

# PATIENT MANAGEMENT SYSTEM

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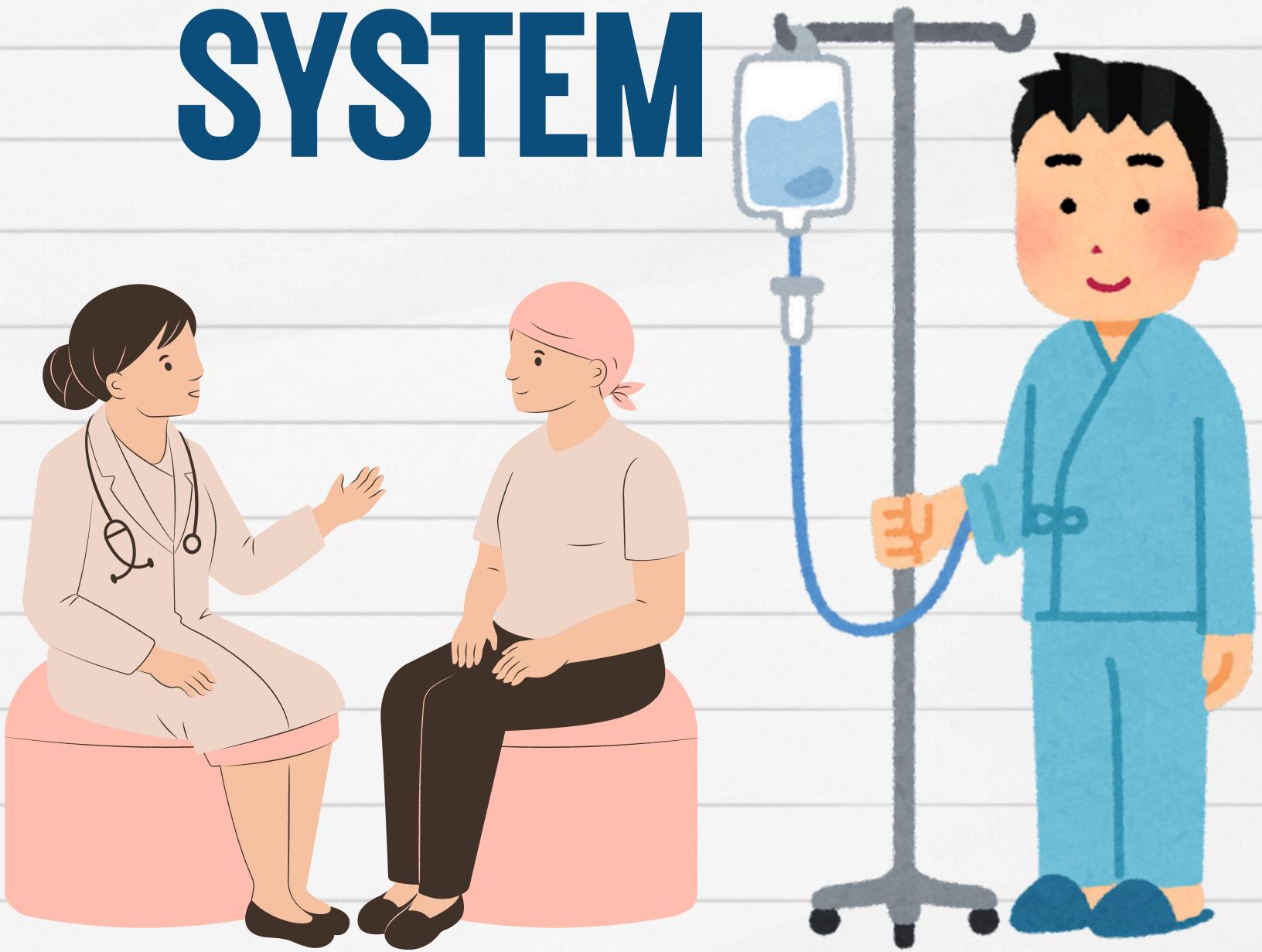
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# CONTENT

- Introduction
- Use-cases & Descriptions
- Database Design
- Proposed System Architecture
- Some Wireframes
- An example of reporting view
- Development Strategy



# INTRODUCTION: PATIENT MANAGEMENT SYSTEM



A System to help,

- Patient registration and appointment scheduling processes
- Real-time access to patient records.
- Enhance the efficiency
- Enable electronic payments
- Improve reporting for patient care
- Improve communication with patients



