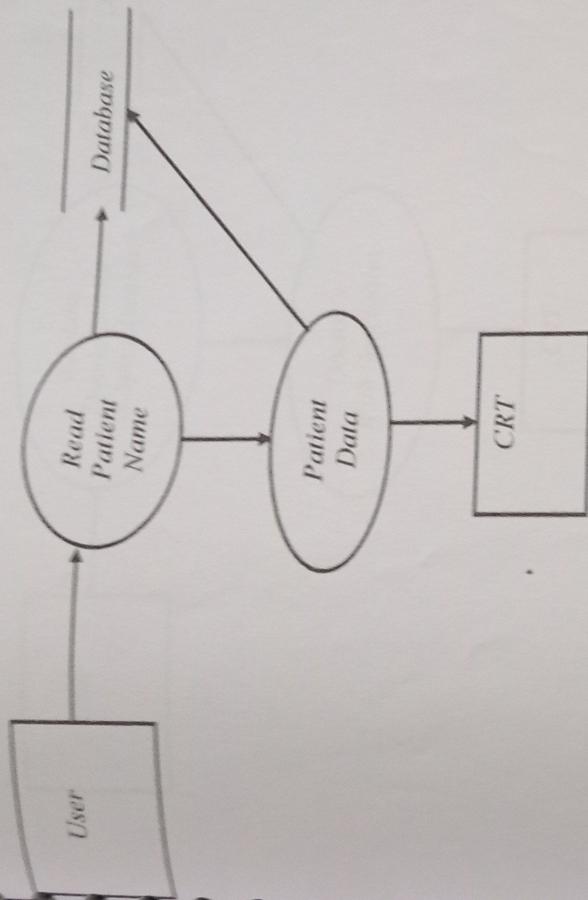
DWD for PG Course



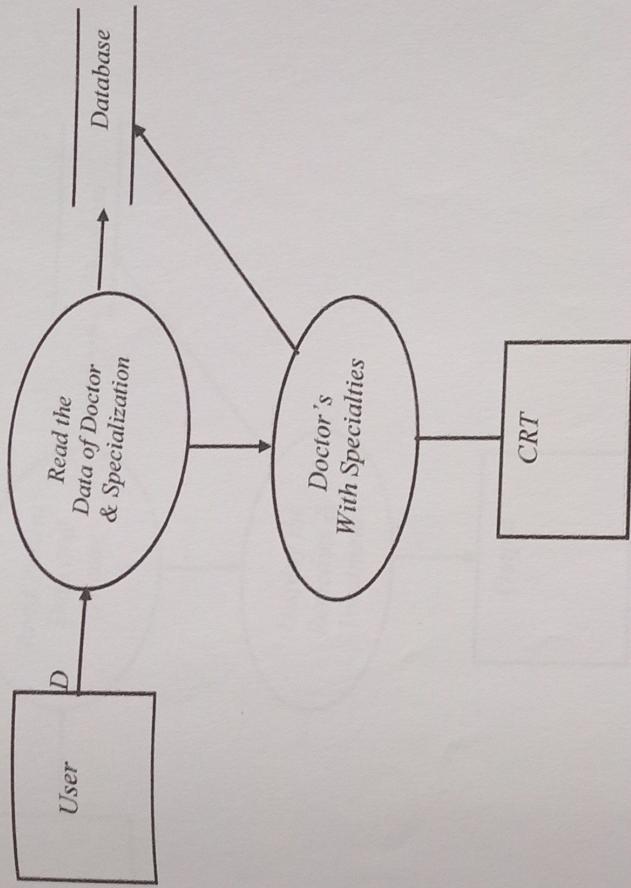
### DFD For Job Opportunity In hospital



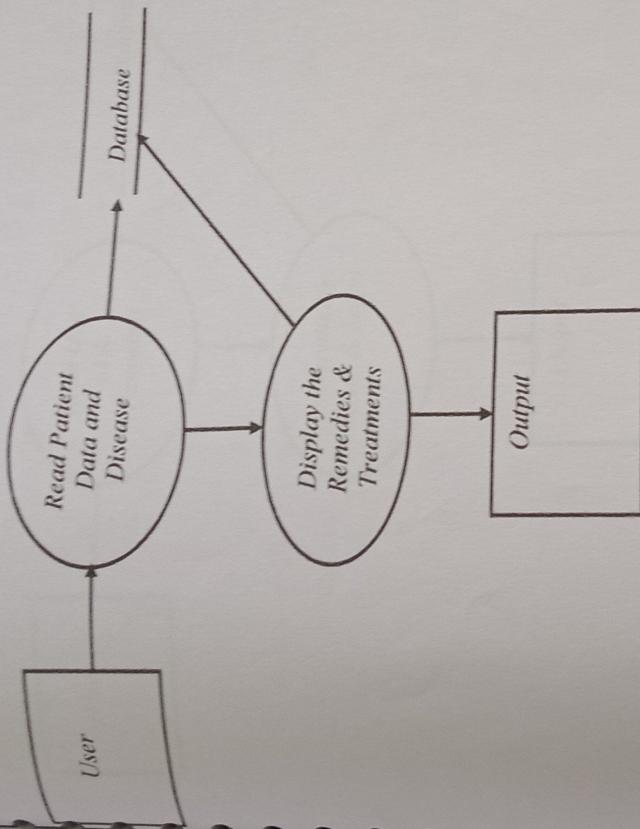
### DFD For Online Searching For Patient



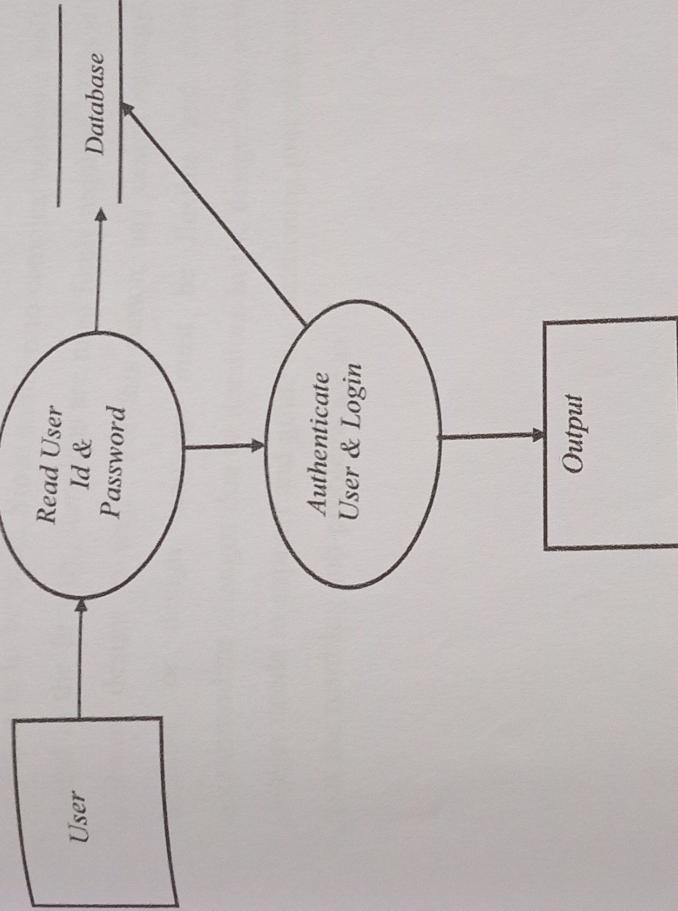
### DFD For Searching a Doctors



### DFD Online Medical Advice



### DFD For Login Of User



## SYSTEM DESIGN

### System Design:

The design document that we will develop during this phase is the blueprint of the software. It describes how the solution to the customer problem is to be built. Since solution to complex problems isn't usually found in the first try, iterations are most likely required. This is true for software design as well. For this reason, any design strategy, design method, or design language must be flexible and must easily accommodate changes due to iterations in the design. Any technique or design needs to support and guide the partitioning process in such a way that the resulting sub-problems are as

## DATA MODELING:

### Users table

Field	Type	Constraint
Name	Char (30)	Not Null
Emp Id	Char (30)	Primary Key
Email Id	Char (30)	Not Null
Password	Char (30)	Not Null

