



HOSPITAL MANGEMENT SYSTEM

A MINI-PROJECT REPORT

Submitted By:

DHEERAJ D : ENG18CS0090

DONAL J N : ENG18CS0095

GAYATHRI D N : ENG18CS0105

VARSHASHREE D: ENG18CS0312

of

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OBJECT ORIENTED PROGRAMMING

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CERTIFICATE

This is to certify that the Object Oriented Programming Mini-Project report entitled **“HOSPITAL MANGEMENT SYSTEM”** being submitted by DHEERAJ D to Department of Computer Science and Engineering, School of Engineering, Dayananda Sagar University, Bangalore, for the 5th semester B.Tech C.S.E of this university during the academic year 2020-2021.

Date: _____

Signature of the Faculty in Charge

Signature of the Chairman

DAYANANDA SAGAR UNIVERSITY



CERTIFICATE

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This is to certify that the Object Oriented Programming Mini-Project report entitled **“HOSPITAL MANGEMENT SYSTEM”** being submitted by GAYATHRI DEVI N to Department of Computer Science and Engineering, School of Engineering, Dayananda Sagar University, Bangalore, for the 5th semester B.Tech C.S.E of this university during the academic year 2020-2021.

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Date: _____

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Signature of the Chairman

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DHEERAJ D : ENG18CS0090

DONAL J N : ENG18CS0095

GAYATHRI D N : ENG18CS0105

VARSHASHREE D : ENG18CS0312

ABSTRACT

Our present modern information system makes use of computers for the execution, each of them connected through an optimized network. Healthcare is the most critical aspect of our society, and many health care providers face challenges to offer practical and active services to patients.

Considering a Multi-specialty Hospital, many people enter and exit the hospital in a day and maintaining their records safely is tedious. To reduce this type of burdens and to manage the financial, hospital administration and clinical aspects, Hospital management system came into existence.

Apart from that automating your hospital's processes and implementing them cannot be done too easily, you need an efficient hospital management system to take care of everything that is happening around the labs and hospitals.

The purpose of the project entitled as “HOSPITAL MANAGEMENT SYSTEM” is to computerize the Front Office Management of Hospital to develop software which is user friendly simple, fast, and cost– effective. It deals with the collection of patient’s information, diagnosis details, etc.

Traditionally, it was done manually. The main function of the system is register and store patient details and doctor details and retrieve these details as and when required, and also to manipulate these details meaningfully System input contains patient details, diagnosis details, while system output is to get these details on to the screen.

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

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1. INTRODUCTION

The project “**Hospital Management System**” includes registration of patients, storing their details into the system, and also computerized billing in the pharmacy, and labs. The software has the facility to give a unique id for every patient and stores the details of every patient and the staff automatically. It includes a search facility to know the current status of each room. User can search availability of a doctor and the details of a patient using the id. Hospital Management System can be entered using a username and password. It is accessible either by an administrator or receptionist. Only they can add data into the database.

The data can be retrieved easily. The interface is very user-friendly. The data are well protected for personal use and makes the data processing very fast. Hospital Management System is powerful, flexible, and easy to use and is designed and developed to deliver real conceivable benefits to hospitals. Hospital Management System is designed for Multi-specialty hospitals, to cover a wide range of hospital administration and management processes.

It is an integrated end-to-end Hospital Management System that provides relevant information across the hospital to support effective decision making for patient care, hospital administration and critical financial accounting, in a seamless flow.

Hospital Management System is a software product suite designed to improve the quality and management of hospital management in the areas of clinical process analysis and activity-based costing. Hospital Management System enables you to develop an organization and improve its effectiveness and quality of work. Managing the key processes efficiently is critical to the success of the hospital and this application helps you manage your processes.

Hospital Management System has its advantages like: Faster processing speed & Results, Cost Effective, Reduction in Errors, Data Security & Retrieving Ability, Improved Patient Care and Quality & Compliance.

1.1 PROBLEM STATEMENT

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.

Lack of immediate information storage: -

The information generated by various transactions takes time and efforts to be stored at right place.

Lack of prompt updating: -

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

Error prone manual calculation: -

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

Preparation of accurate and prompt reports: -

This becomes a difficult task as information is difficult to collect from various register.

