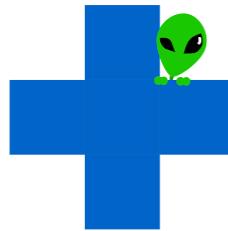


CSC375 Database Management Systems

Haraty Hospital for Humans



HARATY HOSPITAL
FOR HUMANS

A report submitted to Dr. Ramzi R. Haraty in partial fulfillment of the requirements for the course
“CSC375: Database Management Systems” in Computer Science.

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Table of Contents

Introduction	4
ER Diagram Symbols	5
Notations Guide	6
ER Diagram of the Haraty Hospital for Humans Database	7
Entities	8
Relationships	21
ER to Relational Mapping Algorithms	27
Table Structure for the Haraty Hospital for Humans	49
Inserting Data	58
Final Table State	72
SQL Queries	86
Normalization Up to the BCNF Normal Form	96
Relation Schemas without non-prime attributes:	108
Conclusion	111
Instructor's Feedback	112

Introduction

In today's world, hospitals are not only places for treatment but essential institutions that ensure the health and well-being of communities, especially in times of crisis. The role of hospitals has never been more critical, particularly in Lebanon, where ongoing challenges demand resilient healthcare systems that can address both routine and unforeseen medical needs.

Haraty Hospital for Humans, also known as H³, was established on August 18, 1985, just a week after an unusual event that sparked widespread curiosity in the area—though, naturally, it was purely coincidental. For nearly four decades, the hospital has become a cornerstone of medical care, offering compassionate service to the community and delivering healthcare to thousands of patients.

Our project aims to design a robust and comprehensive database management system for Haraty Hospital for Humans. This system will streamline operations, enhance patient care, and ensure more efficient resource management while fostering improved communication between various hospital departments. It will support the hospital's ongoing efforts in innovative research and development, aimed at improving patient care and hospital operations.

This database will connect various departments, from emergency services to outpatient care, facilitating seamless operations across the hospital. A core focus of the design will be providing quick and easy access to patient records, enabling healthcare professionals to provide timely and accurate treatment. The database will also handle patient appointments, treatment schedules, medical histories, and resource allocation, helping the hospital maintain its reputation for high-quality care while ensuring that patients' needs are met in a safe and timely manner. These needs will be addressed by providing an integrated solution that connects various hospital departments, ensures data accuracy, and supports decision-making processes.

As we continue to develop the project, our goal is not only to meet the immediate needs of the hospital's staff and patients but also to ensure a well fleshed out approach. Through this system, Haraty Hospital for Humans will have the chance to thrive, now able to... *treat*... patients more efficiently.





ER Diagram Symbols

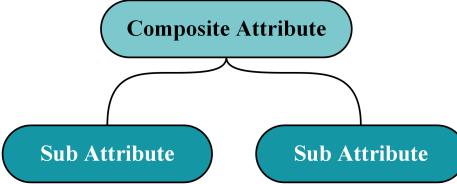
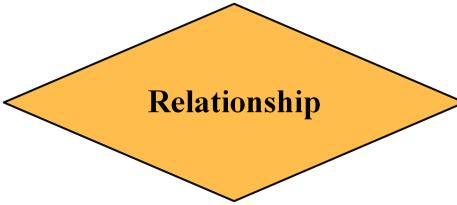
Below is a glossary of the symbols to be used for the ER Diagrams:

Name	Symbol
Entity	ENTITY
Weak Entity	WEAK ENTITY
Attribute	Attribute
Primary Key	Primary Key
Partial Key	Partial Key
Multivalued Key	Multivalued Attribute
Derived Attribute	Derived Attribute
Foreign Key	Foreign Key



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Composite Attribute	
Relationship	
Total Participation	
Partial Participation	

