



HOSPITAL MANAGEMENT SYSTEM

Course Code:CSE134

Course Title:Data Structure Lab

Submitted TO :

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Date of Submission: 12/11/2024

Introduction:

The project Hospital Management system includes registration of patients, storing their details into the system, and also computerized billing in the pharmacy. 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 Hospital Management System can be entered using a username and password. 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 multispecialty 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 your organization and improve its effectiveness and quality of work. Managing the key processes efficiently is critical to the success of the hospital helps you manage your processes.

Background Study:

In today's fast-paced healthcare environment, efficient management of hospital operations is crucial. Manual record-keeping and traditional administrative methods can be time-consuming, error-prone, and hinder the delivery of quality patient care. A Hospital Management System (HMS) is a computer-based solution designed to automate and streamline various

hospital processes. By digitizing patient records, appointment scheduling, billing, emergency services, and staff management, HMS helps hospitals improve efficiency, reduce costs, and enhance patient satisfaction. In traditional setups, such information was managed manually, leading to inefficiency and a higher likelihood of errors.

In this project, various C programming techniques are used:

(i) Structures: Used to group patient, doctor, and staff details in single entities.

(ii) Functions: Modular approach for each feature, such as patientManagementMenu, doctorManagementMenu, appointmentManagementMenu, emergencyServicesMenu, billingManagementMenu and staffManagementMenu.

(iii) Control Statements and Loops: Used to navigate through the main menu and interact with different options.

(iv) File Handling (if implemented): Stores and retrieves information even after the program is closed.

We drew inspiration from numerous research papers to develop our project. These papers guided us on effective use of functions, files, and structures, enabling us to create a unique and innovative solution.¹²³

Features:

1

<https://sg.docworkspace.com/d/slACHhaKPAqvwwLkG?sa=601.1123&ps=1&fn=Hospital%20Managment%20Project%20SE-converted.pdf>

2

https://search.app?link=https%3A%2F%2Fwww.researchgate.net%2Fpublication%2F380505845_Hospital_Management_System_Project_Report&utm_campaign=aga&utm_source=agsadl2%2Csh%2Ffx%2Fgs%2Fm2%2F4

3

https://search.app?link=https%3A%2F%2Fwww.geeksforgeeks.org%2Fc-program-for-hospital-management-system%2F&utm_campaign=aga&utm_source=agsadl2%2Csh%2Ffx%2Fgs%2Fm2%2F4

1. User Authentication and Access Control:

```
-----  
===== WELCOME =====  
===== TO =====  
===== HOSPITAL =====  
===== MANAGEMENT =====  
===== SYSTEM =====  
-----  
  
-----  
  
Enter any key to continue.....  
Please enter your username: abc  
Please enter your password: 123  
Invalid credentials. 2 attempt(s) remaining.  
Please enter your username: |
```

```
-----
=====
=                                     =
=                                     =
=                                     =
=                                     =
=                                     =
=                                     =
=====
-----

Enter any key to continue.....

Please enter your username: admin
Please enter your password: sd
Invalid credentials. 2 attempt(s) remaining.

Please enter your username: admin
Please enter your password: password123
Login successful! Access granted.
```

```

*****
*
*          WELCOME TO PAF HEALTHCARE HOSPITAL
*          (Patient Assistance and Family Care Hospital)
*
*****
*
*          Providing the Best Healthcare Solutions
*
*****

*** MAIN MENU ***
-----$
$-----
1. Patient Management
2. Emergency Services
3. Doctor Management
4. Appointment Scheduling
5. Billing Management
6. Staff Management
7. Exit

Please choose an option (1-7): 1

```

2.Patient Management:

```
C:\C-programming\800\Unit < + v
*** MAIN MENU ***
$-----$
1. Patient Management
2. Emergency Services
3. Doctor Management
4. Appointment Scheduling
5. Billing Management
6. Staff Management
7. Pharmacy Management
8. Exit

Please choose an option (1-8): 1

====>> PATIENT MANAGEMENT MENU <<====
-----

*** Please choose an option ***
-----
[1] Add New Patient
[2] View Patient List
[3] Update Patient Information
[4] Delete Patient
[5] Back to Main Menu
-----

Please choose an option (1-5): 1

*****
|      Add New Patient      |
*****
```