1.2 OBJECTIVES OF THE PROJECT

- Define hospital
- Recording information about the Patients that come.
- Generating bills.
- Recording information related to diagnosis given to Patients.
- Keeping record of the Immunization provided to children/patients.
- Keeping information about various diseases and medicines available to cure them. These are the various jobs that need to be done in a Hospital by the operational staff and Doctors. All these works are done on papers.

2. LITERATURE SURVEY

2.1 EXISTING SYSTEM

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

The records are to be updated according to the requirements of the users. It takes time to search for the required query. All the details regarding the hospital and its patients are hard to maintain. The work will be more, so the system needs more number of crew to fulfill the requirements. There may be a chance of failure since it is manual. A one fault of the system may lead to inconvenience and also causes a vast destruction. So, these faults make the system less efficient and performance of the system is very slow. Hence, there should be a system to overcome all these defaults and provide the users with more facilities.

2.2 PROPOSED SYSTEM

The Hospital Management System is designed for any hospital to replace their existing manual paper based system. In the proposed system, everything is computerized. The system provides all the details regarding the Hospital, doctors, patients, bed numbers, and fares also and so on. The user can search required data easily with no time. A very less number of staff is required to handle the system.

The patients need not wait for a long time to fulfil his requirement. There is no chance of any failure in the system, which improves the performance of the system and also increases the efficiency of the system. All services are to be provided in an efficient, cost effective manner, with the goal of reducing the time and resources currently enquired for such tasks.

3. SYSTEM REQUIREMENTS

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

3.1 FUNCTIONAL REQUIREMENTS

Registration Process of SRS (Software Requirements Specification)

- Adding Patients: The Hospital Management enables the staff in the front desk to include new patients to the system.
- Assigning an ID to the patients: The HMS enables the staff in the front desk to provide a unique ID for each patient and then add them to the record sheet of the patient. The patients can utilize the ID throughout their hospital stay.
- Adding Employee and other staff: The Hospital Management enables the staff in the front desk to include new staff joining the system and give them unique ID's.

Check Out of SRS:

- Deleting Patient or Employee ID: The staff in the administration section of the ward can delete the patient ID and the Employee ID from the system when the patient's checkout from the hospital and when the employee resigns.
- Room Allocation: The Staff in the administration section of the ward can assign beds to each patient in available rooms.
- Appointment Booking: The Staff in the administration section of the ward can schedule appointments to patients with a particular or group of doctors with a time slot.

Report Generation of SRS:

- Information of the Patient: The Hospital Management System generates a report on every patient regarding various information like patient name, Phone number, bed number, the doctor's name whom its assigns, ward name, and more.
- Availability of the Rooms(beds): The Hospital Management system also helps in generating reports on the availability of the rooms regarding the information like room number unoccupied or occupied and more.
- Patient Billing: The total cost of the patient's visit to the hospital, with medicine cost and room charges (if allocated) is billed.

Database of SRS:

- Mandatory Patient Information: Every patient has some necessary data like phone number, their name, personal health number, address, patient's ID number, etc.
- Updating information of the Patient: The hospital management system enables users to update the information of the patient as described in the mandatory information included.
- Mandatory Employee Information: Every employee has some necessary data like phone number, their name, personal health number, address, employee's ID number, etc.
- Updating information of the Employee: The hospital management system enables users to update the information of the employee as described in the mandatory information included.

3.2 SOFTWARE AND HARDWARE REQUIREMENTS

HARDWARE REQUIREMENTS:

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

HARDWARE REQUIREMENTS FOR PRESENT PROJECT:

PROCESSOR: Intel dual Core, i3 or above

RAM: 4 GB

HARD DISK: 80 GB

SOFTWARE REQUIREMENTS:

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

SOFTWARE REQUIREMENTS FOR PRESENT PROJECT:

OPERATING SYSTEM: Windows 7/ XP/8/10

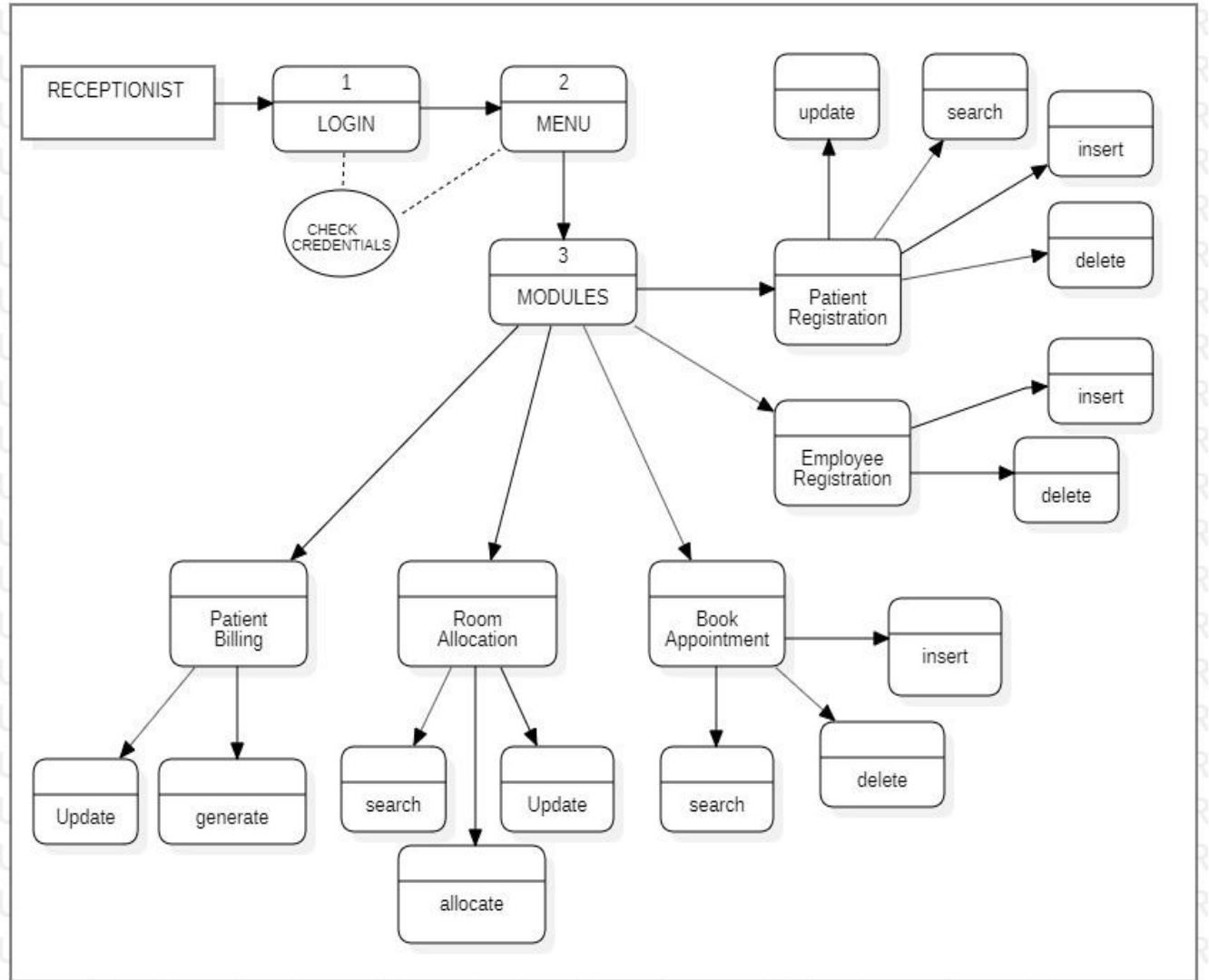
FRONT END: Tkinter

SERVER-SIDE SCRIPT: Python

DATABASE: sqlite

4. SYSTEM DESIGN

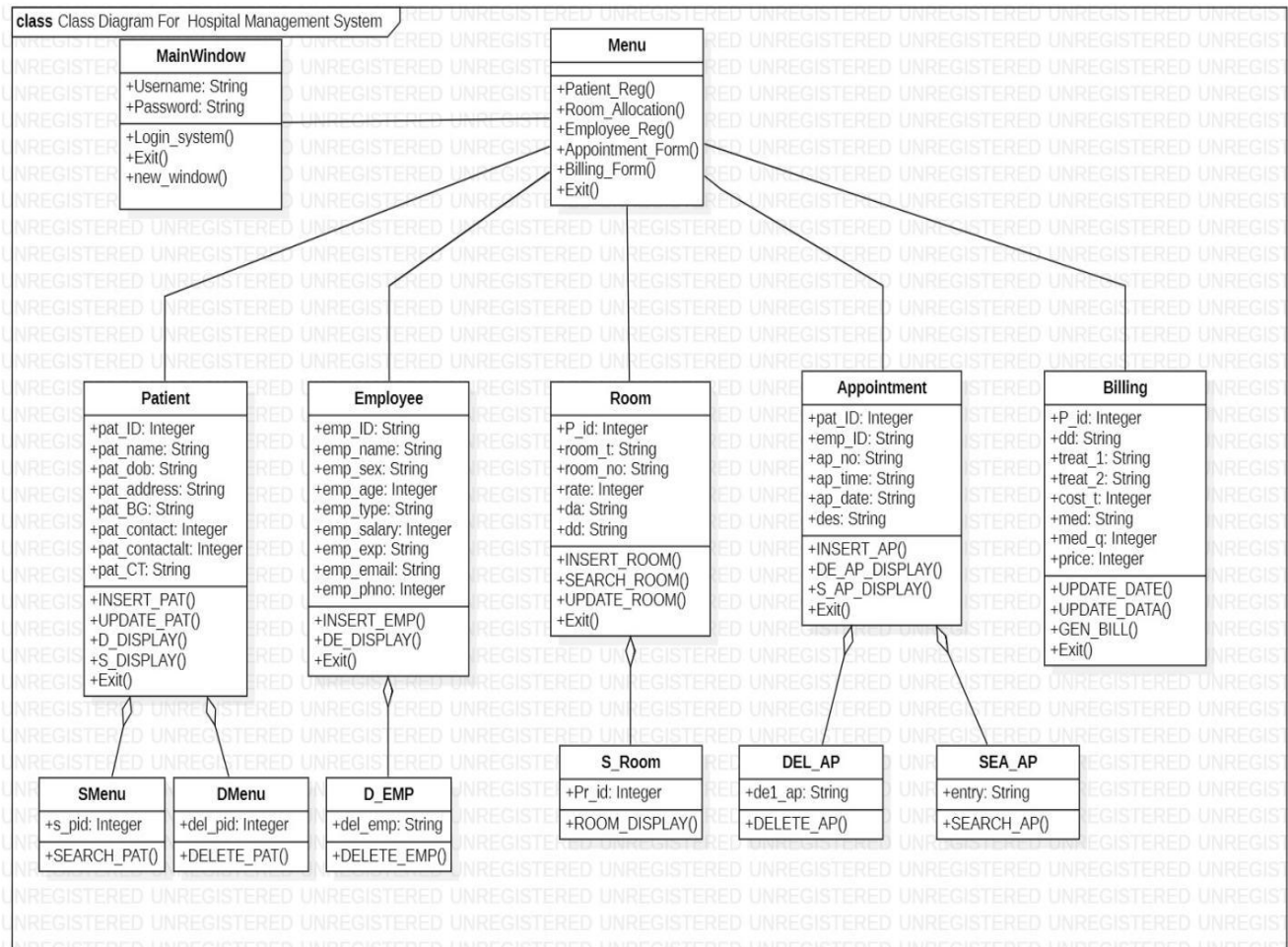
4.1 ARCHITECTURE/DATA FLOW DIAGRAMS



4.2 MODULES - CLASS DIAGRAMS

MODULES:

- Menu
- Patient
- Employee
- Room
- Appointment
- Billing



5. EXPERIMENTAL INVESTIGATION

Test objectives

All field entries must work properly.

Pages must be activated from the identified link.

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

Features to be tested

Verify that the entries are of the correct format

No duplicate entries should be allowed

All links should take the user to the correct page

Integration Testing:

Software integration testing is the incremental integration testing of two or more integrated software components on a single platform to produce failures caused by interface defects. The task of the integration test is to check that components or software applications, e.g. components in a software system or one step up software applications at the company level interact without error.