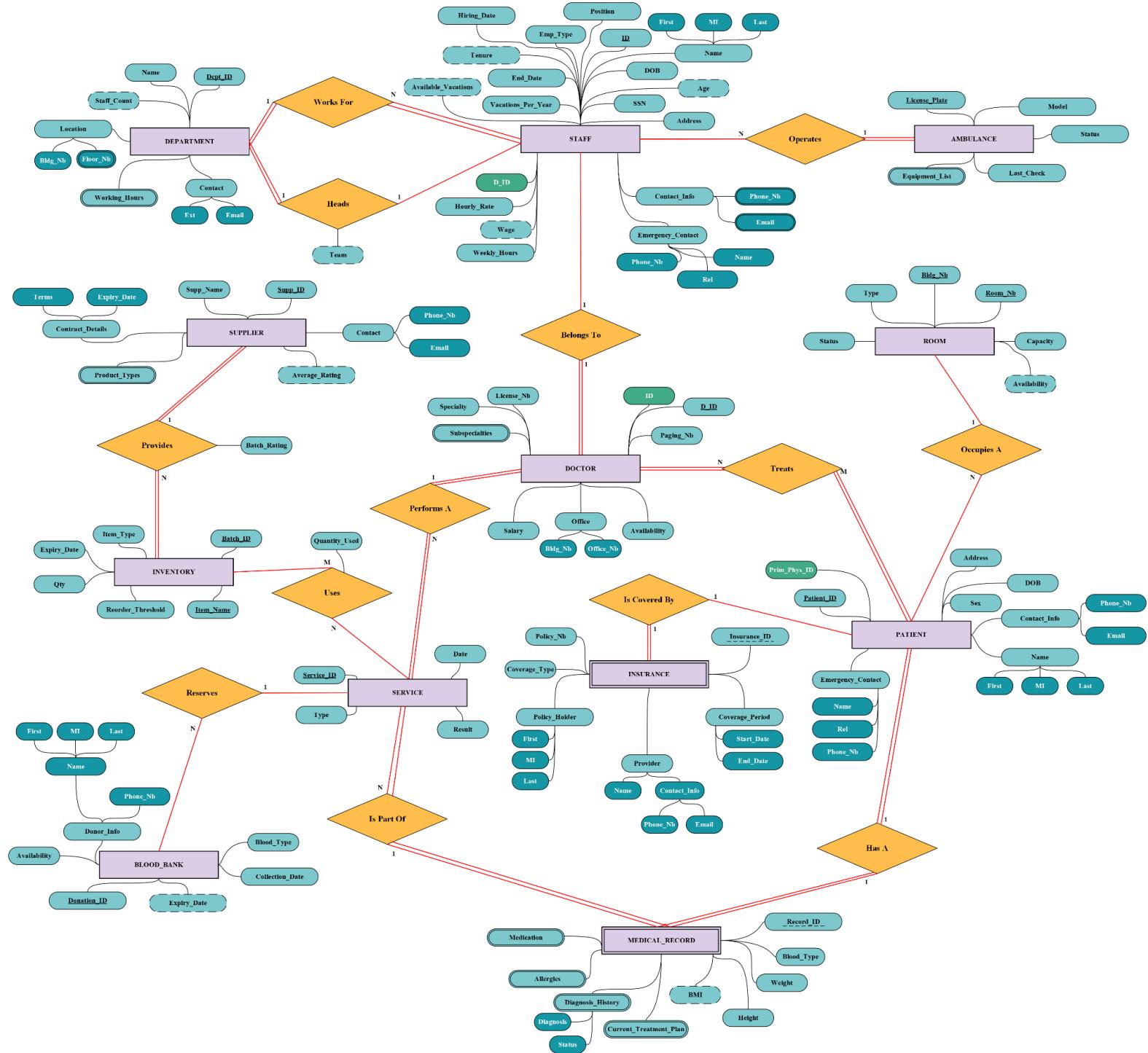
Notations Guide

At various points in this report, the following letters are used to describe different values:

- X : represents a digit (0-9) (used for codes and phone numbers)
- R : represents a letter (A-Z)
- D, M, Y : used to represent the format in which a date is stored (D: day, M: month, Y: year)