(i) Add New Patient

```
====>> PATIENT MANAGEMENT MENU <<====
-----

*** Please choose an option ***
-----
[1] Add New Patient
[2] View Patient List
[3] Update Patient Information
[4] Delete Patient
[5] Back to Main Menu
-----

Please choose an option (1-5): 1

*****
|      Add New Patient      |
*****
Enter patient's name: Riha
Enter patient's age: 25
Enter patient's disease: fever
Enter patient type (Outpatient/Inpatient): Outpatient
Enter patient's medical history (optional): recent surgeries

-----
Patient added successfully!
-----
```

(ii) View Patient List:

```
====>> PATIENT MANAGEMENT MENU <<====
-----

*** Please choose an option ***
-----
[1] Add New Patient
[2] View Patient List
[3] Update Patient Information
[4] Delete Patient
[5] Back to Main Menu
-----

Please choose an option (1-5): 2

-----
|      No patients to display at the moment!      |
-----
```

```
====> PATIENT MANAGEMENT MENU <====
=====
*** Please choose an option ***
-----
[1] Add New Patient
[2] View Patient List
[3] Update Patient Information
[4] Delete Patient
[5] Back to Main Menu
-----

Please choose an option (1-5): 2

|                                     Patient List                                     |
|-----|-----|-----|-----|-----|-----|
| ID | Name | Age | Disease | Type | Medical History |
|-----|-----|-----|-----|-----|-----|
| 1 | Riha | 25 | fever | outpatient | recent surgeries |
| 2 | Risa | 45 | headache | outpatient | high pressure |
|-----|-----|-----|-----|-----|-----|

====> PATIENT MANAGEMENT MENU <====
=====
```

(iii) Update patient Information:

```
Please choose an option (1-5): 3

*=====*
| Update Patient Info |
*=====*
Enter patient ID to update: 1

*-----*
| Update Patient Details |
*-----*

Update patient name: Rista
Update patient age: 45
Update patient disease: heart pain
Update patient type (Outpatient/Inpatient): Outpatient
Update patient's medical history (optional): High pressure

| Patient updated successfully! |
```

(iv).Delete Patient:

```
====> PATIENT MANAGEMENT MENU <====
=====
*** Please choose an option ***
-----
[1] Add New Patient
[2] View Patient List
[3] Update Patient Information
[4] Delete Patient
[5] Back to Main Menu
-----

Please choose an option (1-5): 4

+-----+
| Delete Patient |
+-----+
Enter the ID of the patient you want to delete: 1

+-----+
| Patient with ID 1 has been successfully deleted. |
+-----+

====> PATIENT MANAGEMENT MENU <====
=====
```

3. Emergency Services:


```
C:\C-programming\800\Unit1 x + -
*** MAIN MENU ***
$$$
1. Patient Management
2. Emergency Services
3. Doctor Management
4. Appointment Scheduling
5. Billing Management
6. Staff Management
7. Pharmacy Management
8. Exit
Please choose an option (1-8): 2

==>>> EMERGENCY SERVICES MENU <==
=====
*** Choose an option below ***
=====
[1] Add Emergency Patient
[2] Display Emergency Patients
[3] Add Ambulance Request
[4] Display Ambulance Requests
[5] Schedule Emergency Appointment
[6] Display Emergency Appointments
[7] Back to Main Menu
=====
Please choose an option (1-7): 1
Enter emergency patient's name: prity
```

(i)Add Emergency Patient:

```
C:\C-programming\800\Unit1 x + -
=====
Please choose an option (1-7): 1
Enter emergency patient's name: prity
Enter emergency patient's age: 21
Enter emergency type (e.g., Heart Attack, Accident, etc.): headache

=====
| Emergency patient added successfully! |
=====
```