### Admin

Field	Type	Constraint
Username	Char (30)	Not Null
Password	Char (30)	Not Null

### Patient table

Field	Type	Constraint
Card_no	Char (30)	Primary key
Name	Char (30)	Not Null
Gender	Char (30)	Not Null
Age	Numeric	Not Null
Address	Char (60)	Not Null
Phone	Numeric	Not null
Relative_name	Char (30)	Not null
Relative_address	Char(60)	Not null
Department	Char (60)	Not Null
Doctor_name	Char (30)	Not null

**Doctor\_Master**

Field	Type	Constraint
Dr_code	Char (30)	Not null
Dr.name	Char (30)	Not null
Gender	Char (30)	Not null
Date_of_birth	Date	Not null
Address	Char (30)	Not null
Date_of_join	Date	Not null
		Not null

**Bed\_details**

Field	Type	Constraint
Bed_no	Char (30)	Not null
Status	Char(30)	Not null

**HOSPITAL**

Field	Type	Constraint
License_No	Char (20)	Primary Key, Not Null
Name	Char (30)	Not null
Address	Char (50)	Not null

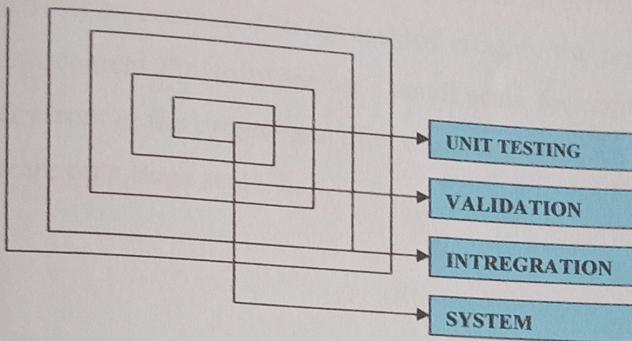
## TESTING PHASE

One of the purposes of the testing is to validate and verify the system. Verification means checking the system to ensure that it is doing what the function is supposed to do and Validation means checking to ensure that system is doing what the user wants it to do.

No program or system design is perfect; communication between the user and the designer is not always complete or clear, and time is usually short. The result is errors and more errors. Theoretically, a newly designed system should have all the pieces in working order, but in reality, each piece works independently. Now is the time to put all the pieces into one system and test it to determine whether it meets the user's requirements. This is the best chance to detect and correct errors before the system is implemented. The purpose of system testing is to consider all the likely variations to which it will be subjected and then push the system to its limits. If we implement the system without proper testing then it might cause the problems.

## LEVELS OF TESTING:

The different types of testing are as follows:



System testing consists of the following steps:

1. Program(s) testing.
2. String testing.
3. System testing.
4. System documentation.
5. User acceptance testing.

## SYSTEM IMPLEMENTATION

As we know, creating software is one thing and the implementation of the created software is another. The process of implementing software is much difficult as compared to the task of creating the project. First, we have to implement the software on a small scale for removing the bugs and other errors in the project and after removing them we can implement the software on a large scale.

## SECURITY MEASURES

Security Performed In HOSPITAL Management System

User Name & Password security implemented so that no unauthorised person can handle any operation without username and Password.

- Only authorized person can log-on the system.
- Only authorized person can update the records.
- Only authorized person can handle the reservation.
- Only authorized person can print the report.

### FURTHER SCOPE OF THE APPLICATION

1. Though maximum efforts have been put in to make this report authentic in all aspects and to take all necessary presentation to ensure that the information gathered is true, some uncomfortable factors may have crept in.
2. Some of the respondents were reluctant to part with certain information on the pretext of the sensitivity of the information. Also some facts of figures were not divulged as the company policy came in the way for free revelation of the desired input.
3. An element of bias might have crept in from the side of the official interviewed. This could also have resulted in some kind of modification of the information divulged.
4. Through an attempt was made to collect information from the best possible source in the company, it was difficult to meet the top officials due to their busy schedules.
5. Most of the analysis and interpretations, made for this report, are based on secondary data obtained. This data could have some inherent mistakes and errors.
6. Finally, although due care has been taken those can be typing and compilation errors in the report itself.

## CONCLUSION

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

- a) We have gained an insight into the working of the HOSPITAL. This represents a typical real-world situation.
- b) 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.
- c) Scheduling a project and adhering to that schedule creates a strong sense of time management.
- d) Sense of teamwork has developed and confidence of handling real life project has increased to a great extent.
- e) Initially, there were problem with the validation but with discussions, we were to implement validations.

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