ER Diagram of the Haraty Hospital for Humans Database



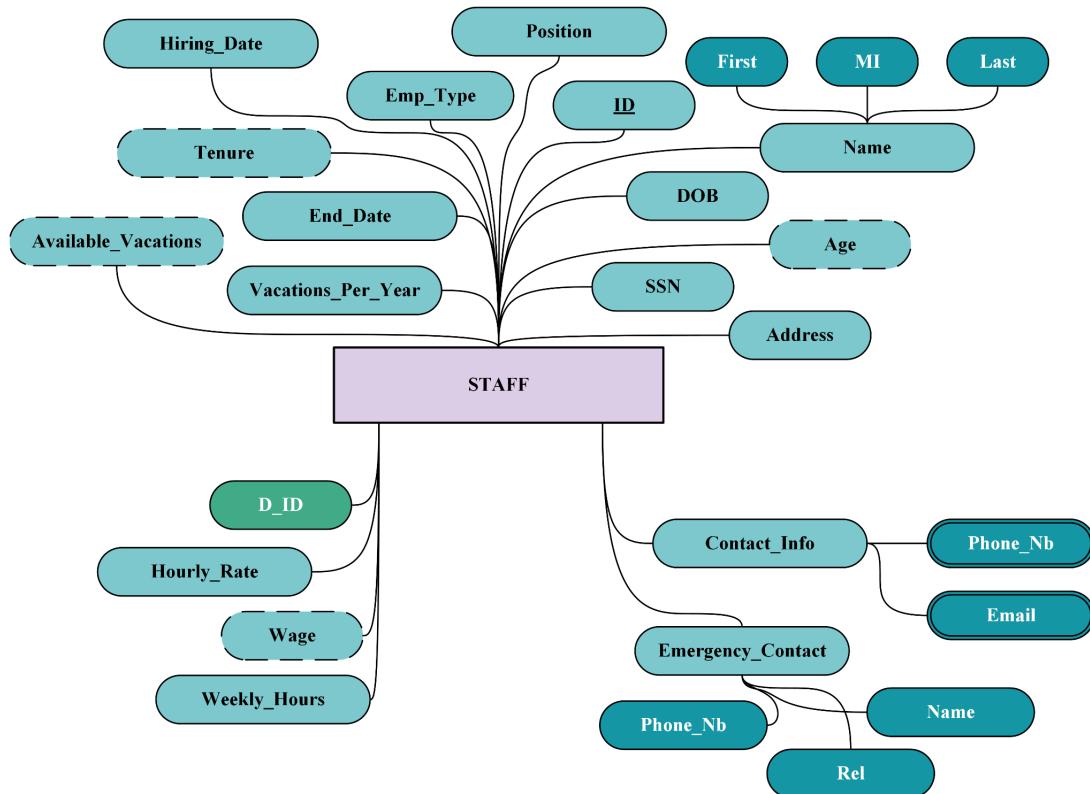


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Entities

STAFF



The STAFF entity type includes any faculty or hired personnel (who are 100% human, don't worry) of the hospital. It serves as the general type encompassing anyone hired by H³, from doctors, to nurses, to any other general position (administrators, IT managers, maintenance staff, etc.). The STAFF entity type has an ID: it holds a unique identification number assigned at employment.

Other STAFF attributes are:

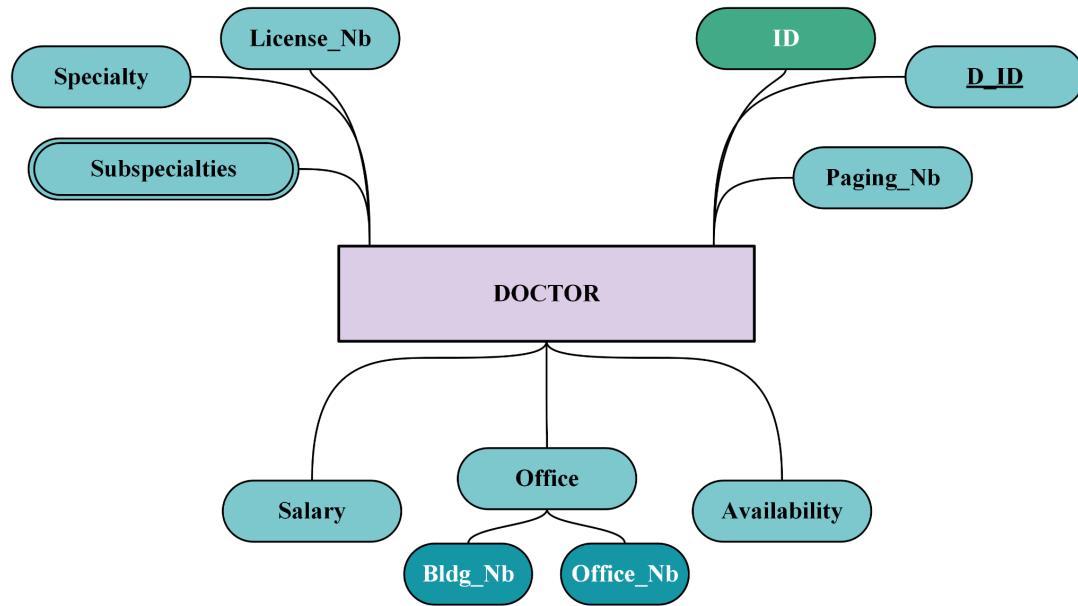
- **Name:** it is a composite attribute which stores the staff member's full name, it includes:
 - **First:** the employee's first name.
 - **MI:** the employee's middle initial.
 - **Last:** the employee's last name.
- **DOB:** the employee's date of birth, must be of format: DD-MM-YYYY.

- **Age:** attribute derived from the DOB, stores the current age of the employee which must be between 18 and 64.
- **SSN:** stores the Social Security Number of the staff member, format: XXX-XX-XXXX (9 digits).
- **Address:** stores the home address of the employee.
- **Contact_Info:** composite attribute storing:
 - **Phone_Nb:** multivalued attribute holding the phone number(s) of the employee, format: XX / XXX XXX.
 - **Email:** multivalued attribute storing the email(s) of the staff member, format: *@*.*(could include the staff member's hospital-assigned and personal email).
- **Emergency_Contact:** another composite contact attribute, but storing the information of the employee's chosen emergency contact instead of the employee's:
 - **Name:** the emergency contact's full name.
 - **Rel:** the emergency contact's relation to the faculty member (parent, sibling, child, relative, friend, partner).
 - **Phone_Nb:** the emergency contact's phone number to be called when needed, format: XX / XXX XXX.
- **Position:** stores the staff member's specific role in the hospital.
- **Hiring_Date:** stores the date of employment of the staff member, format: DD-MM-YYYY.
- **Tenure:** attribute derived from Hiring_Date, stores the amount of years the employee has been working for the hospital.
- **Emp_Type:** stores the type of employment of the faculty member (full time, part time)
- **Weekly_Hours:** stores the number of hours the employee works per week.
- **Hourly_Rate:** indicates the hourly wage of the employee in U.S.D., in case the staff member is a doctor, it is nullified.
- **Wage:** derived attribute which calculates the amount to be paid to the employee depending on their Hourly_Rate and Weekly_Hours, nullified in case of doctor.
- **Vacations_Per_Year:** stores the set number of vacation days the employee receives yearly.
- **Available_Vacations:** derived from the Vacations_Per_Year attribute, shows the amount of vacation days the employee can still take (decrements by 1 every time the staff member takes a day off, increments by Vacations_Per_Year every new year).
- **End_Date:** stores the date the employee stopped working for the hospital, format: DD-MM-YYYY. (Null if they're still hired)

The STAFF entity type also includes one foreign key to help differentiate doctors from other employees:

- **D_ID**: represents “doctor ID”, if the staff member is a doctor, then their assigned doctor ID would be stored in this attribute. If the staff member is not a doctor of the hospital, a value of null is inserted here.