(ii)Display Emergency Patients:

```
C:\C-programming\800\Unit1 x + -
[2] Display Emergency Patients
[3] Add Ambulance Request
[4] Display Ambulance Requests
[5] Schedule Emergency Appointment
[6] Display Emergency Appointments
[7] Back to Main Menu
=====
Please choose an option (1-7): 2

+-----+
| No emergency patients to display at the moment!! |
+-----+
```

```
C:\C-programming\800\Unit1 x + -
[3] Add Ambulance Request
[4] Display Ambulance Requests
[5] Schedule Emergency Appointment
[6] Display Emergency Appointments
[7] Back to Main Menu
=====
Please choose an option (1-7): 2

=====
| Emergency Patient List |
=====
* ID | Name | Age | Emergency Type *
* 1 | ruma | 20 | headache *
* ID | Name | Age | Emergency Type *
* 2 | suma | 15 | heart Attack *
```

(iii)Add Ambulance Request:

```
==>> EMERGENCY SERVICES MENU <==<
=====

*** Choose an option below ***
=====
[1] Add Emergency Patient
[2] Display Emergency Patients
[3] Add Ambulance Request
[4] Display Ambulance Requests
[5] Schedule Emergency Appointment
[6] Display Emergency Appointments
[7] Back to Main Menu
=====

Please choose an option (1-7): 3
Enter patient's name for ambulance request: farhana
Enter ambulance pickup location: metropolitan university

*-----*
|           Ambulance request added successfully!           |
*-----*
```

(iv) Display Ambulance Request:

```
*** Choose an option below ***
=====
[1] Add Emergency Patient
[2] Display Emergency Patients
[3] Add Ambulance Request
[4] Display Ambulance Requests
[5] Schedule Emergency Appointment
[6] Display Emergency Appointments
[7] Back to Main Menu
=====

Please choose an option (1-7): 4

+-----+
|           No ambulance requests to display!           |
+-----+
```

```
==>> EMERGENCY SERVICES MENU <==<
=====

*** Choose an option below ***
=====
[1] Add Emergency Patient
[2] Display Emergency Patients
[3] Add Ambulance Request
[4] Display Ambulance Requests
[5] Schedule Emergency Appointment
[6] Display Emergency Appointments
[7] Back to Main Menu
=====

Please choose an option (1-7): 4

+-----+
|           Ambulance Request List           |
+-----+
| ID | Patient Name | Pickup Location |
+-----+
| 1  | farhana      | metropolitan university |
+-----+
```

(v) Schedule Emergency Appointment:

```
*** Choose an option below ***
=====
[1] Add Emergency Patient
[2] Display Emergency Patients
[3] Add Ambulance Request
[4] Display Ambulance Requests
[5] Schedule Emergency Appointment
[6] Display Emergency Appointments
[7] Back to Main Menu
=====

Please choose an option (1-7): 5

+-----+
|           Schedule Emergency Appointment           |
+-----+
Enter emergency patient's name: Tuha
Enter doctor's name for emergency appointment: Dr.Ruha
Enter emergency appointment date (DD/MM/YYYY): 12/11/2024

+-----+
| Emergency Appointment Successfully Scheduled! |
+-----+
```


(vi) Display Emergency Appointments:

```
*** Choose an option below ***
=====
[1] Add Emergency Patient
[2] Display Emergency Patients
[3] Add Ambulance Request
[4] Display Ambulance Requests
[5] Schedule Emergency Appointment
[6] Display Emergency Appointments
[7] Back to Main Menu
=====

Please choose an option (1-7): 6
+-----+
|                                     |
| No emergency appointments to display! |
|                                     |
+-----+
```

```
[3] Add Ambulance Request
[4] Display Ambulance Requests
[5] Schedule Emergency Appointment
[6] Display Emergency Appointments
[7] Back to Main Menu
=====

Please choose an option (1-7): 6
+-----+
|                                     |
| Emergency Appointment List          |
|                                     |
+-----+
| ID | Patient Name | Doctor Name | Date | Time |
+-----+
| 1   | rumi          | D.shirin   | 12/11/24 | Immediate |
| 2   | ritu          | D.Bikash   | 13/11/24 | Immediate |
+-----+
```