# USE-CASES

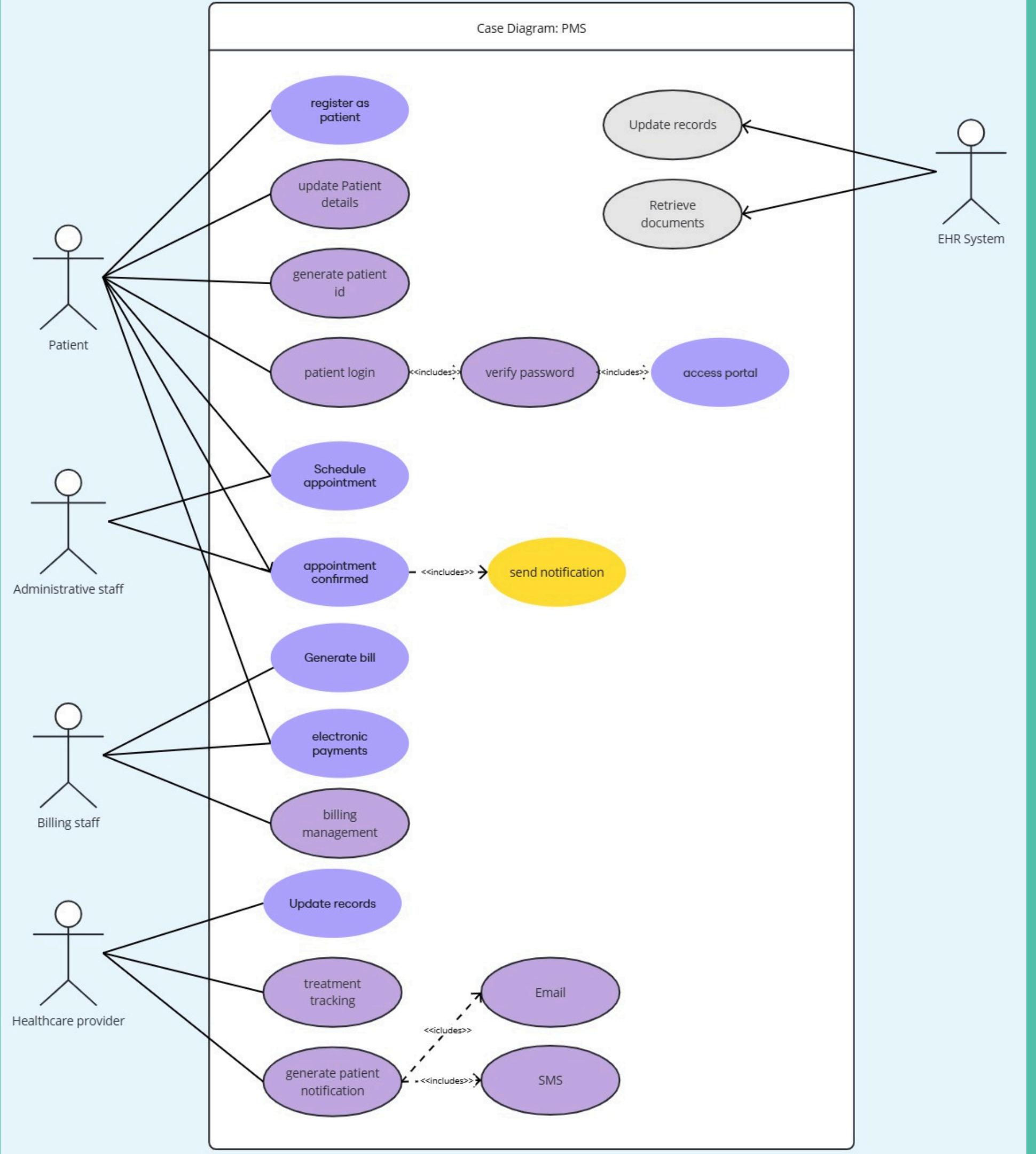


USE CASE DIAGRAMS DEPICTING A CLEAR IMAGE OF HOW DIFFERENT OPERATIONS OPERATE IN THE ORGANISATION. COMPONENTS OF USE CASE DIAGRAM INVOLVES:

- ACTORS: THE EXTERNAL ENTITIES WHICH WILL INTERACT WITH THE SYSTEM ARE PATIENT, ADMINISTRATIVE STAFF, BILLING STAFF, AND HEALTHCARE PROVIDER
- USE CASES: PATIENT REGISTRATION, APPOINTMENT SCHEDULING, BILLING MANAGEMENT, TREATMENT TRACKING, AND PATIENT NOTIFICATIONS



# USE CASE DIAGRAM



# USE CASE DESCRIPTION I

USE CASE 1: patient registration:

USE CASE ELEMENT	DETAILS
<b>Use case name</b>	Patient registration
<b>Actors</b>	Patient, administrative staff
<b>Description</b>	Patients enter their details and medical history information to register in the portal.
<b>Preconditions</b>	None
<b>Flow of events</b>	<ol style="list-style-type: none"><li>1. Administrative staff input the patient's details</li><li>2. The system validates the data which is entered.</li><li>3. Confirmation of registration and creation of a unique patient id.</li></ol>
<b>Postconditions</b>	Patient's data is stored and is accessible in all facilities.



