

# HOSPITAL MANAGEMENT SYSTEM

MILESTONE III

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GROUP 9

Cheuk Hei Wong

Karoly Nemeth

Shu Yam Nicole Kwok

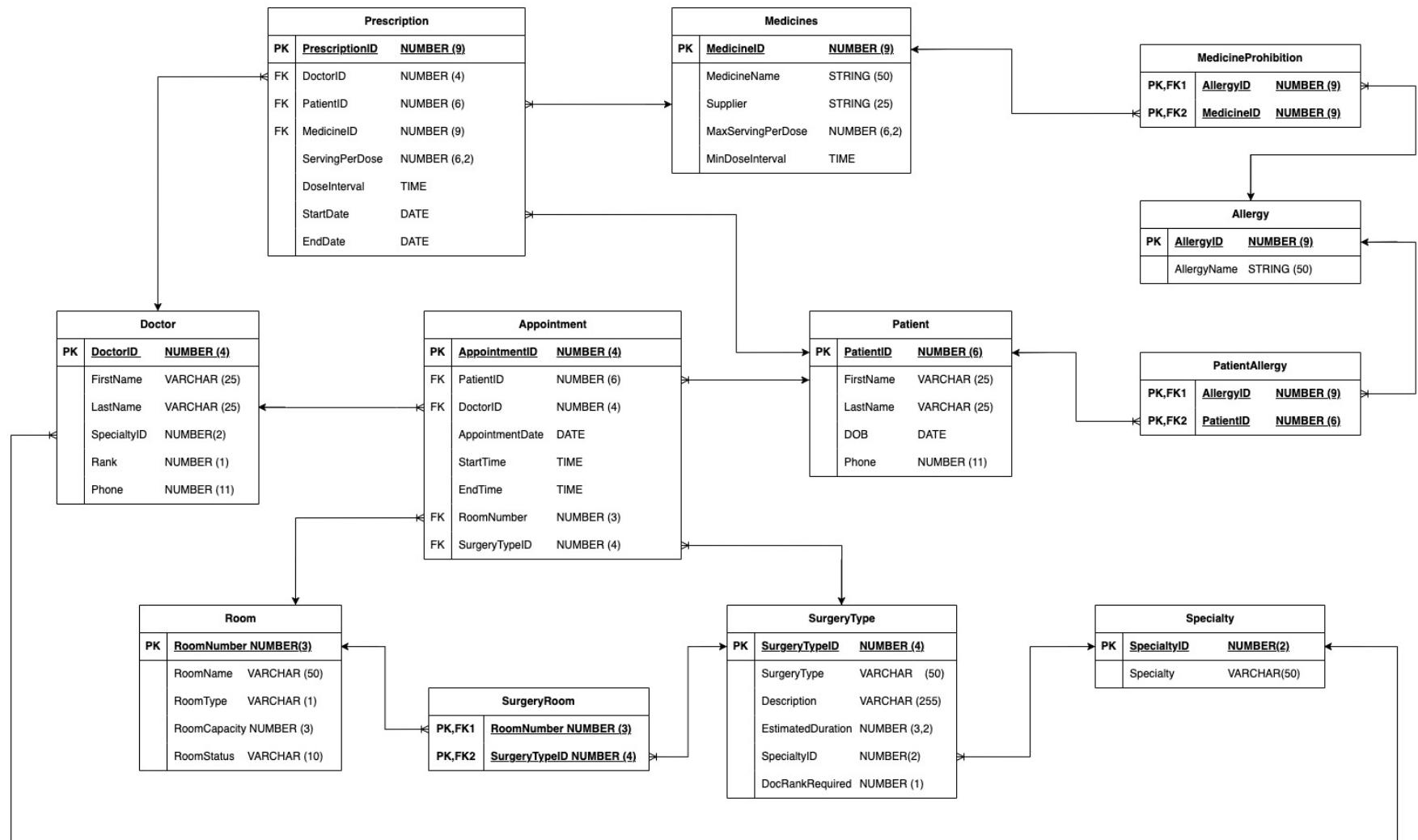


*Photo by National Cancer Institute on Unsplash*

## **Summary**

Our database function will include patient information, appointments, prescriptions, doctor information, and the rooms available. These database functions will make the hospital management system more efficient and have less errors and delays. It will play a crucial role in delivering professional and fast service all around in all aspects for the hospital. The functions in this database will utilize data extracted from the database and then generate useful insights to the users for decision making and monitoring. Our Database functions for this focus on specific key solutions to make the hospital experience an overall better and faster service all around.