4.Doctor Management:

```
2. Emergency Services
3. Doctor Management
4. Appointment Scheduling
5. Billing Management
6. Staff Management
7. Pharmacy Management
8. Exit

Please choose an option (1-8): 3

====>> DOCTOR MANAGEMENT MENU <====
=====
*** Please choose an option ***
=====
[1] Add New Doctor
[2] View Doctor List
[3] Update Doctor Information
[4] Return to Main Menu
=====

Please choose an option (1-4):
```

(i) Add New Doctor:

```
85
86
87 [2] View Doctor List
88 [3] Update Doctor Information
89 [4] Return to Main Menu
90
91 =====
92
93 Please choose an option (1-4): 1
94
95 =====
96 Enter Doctor's Information
97 =====
98 -> Enter doctor's name: Dr.Tanha
99 -> Enter doctor's specialty: Cardiology
100
101
102 Doctor added successfully!
103 +-----+
104
105
```

(ii)View Doctor List:

```
Please choose an option (1-8): 3

==>> DOCTOR MANAGEMENT MENU <<==
-----

*** Please choose an option ***
-----
[1] Add New Doctor
[2] View Doctor List
[3] Update Doctor Information
[4] Return to Main Menu
-----

Please choose an option (1-4): 2
No doctors to display.
```

```
[3] Update Doctor Information
[4] Return to Main Menu
-----

Please choose an option (1-4): 2

+-----+-----+-----+
| ID | Name | Specialty |
+-----+-----+-----+
| 1 | Dr.Tanha | Cardiology |
| 2 | Dr.Raha | Gynaecology |
+-----+-----+-----+

==>> DOCTOR MANAGEMENT MENU <<==
```

(iii)Update Doctor Information:

```
Update Doctor Information
=====
Enter doctor ID to update: 2

+-----+-----+-----+
| ID | Name | Specialty |
+-----+-----+-----+
| 2 | Dr.Raha | Gynaecology |
+-----+-----+-----+

Update doctor name: Dr.Fariha
Update doctor specialty: Neurology

+-----+
| Doctor information updated successfully! |
+-----+
```

5.Appintment Scheduling:

```
*** MAIN MENU ***
-----
1. Patient Management
2. Emergency Services
3. Doctor Management
4. Appointment Scheduling
5. Billing Management
6. Staff Management
7. Pharmacy Management
8. Exit

Please choose an option (1-8): 4

==>> Appointment SCHEDULING MENU <<==
-----

*** Please choose an option ***
-----
[1] Schedule a New Appointment
[2] View Existing Appointments
[3] Return to Main Menu
-----
```

(i) Schedule a New Appointment:

```
1 [1] Schedule a New Appointment
2 [2] View Existing Appointments
3 [3] Return to Main Menu
4
5 =====
6
7 Please choose an option (1-3): 1
8 -> Enter patient's name: Taha
9 -> Enter doctor's name: Dr.Raha
10 -> Enter appointment date (DD/MM/YYYY): 12/11/2024
11 -> Enter appointment time (HH:MM): 3:30
12
13 =====
14 Appointment scheduled successfully!
15 =====
16
17
```

(ii) View Existing Appointment:

```
85
86 ==>> Appointment SCHEDULING MENU <==
87
88
89 *** Please choose an option ***
90
91 =====
92 [1] Schedule a New Appointment
93 [2] View Existing Appointments
94 [3] Return to Main Menu
95 =====
96
97 Please choose an option (1-3): 2
98
99 =====
100 No appointments to display.
101 =====
102
103
```

```
1 *** Please choose an option ***
2
3 =====
4 [1] Schedule a New Appointment
5 [2] View Existing Appointments
6 [3] Return to Main Menu
7 =====
8
9 Please choose an option (1-3): 2
10
11 =====
12
13 | ID | Patient Name | Doctor Name | Date | Time |
14 |----|-----|-----|-----|-----|
15 | 1 | Taha | Dr.Raha | 12/11/2024 | 3:30 |
16 | 2 | Afifa | Dr.Nuha | 13/11/2024 | 05:00 |
17 |----|-----|-----|-----|-----|
18
19
```