# USE CASE DESCRIPTION II

## USE CASE 2: Appointment Scheduling

USE CASE ELEMENT	DETAILS
<b>Use case name</b>	Appointment Scheduling
<b>Actors</b>	Patient, administrative staff
<b>Description</b>	Patients schedule appointments online and confirmed by administrative staff
<b>Preconditions</b>	Patient must be registered on the system
<b>Flow of events</b>	<ol style="list-style-type: none"><li>1. Patient selects preferred time and date for the appointment.</li><li>2. System checks the doctor's availability.</li><li>3. Once checked, the appointment is confirmed.</li><li>4. Confirmation notification sent to the patient.</li></ol>
<b>Postconditions</b>	Appointment details are updated in the patient's record.



# USE CASE DESCRIPTION III

## USE CASE 3: Billing management

USE CASE ELEMENT	DETAILS
<b>Use case name</b>	Billing management
<b>Actors</b>	Patient, Billing staff
<b>Description</b>	Manages bills and payment for services
<b>Preconditions</b>	Patient record should exist
<b>Flow of events</b>	<ol style="list-style-type: none"><li>1. Billing staff generated bill</li><li>2. Patient receives the bill and review it</li><li>3. Payment is processed electronically</li><li>4. Payment confirmation is sent to the patient</li></ol>
<b>Postconditions</b>	Billing status is updated in patient's record