DOCTOR



Doctors (definitely humans) are at the heart of the hospital. The DOCTOR entity type is a part of staff and it represents medical professionals working within the hospital, which are mostly responsible for diagnosing and treating patients. Every Doctor is assigned a unique identification number, **D_ID**.

Other attributes of DOCTOR are:

- **License_Nb**: It is the doctor's license number issued by the Order of Physicians, allowing them to legally practice medicine. In the format: RR-XXXXX-RR.
- **Specialty**: this indicates the doctor's specialty.
- **Salary**: stores the doctor's set monthly salary in U.S.D.
- **Office**: a composite attribute including:
 - **Bldg_Nb**: number of the building where the office is located.
 - **Office_Nb**: number of the office, format: LRR (L: level, RR: room).



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FOR HUMANS

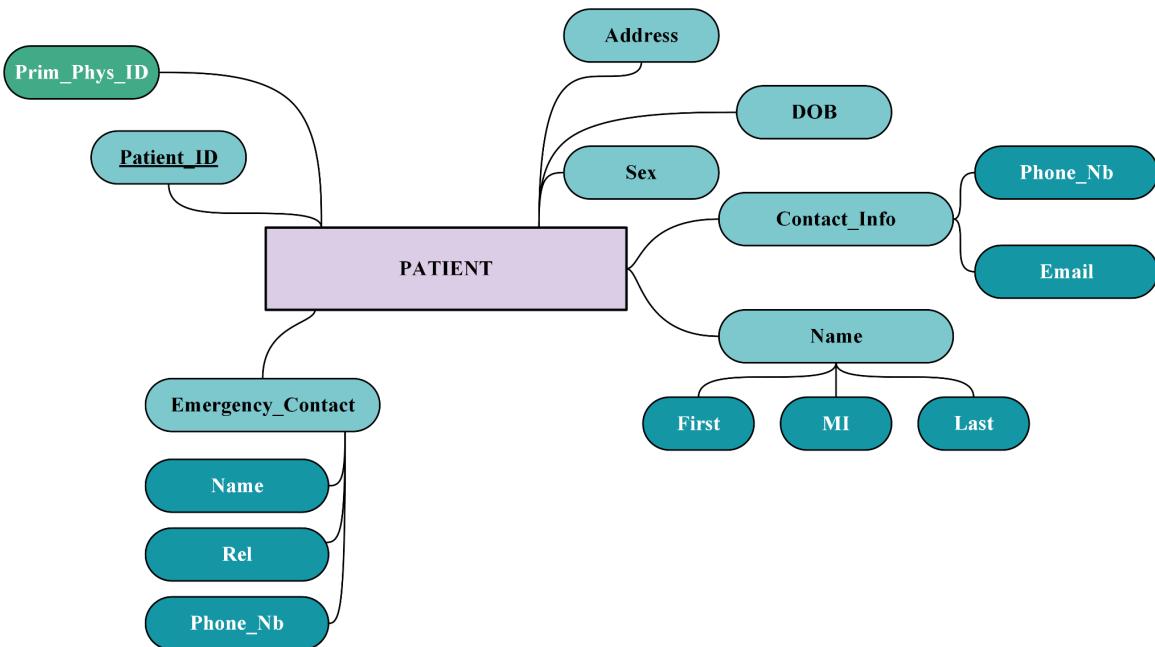


- **Availability:** this indicates availability of doctors for emergency surgeries.
- **Subspecialties:** a multivalued attribute that includes qualifications and specific skills of the doctor.
- **Paging_Nb:** code used to reach the doctor's specific pager efficiently while on duty, format: XXXX.

The DOCTOR entity has a foreign key:

- **ID:** stores the staff ID of the doctor.

PATIENT



A PATIENT is any individual seeking help from the hospital. Upon their first visit to the hospital, they're assigned a **Patient ID**, a unique identification number for the PATIENT entity type.