6.Billing Management:

```
291
292
293 1. Patient Management
294 2. Emergency Services
295 3. Doctor Management
296 4. Appointment Scheduling
297 5. Billing Management
298 6. Staff Management
299 7. Pharmacy Management
300 8. Exit
301
302 Please choose an option (1-8): 5
303
304
305 ==>> BILLING MANAGEMENT SYSTEM <==
306
307
308 *** Please choose an action ***
309
310 =====
311 [1] Generate a New Bill
312 [2] Display Existing Bills
313 [3] Return to Main Menu
314 =====
315
316
```

(i) Generate a New Bill:

```
288
289 [1] Generate a New Bill
290 [2] Display Existing Bills
291 [3] Return to Main Menu
292
293 =====
294
295 Please choose an option (1-3): 1
296
297 =====
298 Generate New Bill
299 =====
300 => Enter patient's name: Tanha
301 => Enter consultation fee: 1000
302 => Enter medication cost: 2000
303 => Enter room charges: 1200
304
305 =====
306 Bill generated successfully!
307 Total Bill: 4200.00
308 =====
309
310
```

(ii) Display Existing Bills:

```
116      ==>> BILLING MANAGEMENT SYSTEM <==
117      -----
118      *** Please choose an action ***
119      -----
120      [1] Generate a New Bill
121      [2] Display Existing Bills
122      [3] Return to Main Menu
123      -----
124      Please choose an option (1-3): 2
125      -----
126      No bills to display.
127      -----
```

```
287      *** Please choose an action ***
288      -----
289      [1] Generate a New Bill
290      [2] Display Existing Bills
291      [3] Return to Main Menu
292      -----
293      Please choose an option (1-3): 2
294      -----
295      ID      Patient Name      Total Bill
296      -----
297      1      Tanha      4200.00
298      2      Natasha      6900.00
299      -----
```

7. Staff Management:

```
288      *** MAIN MENU ***
289      -----
290      1. Patient Management
291      2. Emergency Services
292      3. Doctor Management
293      4. Appointment Scheduling
294      5. Billing Management
295      6. Staff Management
296      7. Pharmacy Management
297      8. Exit
298      Please choose an option (1-8): 6
299      -----
300      ==>> STAFF MANAGEMENT SYSTEM <==
301      -----
302      *** Please choose an action ***
303      -----
304      [1] Add New Staff
305      [2] Display All Staff
306      [3] Return to Main Menu
307      -----
```

(i) Add New Staff:

```
284      [1] Add New Staff
285      [2] Display All Staff
286      [3] Return to Main Menu
287      -----
288      Please choose an option (1-3): 1
289      -----
290      Add New Staff Member
291      -----
292      -> Enter staff name: Tazrin
293      -> Enter staff position: Nurse
294      -----
295      Staff added successfully!
296      -----
```

(ii) Display All Staff:

```
6
7
8      <<<<< STAFF MANAGEMENT SYSTEM <<<<<
9      =====
10
11 *** Please choose an action ***
12 -----
13 [1] Add New Staff
14 [2] Display All Staff
15 [3] Return to Main Menu
16 -----
17
18 Please choose an option (1-3): 2
19
20 =====
21 No staff members to display.
22 =====
23
24 <<<<< STAFF MANAGEMENT SYSTEM <<<<<
25 =====
26
27 *** Please choose an action ***
28 -----
29 [1] Add New Staff
30 [2] Display All Staff
31 [3] Return to Main Menu
32 -----
```

```
286
287 *** Please choose an action ***
288 -----
289 [1] Add New Staff
290 [2] Display All Staff
291 [3] Return to Main Menu
292 -----
293
294 Please choose an option (1-3): 2
295
296 -----+-----+-----+
297 | ID | Name | Position |
298 +-----+-----+-----+
299 | 1 | Tazrin | Nurse |
300 | 2 | Anjum | Doctor |
301 | 3 | Mr.Hossain | Security guard |
302 +-----+-----+-----+
303
304
305
306
307
```