# Entity Relationship Diagram



# Data Dictionary

TABLE: Appointment								
Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
AppointmentID	NUMBER	4		PK	Y	1-9999	1234	Unique identity for each appointment
PatientID	NUMBER	6		FK	Y	1-999999	567890	Unique identity for each patient
DoctorID	NUMBER	4		FK	Y		4321	Foreign key reference to Doctor table
AppointmentDate	DATE				Y	DD/MM/YYYY	19/11/2023	Date of the appointment (DD/MM/YYYY)
StartTime	NUMBER	4			Y		1430	Start time of the appointment
EndTime	NUMBER	4			Y		1530	End time of the appointment
RoomNumber	NUMBER	3		FK	Y	101-999	101	Unique identity for each room
SurgeryTypeID	NUMBER	4		FK	N	1-9999	6009	Unique identity for each surgery type

TABLE: Doctor								
Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
DoctorID	NUMBER	4		PK	Y	1-9999	4321	Unique identity for each doctor
FirstName	VARCHAR	25			Y		John	First name of the doctor
LastName	VARCHAR	25			Y		Doe	Last name of the doctor
SpecialtyID	NUMBER	2		FK	Y	1-99	12	Unique identity for each specialty, Reference appointment
Rank	NUMBER	1			Y	1-9	3	Rank level in the hospital
Phone	NUMBER	10			Y	2000000000-9999999999	1234567891	North American phone number

TABLE: Patient								
Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
PatientID	NUMBER	6		PK	Y	1-999999	567890	Unique identity for each patient
FirstName	VARCHAR	25			Y		John	First name of the patient
LastName	VARCHAR	25			Y		Doe	Last name of the patient
DOB	DATE				Y	DD/MM/YYYY	20/08/1985	Date of Birth
Phone	NUMBER	10			Y	2000000000-9999999999	1234567891	North American phone number

TABLE: Room								
Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
RoomNumber	NUMBER	3		PK	Y	101-999	101	Unique identity for each room
RoomName	VARCHAR	50			Y		Consultation Room 1	Name of the room
RoomType	VARCHAR	1			Y	C/S	C	Type of rooms
RoomCapacity	NUMBER	2			Y		11	Maximum capacity of the room
RoomStatus	VARCHAR	10			Y	Active/Inactive	Active	Current status of the room

TABLE: SurgeryType								
Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
SurgeryTypeID	NUMBER	4		PK	Y	1-9999	567	Unique identity for each surgery type
SurgeryType	VARCHAR	50			Y		Appendectomy	Name of surgery type
Description	VARCHAR	255			N		Appendectomy is surgery to remove the appendix	Description of surgery type
EstimatedDuration	NUMBER	3,2			Y	0-999.99	2.5	Estimated duration in hours
SpecialtyID	NUMBER	2		FK	Y	1-99	12	Specialty this surgery belongs to
DocRankRequired	NUMBER	1			Y	1-9	3	Rank of doctors required for this surgery

TABLE: SurgeryRoom								
Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
RoomNumber	NUMBER	3		PK/FK	Y	101-999	101	Unique identity for each room
SurgeryTypeID	NUMBER	4		PK/FK	Y	1-9999	567	Unique identity for each surgery type