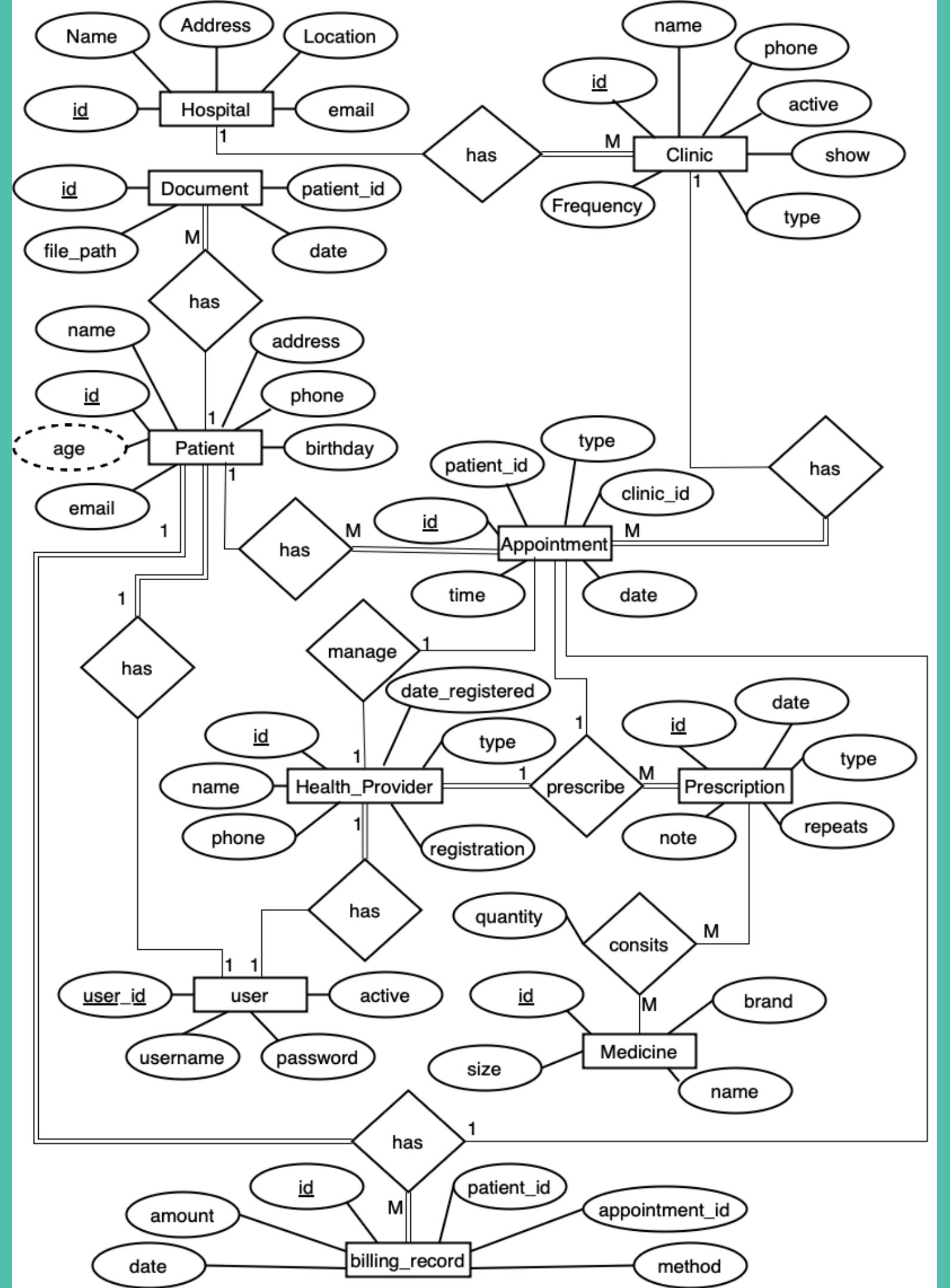




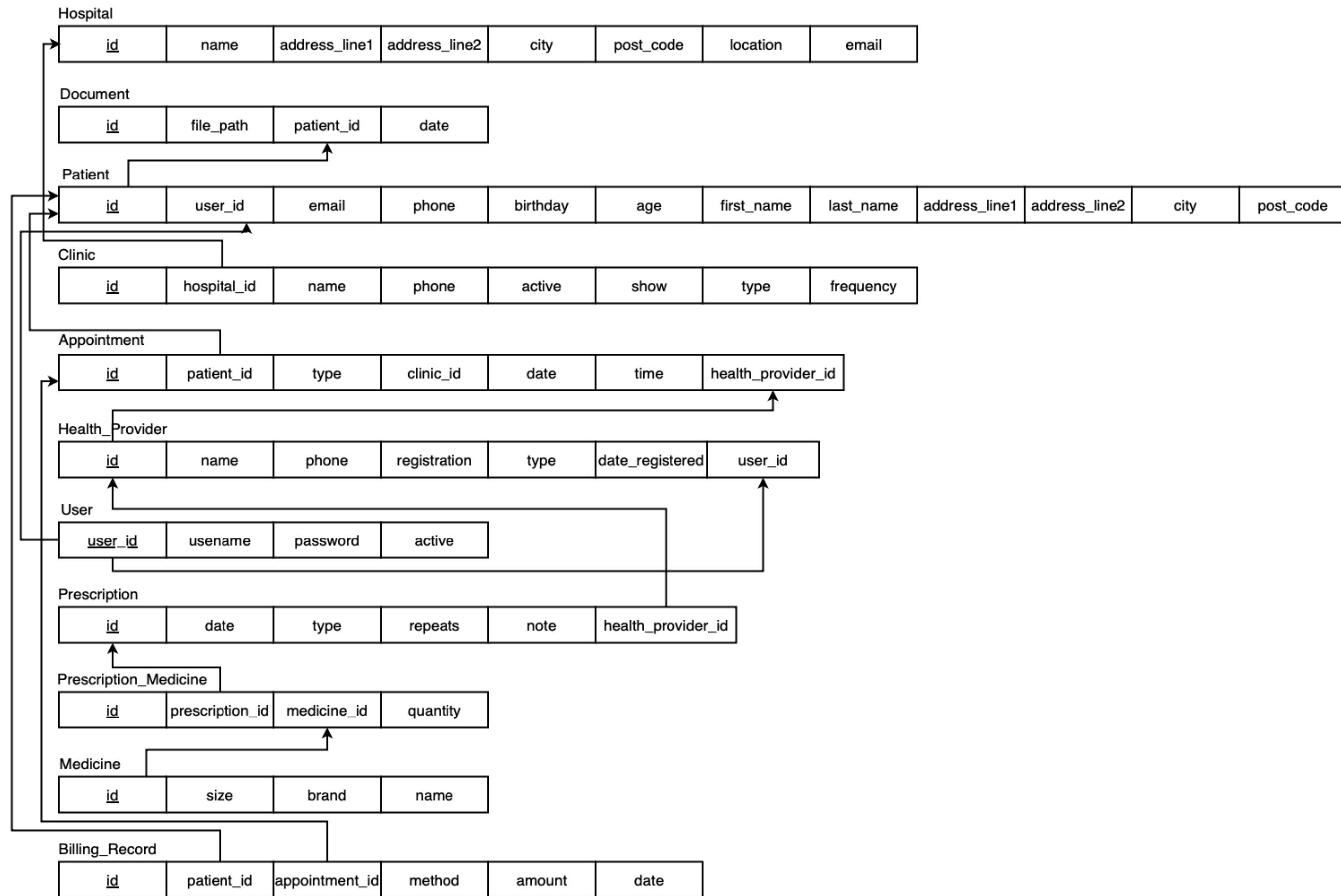
# DATABASE DESIGN



# ER DIAGRAM



# DATABASE SCHEMA



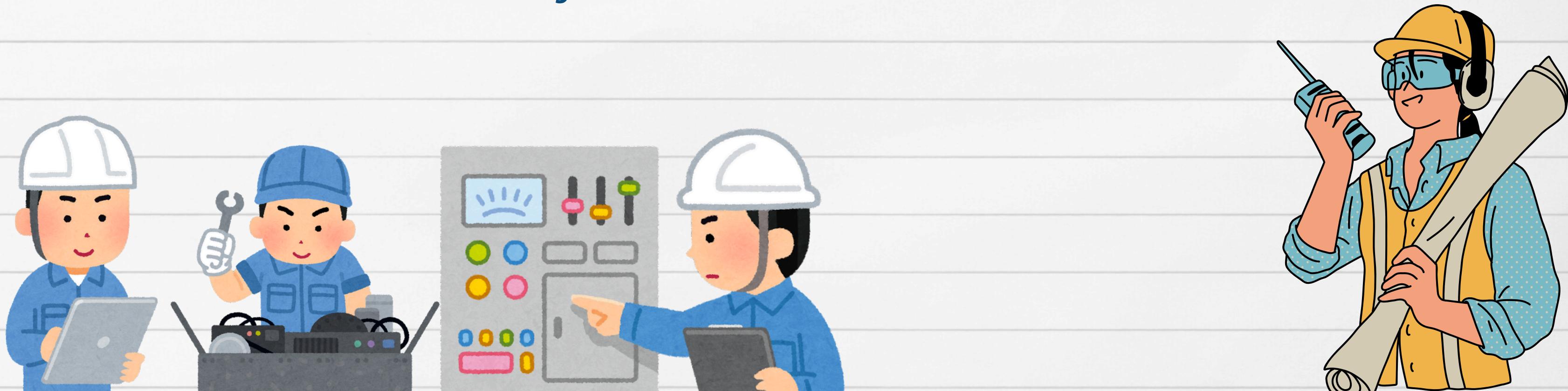