8. Pharmacy Management:

```
10
11
12 *** MAIN MENU ***
13 -----
14 1. Patient Management
15 2. Emergency Services
16 3. Doctor Management
17 4. Appointment Scheduling
18 5. Billing Management
19 6. Staff Management
20 7. Pharmacy Management
21 8. Exit
22 -----
23 Please choose an option (1-8): 7
24
25 <<<<< PHARRACY MANAGEMENT MENU <<<<<
26 =====
27
28 *** Please choose an option ***
29 -----
30 [1] Add New Medicine
31 [2] View Medicine List
32 [3] Update Medicine Information
33 [4] Delete Medicine
34 [5] Back to Main Menu
35 -----
36
37 Please choose an option (1-5):
```

(i)Add New Medicine:

```
286
287 Please choose an option (1-5): 1
288
289
290 *-----*
291 | Add New Medicine |
292 *-----*
293 Enter medicine name: Napa
294 Enter quantity: 50
295 Enter price per unit: 1.5
296 Enter expiration date (MM-YYYY): 12/2025
297
298 -----
299 Medicine added successfully!
300 -----
301
302
```

(ii)View Medicine List:


```
286
287 *** Please choose an option ***
288 -----
289 [1] Add New Medicine
290 [2] View Medicine List
291 [3] Update Medicine Information
292 [4] Delete Medicine
293 [5] Back to Main Menu
294 -----
295
296 Please choose an option (1-5): 2
297
298 -----
299 | No medicines available to display. |
300 -----
301
302
303
304
305
```

```
284
285 [3] Update Medicine Information
286 [4] Delete Medicine
287 [5] Back to Main Menu
288 -----
289
290 Please choose an option (1-5): 2
291
292
293 *** MEDICINE LIST ***
294 -----
295 | Medicine ID | Medicine Name | Quantity | Price per Unit | Expiration Date | Total Cost |
296 -----
297 | 1 | Napa | 50 | 10.00 | 22/2026 | 500.00 |
298 | 2 | Seclo | 20 | 6.00 | 20-2026 | 120.00 |
299 | 3 | Paracetamol | 30 | 2.00 | 30/2026 | 60.00 |
300 -----
301
302
303
304
305 =====> PHARMACY MANAGEMENT MENU <=====
306 -----
307
```

(iii)Update Medicine Information:

```
87
88
89 =====> PHARMACY MANAGEMENT MENU <=====
90 -----
91
92 *** Please choose an option ***
93 -----
94 [1] Add New Medicine
95 [2] View Medicine List
96 [3] Update Medicine Information
97 [4] Delete Medicine
98 [5] Back to Main Menu
99 -----
100
101 Please choose an option (1-5): 3
102
103 -----
104 | Update Medicine Information |
105 -----
106
107 Enter the ID of the medicine to update: 1
108 Update quantity: 50
109 Update price per unit: 10
110 Update expiration date (MM-YYYY): 22/2026
111 -----
112
113 Medicine updated successfully!
114 -----
115
116
```

(iv)Delete Medicine:

```
286
287 =====> PHARMACY MANAGEMENT MENU <=====
288 -----
289
290 *** Please choose an option ***
291 -----
292 [1] Add New Medicine
293 [2] View Medicine List
294 [3] Update Medicine Information
295 [4] Delete Medicine
296 [5] Back to Main Menu
297 -----
298
299 Please choose an option (1-5): 4
300
301 -----
302 | Delete Medicine |
303 -----
304
305 Enter the ID of the medicine to delete: 1
306 -----
307
308 Medicine with ID 1 has been successfully deleted!
309 -----
310
311
```


Limitations:

- **Technical Limitations:**

- (i). **Complexity:** Implementing a comprehensive HMS can be complex, requiring significant technical expertise.