Table: Prescription								
Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
PrescriptionID	NUMBER	9		PK	Y	0-999999999	135442226	Automatically generated
DoctorID	NUMBER	4		FK	Y	1-9999	4321	Unique identity for each doctor
PatientID	NUMBER	6		FK	Y	1-999999	567890	Unique identity for each patient
MedicineID	NUMBER	9		FK	Y	0-999999999	647916681	Medicine used
ServingPerDose	NUMBER	6,2			Y	0.00-9999.99	230.55	in mg
DoseInterval	NUMBER	4			Y		1430	in hour and minutes
StartDate	DATE				Y	DD/MM/YYYY	19/11/2023	Start date of the prescription (DD/MM/YYYY)
EndDate	DATE				Y	DD/MM/YYYY	19/11/2023	End date of the prescription (DD/MM/YYYY)

Table: Medicines								
Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
MedicineID	NUMBER	9		PK	Y	0-999999999	647916681	Unique identity for each type of medicine
MedicineName	STRING	50			Y		methylmethionine sulfonium chloride	
Supplier	STRING	25			Y		Johnson & Johnson	
MaxServingPerDose	NUMBER	6,2	0		Y	0.00-9999.99	230.55	Maximum serving per dose in mg
MinDoseInterval	NUMBER	4			Y		1430	Minimum dose interval in hour and minutes

Table: Allergy								
Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
AllergyID	NUMBER	9		PK	Y	0-999999999	168861234	Unique identity for each type of allergy
AllergyName	STRING	50			Y		Penicillin Allergy	

Table: MedicineProhibition								
Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
AllergyID	NUMBER	9		PK/FK	Y	0-999999999	168861234	Allergy that prohibits certain type of medicine
MedicineID	NUMBER	9		PK/FK	Y	0-999999999	647916681	Medicine prohibited to use

Table: PatientAllergy								
Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
AllergyID	NUMBER	9		PK/FK	Y	0-999999999	168861234	Allergy that the patient has
PatientID	NUMBER	6		PK/FK	Y	1-999999	567890	Patient with allergy

TABLE: Specialty								
Column	Data Type	Size, Precision	Default	PK/FK	Required	Range	Sample Data	Notes
SpecialtyID	NUMBER	2		PK	Y	1-99	12	Unique identity for each specialty
Specialty	VARCHAR	50			Y		Cardiology	Name of specialty

# Business Rules

## Appointment and Doctor:

Each appointment is scheduled with one doctor (1:1)

Each doctor can have multiple appointments (1:M)

## Medicine and Allergy:

Each medicine can cause multiple allergy (1:M) \*Needs Bridge Table\*

Each allergy may be caused by many medicine (1:M) \*Needs Bridge Table\*

## Doctor and Prescription:

Each doctor can create many prescriptions (1:M)

Each prescription is created by one doctor (1:1)

## Allergy and Patient:

Each allergy is associated with many patient (1:M) \*Needs Bridge Table\*

Patient can have multiple allergies (1:M) \*Needs Bridge Table\*

## Prescription and Medicine:

Each prescription includes one medicine (1:1)

Each medicine can be in many prescriptions (1:M)

## Appointment and Patient:

Each appointment is for one patient (1:1)

Each patient can have many appointments (1:M)

## Prescription and Patient:

Each prescription is for one patient (1:1)

Each patient can have multiple prescriptions (1:M)

## Appointment and Room:

Each appointment is assigned to one room (1:1)

Each room can have multiple appointments (1:M)

**Room and SurgeryType:**

Each room can have many different surgery types (1:M) \*Needs Bridge Table\*

Each surgery type can be completed in many rooms (1:M)  
\*Needs Bridge Table\*

**SurgeryType and Appointment:**

Each appointment is scheduled for a specific surgery type (1:1)

Each surgery type can have multiple appointments (1:M)

## **Summary of function**

The software application proposed by our team will help doctors, nurses, and patients with managing the patient records, doctor information, appointment schedules, prescriptions, surgery data, and department details. By including essential data into a database, the application can utilize data extracted from the database and then generate useful insights to the users for decision making and monitoring. It will be an organized helper for everyone in the hospital. Overall efficiency of hospitals will thus be improved amid critical challenges in an extreme environment.