# SYSTEM ARCHITECTURE



# PROPOSED ARCHITECTURE

- Microservices
- Cloud Computing - AWS
- Hybrid Cloud Model

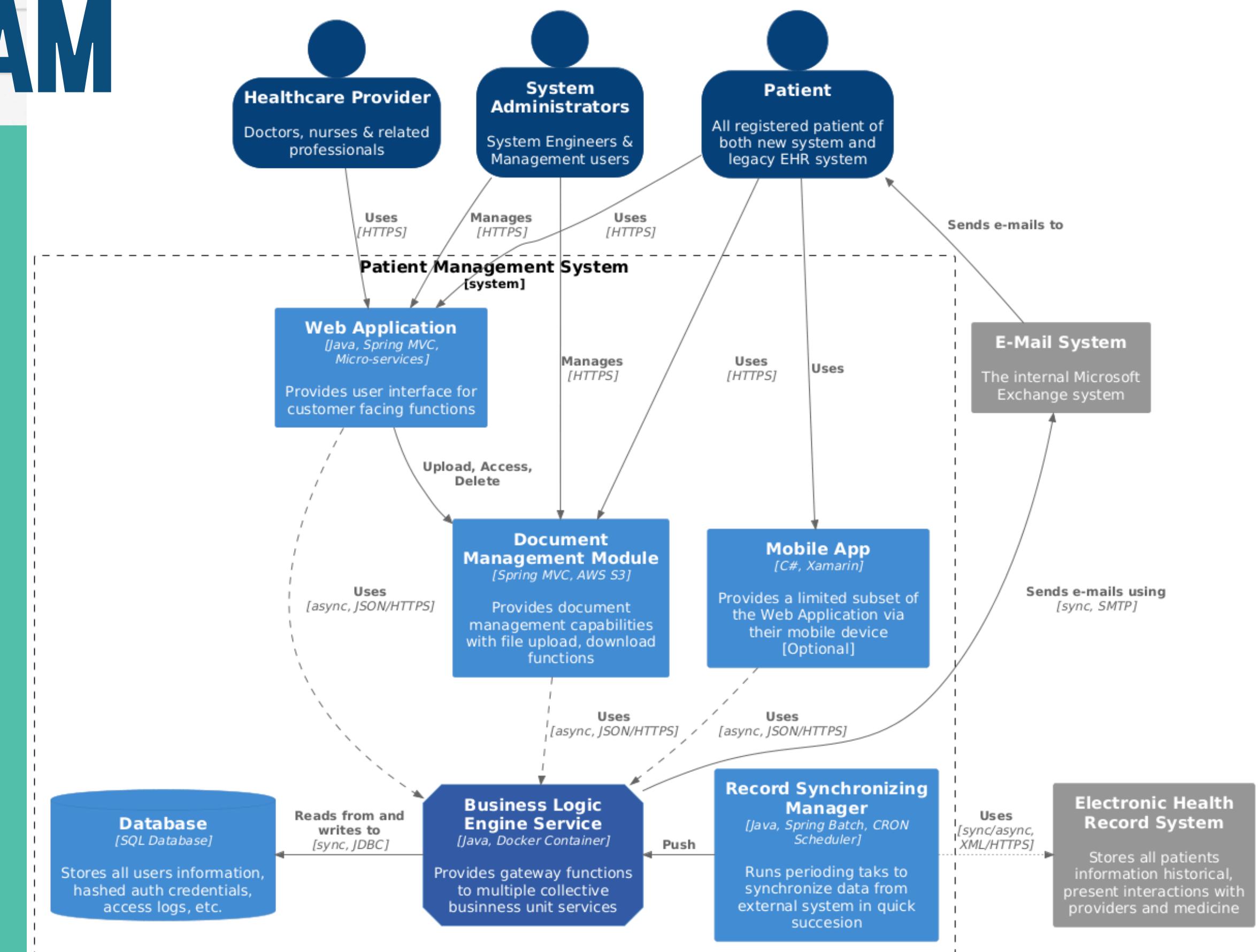