- (ii). **Interoperability Issues:** Seamless integration with other healthcare systems can be challenging due to varying standards and data formats.

- (iii). **Scalability:** As the hospital grows, the HMS may need to be scaled to accommodate increased workload and data volume.

- (iv). **Cyber security Threats:** Hospitals are prime targets for cyber attacks, making data security a major concern.

- **Human Factors:**

- (i). **Resistance to Change:** Healthcare professionals may be resistant to adopting new technology, especially if it disrupts their workflow.

- (ii). **User Error:** Mistakes in data entry or system usage can lead to errors and inefficiencies.

- (iii). **Training and Support:** Adequate training is essential for staff to effectively use the HMS, and ongoing support is needed to address issues and provide updates.

- **Cost Considerations:**

- (i). **Initial Investment:** Implementing an HMS requires significant upfront costs, including hardware, software, and implementation services.

- (ii). **Ongoing Maintenance Costs:** Regular maintenance, updates, and technical support are necessary to keep the system running smoothly.

(iii). **Data Migration Costs:** Migrating existing patient data to the new system can be time-consuming and expensive.

By understanding these limitations and carefully planning the implementation process, healthcare organizations can mitigate risks and maximize the benefits of an HMS.

Future scope:

1.For Patients:

➤ Improved Patient Experience:

- **Easy Appointment Scheduling:** Convenient online booking and reminders.
- **Centralized Medical Records:** Secure access to medical history and prescriptions.
- **Faster Check-in and Check-out:** Streamlined admission and discharge processes.
- **Real-time Updates:** Timely notifications about appointments, test results, and treatment plans.

2.For Doctors:

➤ Enhanced Efficiency:

- **Digitalized Patient Records:** Quick access to detailed patient information.
- **Automated Scheduling:** Optimized appointment management.
- **Efficient Prescription Management:** Electronic prescriptions and drug interaction alerts.
- **Real-time Updates:** Timely notifications about patient conditions and test results.

3.Improved Decision-Making:

- **Data-Driven Insights:** Data analytics to identify trends and improve patient care.
- **Clinical Decision Support Systems:** Evidence-based recommendations for diagnosis and treatment.

4.For Emergency Services:

➤ **Faster Response Times:**

- Real-time Patient Information: Access to critical patient data for rapid triage.
- Efficient Resource Allocation: Optimized bed management and staff scheduling.
- Streamlined Patient Registration: Quick patient intake and data entry.

5. For Billing and Finance:

➤ **Accurate Billing:**

- Automated Billing Processes: Reduced errors and faster billing cycles.
- Real-time Financial Reports: Improved financial visibility and decision-making.
- Insurance Claims Management: Simplified claims submission and tracking.

6. For Appointments:

➤ **Efficient Scheduling:**

- Automated Appointment Scheduling: Optimized time slots and reduced wait times.
- Real-time Appointment Management: Easy rescheduling and cancellation.
- Automated Reminders: Reduced missed appointments.

7. For Staff:

➤ **Improved Workflow Efficiency:**

- Automated Tasks: Streamlined administrative tasks, such as data entry and report generation.
- Centralized Communication: Enhanced collaboration among staff members.
- Reduced Paperwork: Digitalized records and electronic signatures.

8. For Pharmacy:

➤ **Accurate Drug Dispensing:**

- **Real-time Inventory Management:** Optimized stock levels and reduced drug shortages.
- **Automated Prescription Processing:** Faster prescription filling and reduced errors.
- **Drug Interaction Alerts:** Improved patient safety.

Conclusion:

A Hospital Management System (HMS) is a comprehensive solution that streamlines various aspects of hospital operations. By integrating modules for patient management, emergency services, doctor management, appointment scheduling, billing, staff management, and pharmacy management, HMS optimizes workflows, reduces errors, and enhances patient care. It empowers healthcare providers to deliver timely and accurate care, improves operational efficiency, facilitates data-driven decision making, and improves staff productivity. By adopting HMS, hospitals can achieve greater efficiency, accuracy, and patient satisfaction, ultimately leading to improved patient outcomes.