Acceptance Testing:

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

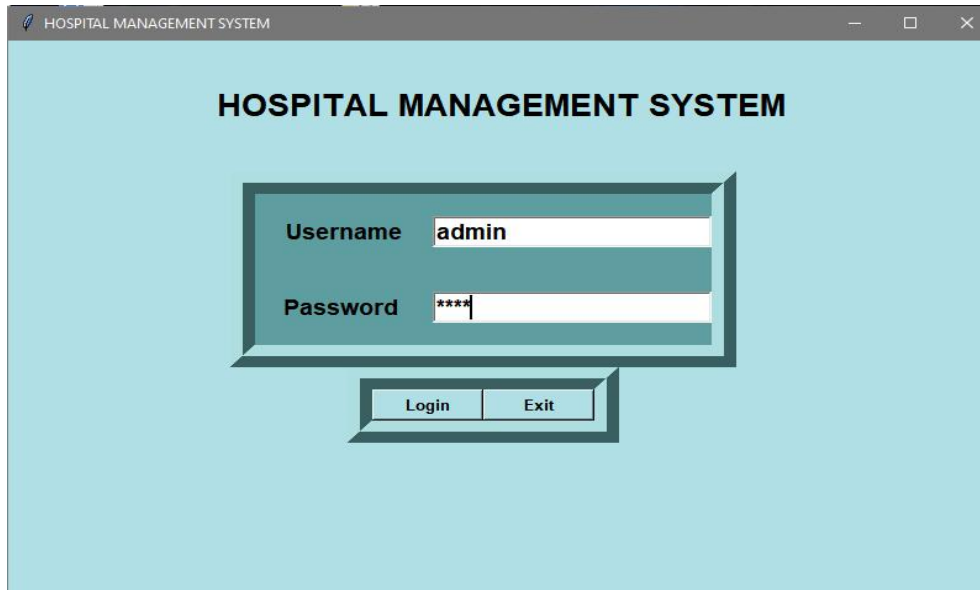
Test Results:

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

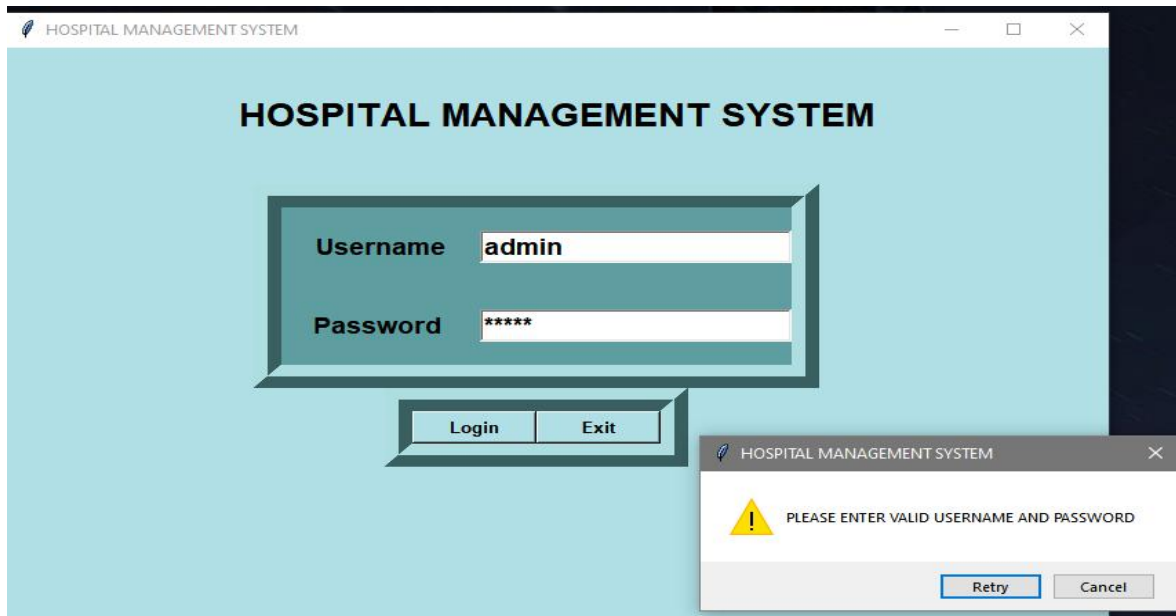
6. RESULTS - SCREENSHOTS

Login window

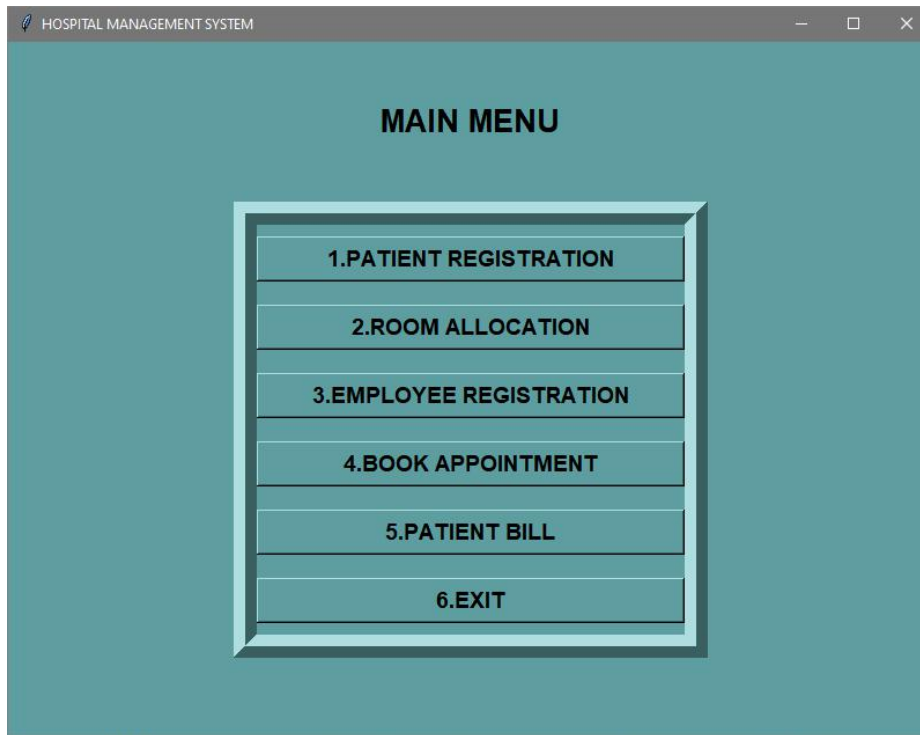
- If username and password are valid.



- If username and password are invalid.



Menu



Patient Registration form:

Patient registration: Submit

The screenshot shows the "HOSPITAL MANAGEMENT SYSTEM" window with the "PATIENT REGISTRATION FORM" displayed. The form contains the following fields and values:

PATIENT ID	111	CONTACT NUMBER	9887454520
PATIENT NAME	John	ALTERNATE CONTACT	9568567560
SEX	Male	EMAIL	johnoliver@gmail.com
DOB (YYYY-MM-DD)	1999-06-23	CONSULTING TEAM / DOCTOR	Philips
BLOOD GROUP	B+ve	ADDRESS	Bangalore

Below the form are five buttons: "SUBMIT", "UPDATE", "DELETE", "SEARCH", and "EXIT". To the right, a smaller window titled "HOSPITAL DATABASE SYSTEM" displays a message: "DETAILS INSERTED INTO DATABASE" with an "OK" button.

Patient registration: Update

The screenshot displays the 'HOSPITAL MANAGEMENT SYSTEM' window. The main form is titled 'PATIENT REGISTRATION FORM'. It contains several input fields for patient details, each with a corresponding label. The fields are arranged in two columns. At the bottom of the form, there are five buttons: SUBMIT, UPDATE, DELETE, SEARCH, and EXIT. To the right of the main window, a smaller window titled 'HOSPITAL DATABASE SYSTEM' is visible, showing a message: 'DETAILS UPDATED INTO DATABASE' with an 'OK' button. The background shows a terminal window with the text '4)] on win32'.

PATIENT ID	CONTACT NUMBER
111	9887454520
PATIENT NAME	ALTERNATE CONTACT
John Oliver	9568567560
SEX	EMAIL
Male	johnoliver@gmail.com
DOB (YYYY-MM-DD)	CONSULTING TEAM / DOCTOR
1999-06-23	Murphy
BLOOD GROUP	ADDRESS
O+ve	Bangalore

Buttons: SUBMIT, UPDATE, DELETE, SEARCH, EXIT

Message Box: HOSPITAL DATABASE SYSTEM
DETAILS UPDATED INTO DATABASE
OK

Patient registration: Search

The screenshot displays the 'HOSPITAL MANAGEMENT SYSTEM' window. The main form is titled 'SEARCH WINDOW'. It contains a search input field labeled 'ENTER PATIENT ID TO SEARCH' with the value '111'. Below the search field, there is a table displaying the patient details. At the bottom of the form, there is a 'SEARCH' button.