# CONTEXT DIAGRAM

- C4 DIAGRAM HAS,
- CONTEXT
  - COMPONENT
  - CONTAINER
  - CODE



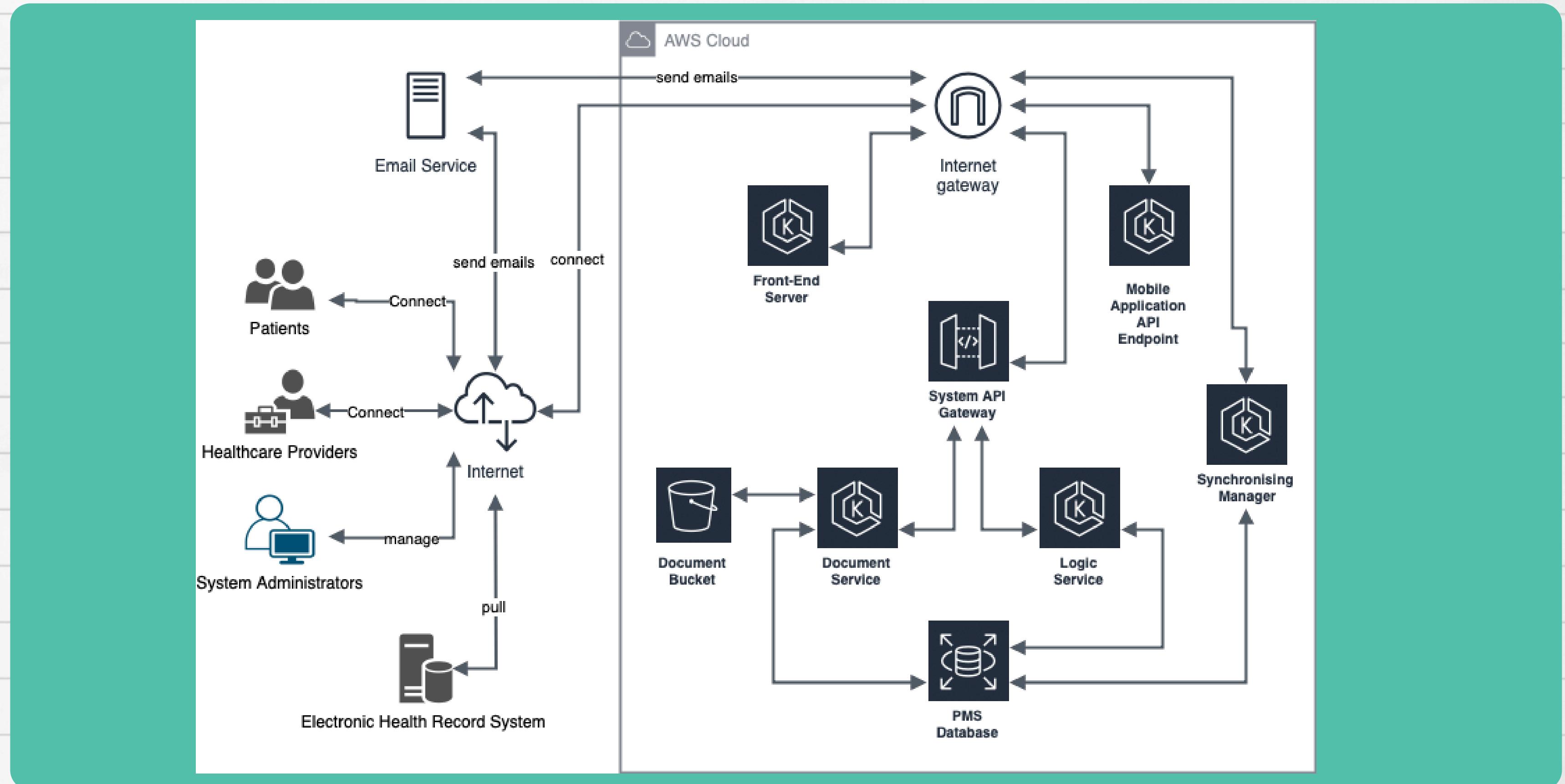
Container Diagram - Patient Management System