Other attributes of the PATIENT entity type are:

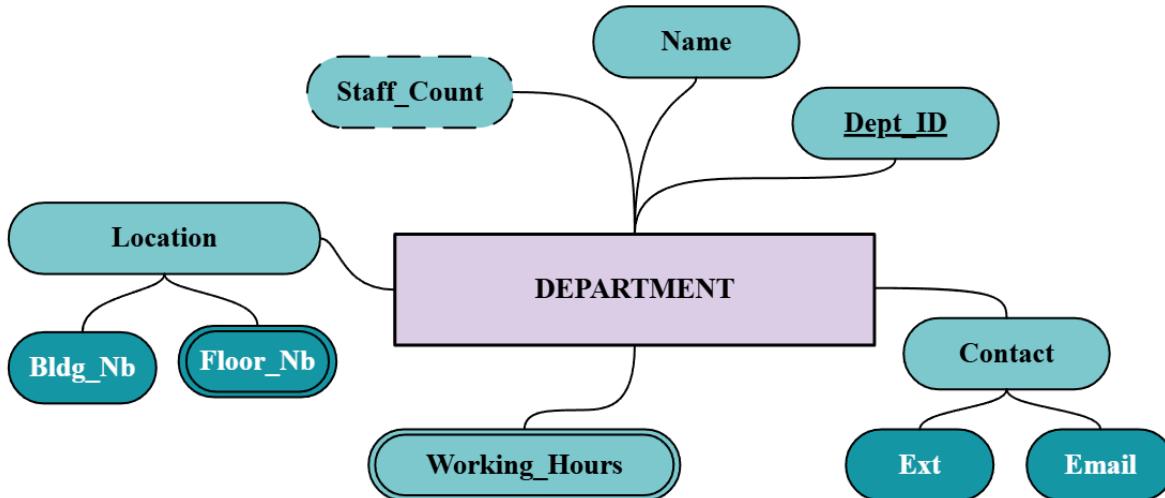
- **Name:** a composite attribute including:
 - **First:** the patient's first name.
 - **MI:** the patient's middle initial.

- **Last:** the patient's last name.
- **Sex:** which stores the sex of the patient (M, F, I [intersex]).
- **DOB:** the patient's date of birth, format: DD-MM-YYYY.
- **Address:** stores the home address of the patient.
- **Contact_Info:** a composite attribute storing:
 - **Phone_Nb:** the patient's personal phone number, format: XX / XXX XXX.
 - **Email:** the patient's email to be used for test results and easier identification upon email queries, this is nullable in case the patient does not have an email, format: *@*.*
- **Emergency_Contact:** composite attribute to be used when needing to contact a patient's acquaintance, it includes:
 - **Name:** the emergency contact's name.
 - **Rel:** their relation to the patient (parent, sibling, child, relative, friend, partner).
 - **Phone_Nb:** the phone number to be used to contact the emergency contact, format: XX / XXX XXX.

The PATIENT entity type additionally has a foreign key:

- **Prim_Phys_ID:** in case the patient has a primary physician working in the hospital, the doctor's ID is inserted here, otherwise null.