PATIENT ID	ADDRESS
111	Bangalore
PATIENT NAME	CONSULTING TEAM / DOCTOR
John Oliver	Murphy
SEX	EMAIL
Male	johnoliver@gmail.com
DOB (YYYY-MM-DD)	CONTACT NUMBER
O+ve	9887454520
BLOOD GROUP	ALTERNATE CONTACT
1999-06-23	9568567560

Buttons: SEARCH

Patient registration: Delete

The screenshot displays the 'HOSPITAL MANAGEMENT SYSTEM' window with a 'DELETE WINDOW' title. It features a text input field labeled 'ENTER PATIENT ID TO DELETE' containing the value '1110', and a 'DELETE' button below it. To the right, a smaller 'HOSPITAL DATABASE SYSTEM' window shows a confirmation message: 'DETAILS DELETED FROM DATABASE' with an 'OK' button.

Room Allocation:

Room Allocation: Submit

The screenshot displays the 'HOSPITAL MANAGEMENT SYSTEM' window with a 'ROOM ALLOCATION FORM' title. The form contains several input fields: 'PATIENT ID' (111), 'ROOM CHARGES' (5000), 'ROOM TYPE' (with a dropdown menu showing 'SINGLE ROOM: Rs 4500', 'TWIN SHARING : Rs2500', and 'TRIPLE SHARING: Rs2000'), 'DATE ADMITTED' (25-10-2020), 'ROOM NUMBER' (1012), and 'DATE DISCHARGED' (27-10-2020). Below the form are four buttons: 'SUBMIT', 'UPDATE', 'ROOM DETAILS', and 'EXIT'. In the bottom left, a smaller 'HOSPITAL DATABASE SY...' window shows a confirmation message: 'ROOM ALLOCATED' with an 'OK' button.

Room Allocation: Update

HOSPITAL MANAGEMENT SYSTEM

ROOM ALLOCATION FORM

PATIENT ID	111	ROOM CHARGES	5000
ROOM TYPE	SINGLE ROOM: Rs 4500 TWIN SHARING : Rs2500 TRIPLE SHARING: Rs2000		
	2500	DATE ADMITTED	26-10-2020
ROOM NUMBER	1013	DATE DISCHARGED	28-10-2020

SUBMIT UPDATE ROOM DETAILS EXIT

HOSPITAL DATABASE SYSTEM

ROOM DETAILS UPDATED

OK

Room Allocation : Room details

HOSPITAL MANAGEMENT SYSTEM

SEARCH PATIENT DETAILS

ENTER PATIENT ID TO SEARCH 111

PATIENT ID	111	ROOM NO	1012
PATIENT NAME	John	ROOM TYPE	2500

SEARCH

Employee Registration:

Employee Registration: Save

HOSPITAL MANAGEMENT SYSTEM

EMPLOYEE REGISTRATION FORM

EMPLOYEE ID	1001	SALARY	150000
EMPLOYEE NAME	Lexi	EXPERIENCE	3 Years
SEX	Female	CONTACT NUMBER	9887585450
AGE	30	EMAIL	lexijohn@gmail.com
EMPLOYEE DESIGNATION [DOCTOR,NURSE,RECEPTIONIST]		DOCTOR	

SAVE **DELETE** **EXIT**

HOSPITAL DATABASE SYSTEM
EMPLOYEE DATA ADDED
OK

Employee Registration : Delete

HOSPITAL MANAGEMENT SYSTEM

DELETE EMPLOYEE WINDOW

ENTER EMPLOYEE ID TO DELETE 1002

DELETE

HOSPITAL DATABASE SYSTEM
EMPLOYEE DATA DELETED
OK

Book Appointment:

Book Appointment: Save

APPOINTMENT FORM

PATIENT ID	111	APPOINTMENT TIME(HH:MM:SS)	10:30:00
DOCTOR ID	1001	APPOINTMENT DATE(YYYY-MM-DD)	18-11-2020
APPOINTMENT NO	315	DESCRIPTION	Minor tooth surgery