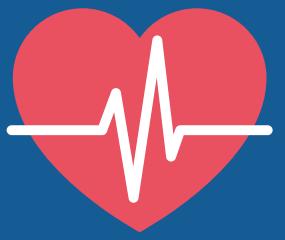


Legend

person
container
external system
system boundary
backend container (eight sided)
- async (dashed)
- sync/async (dotted)

# ARCHITECTURE DIAGRAM





# SYSTEM INTERFACES



# SELECTED INTERFACES



- Patient Registration Interface
- Appointment Scheduling Interface
- Patient Portal Interface
- Healthcare provider dashboard Interface
- Billing Interface

# PATIENT REGISTRATION INTERFACE

Healthcare Organization

## Patient Registration

Contact      Help

**Sections**

- Personal Information
- Medical History
- Emergency Contact
- Insurance Details

**Personal Information**

1 Given Name ABC  
2 Last Name XYZ  
3 Date of Birth 08-June-1997  
4 Gender Male

**Contact**

5 Phone 1 1234567890  
6 Phone 2 9876543210  
7 Email xyz@example.com  
8 Preferred Contact Phone or Email

**Address**

9 Residential Address House 12, Street xx, Suburb, City  
10 Postal Address House 12, Street xx, Suburb, City Postcode

**Medical History**

1 Any childhood illness? If yes, Please mention XYZ  
2 List any other medical problems that other doctors have diagnosed XYZ

3 List any Previous surgeries, Reason, Year and Hospital

Surgery	Year	Reason	Hospital

4 Do you have any current medical condition? If yes, Please mention XYZ  
5 Are you currently on medication? If yes, Please mention XYZ

**Emergency Contact**

1 Emergency Contact Name ABC  
2 Relationship ABC  
3 Phone 0434343434  
4 Address XYZ

**Insurance Details**

1 Insurance Policy Number 123  
2 Insurance Provider ABC  
3 Coverage Details ABC

Please confirm all the provided details are correct.

**Confirm**  
**Submit**

**Feedback**

# APPOINTMENT SCHEDULING INTERFACE

*Healthcare Organization*

Contact      Appointment      Help

**Search**

Search by healthcare provider name  
or  
Search by speciality

**Search by name**

Enter the name of practitioner XYZ

**Result**

Name	Specialty	Location
xyz	xyz	xyz

**Search by speciality**

Specialty XYZ  
Location Suburb/postcode Use current location

**Enter**

**Result**

Name	Specialty	Location
xyz	xyz	xyz

**Time & Date**

Dr. XYZ, Cardiologist Charges: \$200

Availability

Day	Start	End	Notes
Mon - 10:00am	10:00am - 12:00pm	12:00pm - 1:00pm	1:00pm - 3:00pm
Tuesday - 10:00am	10:00am - 12:00pm	12:00pm - 1:00pm	1:00pm - 3:00pm
Wednesday - 10:00am	10:00am - 12:00pm	12:00pm - 1:00pm	1:00pm - 3:00pm

**Details**

Reason for visit XYZ

Specify symptoms XYZ

Additional details XYZ

**Confirmation**

1 Name 123  
2 Email ABC  
3 Phone ABC  
4 Appointment with Dr. ABC  
5 Location Darwin  
6 Time 9am - 9:30 am  
7 Charges \$200

**Modify**      **Confirm**

**Appointment Booked!**

Confirmation Email has been sent to xyz@example.com with a link for appointment cancellation and rescheduling.