SAVE DELETE SEARCH APPOINTMENTS EXIT

Hospital DATABASE SYSTEM
APPOINTMENT SET SUCCESSFULLY
OK

Book Appointment: Delete

DELETE APPOINTMENT WINDOW

ENTER APPOINTMENT NO TO DELETE 315

DELETE

Hospital DATABASE SYSTEM
PATIENT APPOINTMENT DELETED
OK

Book Appointment: Search Appointments

HOSPITAL MANAGEMENT SYSTEM

SEARCH APPOINTMENT WINDOW

ENTER DATE TO VIEW APPOINTMENTS(YYYY-MM-DD) 18-11-2020

PATIENT ID	111
PATIENT NAME	John
APPOINTMENT NO	315
DOCTOR ID	1012
APPOINTMENT TIME(HH:MM:SS)	10:30:00

SEARCH

Patient Bill:

Patient Bill: Update Data

HOSPITAL MANAGEMENT SYSTEM

BILLING WINDOW

PATIENT ID	111		
DATE DISCHARGED(YYYY-MM-DD)	28-10-2020	UPDATE DISCHARGE DATE	
TREATMENT	Root Canal	MEDICINE	IBUPROFEN
TREATMENT CODE	R13	MEDICINE QUANTITY	2
TREATMENT COST ₹	5000	MEDICINE PRICE ₹	50

UPDATE DATA GENERATE BILL EXIT

HOSPITAL DATABASE SY... X

BILLING DATA SAVED

OK

Patient Bill: Update Discharge Date

HOSPITAL MANAGEMENT SYSTEM

BILLING WINDOW

PATIENT ID	111		
DATE DISCHARGED(YYYY-MM-DD)	28-10-2020	UPDATE DISCHARGE DATE	
TREATMENT	Root Canal	MEDICINE	IBUPROFEN
TREATMENT CODE	R13	MEDICINE QUANTITY	2
TREATMENT COST ₹	5000	MEDICINE PRICE ₹	50

HOSPITAL DATABASE SYSTEM

DISCHARGE DATE UPDATED

OK

UPDATE DATA **GENERATE BILL** **EXIT**

Patient Bill: Generate Bill

HOSPITAL MANAGEMENT SYSTEM

BILLING WINDOW

PATIENT ID	111		
DATE DISCHARGED(YYYY-MM-DD)	28-10-2020	UPDATE DISCHARGE DATE	
TREATMENT	Root Canal	MEDICINE	IBUPROFEN
TREATMENT CODE	R13	MEDICINE QUANTITY	2
TREATMENT COST ₹	5000	MEDICINE PRICE ₹	50
TOTAL AMOUNT OUTSTANDING		20100	

UPDATE DATA **GENERATE BILL** **EXIT**

7. CONCLUSION

Well-tuned hospital management workflow involves lots of important decisions that should be made in the most efficient and quick way. Nowadays it is hard to implement it without the distinct hospital management system.

Hospital Management System was introduced to solve the complications coming from managing all the paper works of every patient associated with the various departments of hospitalization with confidentiality. Hospital Management System provides the ability to manage all the paperwork in one place, reducing the work of staff in arranging and analyzing the paperwork of the patients.

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

8. FUTURE SCOPE

Hospitals and healthcare centers have undergone a change for its betterment. The administrations of healthcare sector are opting IT solutions for the better management and patient care in their hospital campus. Daily functions like patient registration, monitoring blood bank, managing admission and overall management of various departments can be easily performed with higher accuracy after the installation of hospital software.

The modules of hospital management software are user-friendly and easy to access. It has a common user-friendly interface having several modules. The officials can utilize these modules in their processes without any hassle and make the best possible use of hospital management system.

Since, every hospital has some or the other points of worth those vary in comparison with to its competitors. Hence, most of the IT companies give on-demand solutions or feature of customization. It further implicates that hospital information management software can be customized by specifying personal requirements of the campus.

The automated functions of online hospital software make productivity effective. This web-based IT solution has automated operations and permit officials to continue with their work in a swift manner. It further implicates that complete automation of the hospital software makes productivity easily obtainable. All in all, this enhances the infrastructure of hospital administration.

This tool is a comprehensive solution that integrates all the departments by creating a common platform. In brief, hospital management system has all the modules that serve purpose of all the departments of healthcare institute. In fact, these modules have been competitively designed to make all the operations simplified.

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- <https://www.upgrad.com/blog/python-tkinter-projects/>