**Feedback**

# PATIENT PORTAL INTERFACE

YOURHEALTHFILE 

Healthcare Organization

Patient Portal

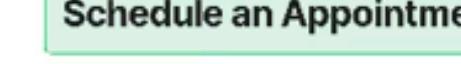
Welcome to your Dashboard

 Message: Clinics are now open till 7pm during weekdays and 6pm on weekends

 \$ 3.00 balance due



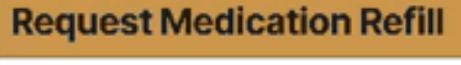
 13 Oct, 24 10:45 am



 13/9/24 10:45 am



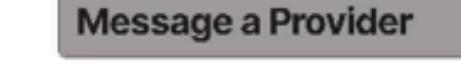








 0 new messages













# HEALTHCARE PROVIDER

## DASHBOARD INTERFACE

Healthcare Organization



Dashboard

Dashboard/Appointments



Dr Pablo Escobar

MBBS, FCPS-II

Dashboard

Appointments

Patients List

Schedule Timings

Account

Reviews

10

Total patients  
Today

6

Consulted  
Patients

Change date

Patient Appointments

Today Upcoming

Show 10 entries

Search:

ABC

Patient Name	Appointment Date & Time	Patient Medical Record	Treatment & Notes

Patients Appointment Schedule chart



Details  
Update  
password  
Contact  
Privacy  
Logout

# BILLING INTERFACE

**YOURHEALTHFILE** 

**Healthcare Organization**

**Billing**

Welcome to your Dashboard [Dashboard/View Current Charges](#)

 Message: Clinics are now open till 7pm during weekdays and 6pm on weekends

Patient ID: 124366123 Patient Name: Mr XYZ Patient Address: XYZ, Suburb, City, Postcode

Contact number: +61xxxxxxxxx Policy number: xxxxxxxxx Insurance Provider: xxxxxxxxx

Recent Appointment Details

Appointment Date: 19/12/24 Doctor Name: Mr XYZ Status: Follow-up

Follow-up Date: 19/01/25 Instructions for follow-up: N/A

Request payment Plan

Due Amount: AUD 110 Intended amount to be paid: AUD 70

Date: 25/12/24 Request

Payment Summary

Total Charges: AUD 210	Consultation Charges: AUD 130	Tests Charges: AUD 50
Medicines Charges : AUD 30	Miscellaneous Charges: AUD 0	Paid: AUD 100 Due: AUD 110

Payment Details

View By:  All  Paid  Due

Invoice Number	Invoice Due Date	Amount	Status	Payment Mode	Receipt
233230	12/12/24	AUD 100	Paid	Credit Card	233230.pdf
234524	25/12/24	AUD 110	Due		

Contact 

Help 



# REPORTING



# EXAMPLE

## Healthcare Organization System Report



Date Covered: December 15-21, 2024

Patients Visited			Billing			Medical Record			Operational Efficiency				Challenges	
Patient Name	Date	Doctor	Patient Name	Total Amount	Paid	Patient Name	Note	Followup	Metric	This week	Last week	% Change		
									Number of patients	12	8	+ 40%		
									Appointments Cancellation	2	4	- 50%		
									Average Patient Waiting Time	20 min	15 min	+ 33%		
									Revenue	30000 AUD	28000 AUD	+ 7%		
									Medicines Sold	2000 AUD	2100 AUD	- 5%		
									Tests Performed Laboratory	4	3	+ 33%		
									Gross Profit	25000 AUD	22000 AUD	+ 13%		
									Staff Salary	8000 AUD	8000 AUD	0		
									Other Expenses	1300 AUD	1100 AUD	+ 18%		
									Net Profit	18000 AUD	16000 AUD	+ 12%		

**Key Highlights**

25%5%13%

Revenue Medicine Net Profit  
sold

**12** Number of patients visited

- Average waiting time for consultation has been increased from 15 min to 20 min
- Sale of medicines has been reduced from 2100 Aud to 2000 aud
- Other Expenses has been increased from 1100 Aud to 1300 aud

# DEVELOPMENT STRATEGY



# AGILE DEVELOPMENT METHOD

01

People &  
Interaction

02

Working  
Software

03

Responding  
to Change

04

Flexibility

05

Improved  
Collaboration

06

Faster  
Deployment

# QUESTIONS?





# THANK YOU!