DEPARTMENT

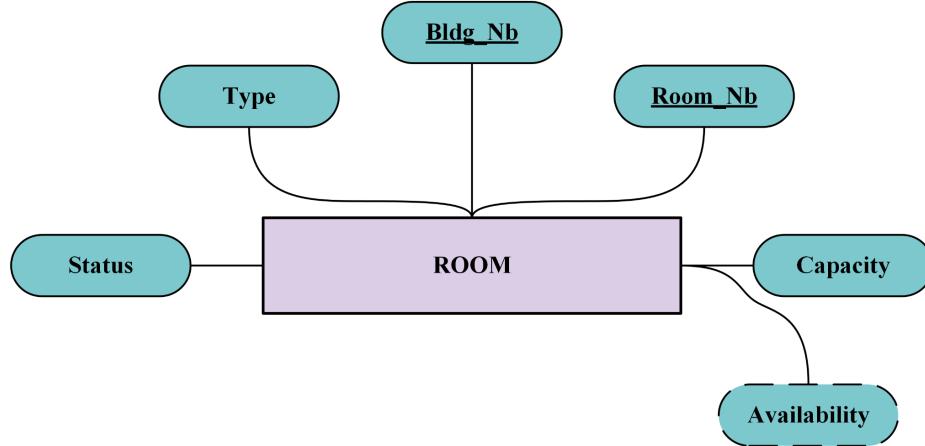


Departments are foundational units within the H³ hospital, with specialized medical and administrative functions. Each department focuses on a specific area, such as Cardiology, Pediatrics, or Radiology. Every DEPARTMENT is assigned a unique identifier upon inception called the **Dept ID**.

Other attributes are:

- **Name:** indicates department name and subsequently its specialty.
- **Contact:** a composite attribute that includes:
 - **Ext:** the department's extension number, format XXXX.
 - **Email:** the department's email address, format: *@h3.org.lb .
- **Location:** a composite attribute including:
 - **Bldg_Nb:** number of the building where the department is located.
 - **Floor_Nb:** multivalued attribute for the floors where the department is located.
- **Working_Hours:** a multivalued attribute that indicates the working hours of each department, example: 08:00-12:00, 13:00-17:00.
- **Staff_Count:** derived attribute that indicates the number of staff employed by the department.

ROOM



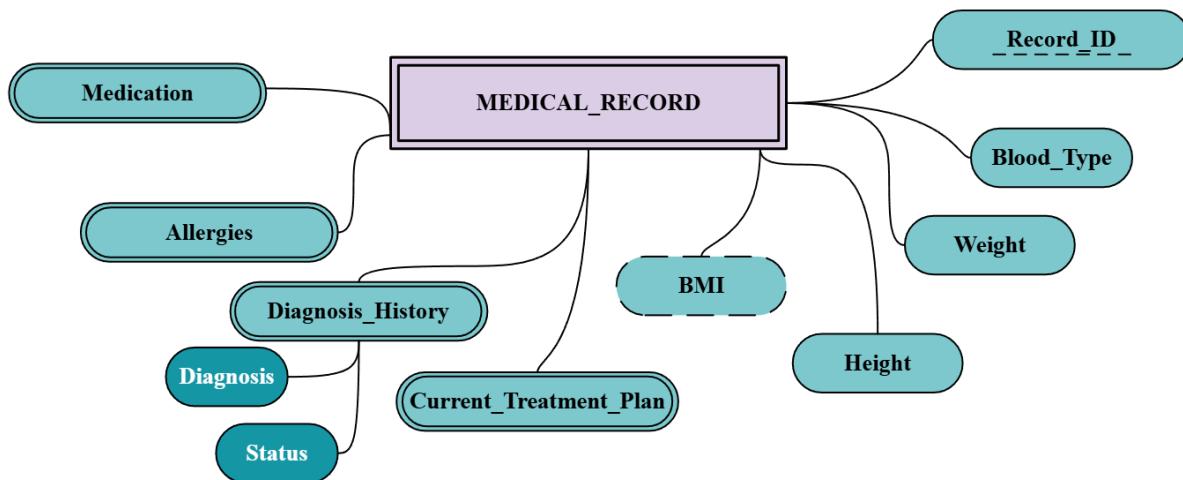
The ROOM entity represents any type of medical room in the hospital. Each room is identified through two attributes: the **Bldg_Nb** indicating the building the room is in, as well as **Room_Nb** indicating the room number within the building.

Other attributes of the ROOM entity are:



- **Type:** stores the type of the room. (Regular_A, Regular_B, ICU, ER, OR, Isolation, NCU, ...).
- **Capacity:** stores the amount of patients the room could hold.
- **Availability:** derived attribute storing the amount of beds available (capacity - number of patients already in the room).
- **Status:** stores the current status of the room. This could be: available, occupied, under maintenance, or cleaning required.

MEDICAL_RECORD



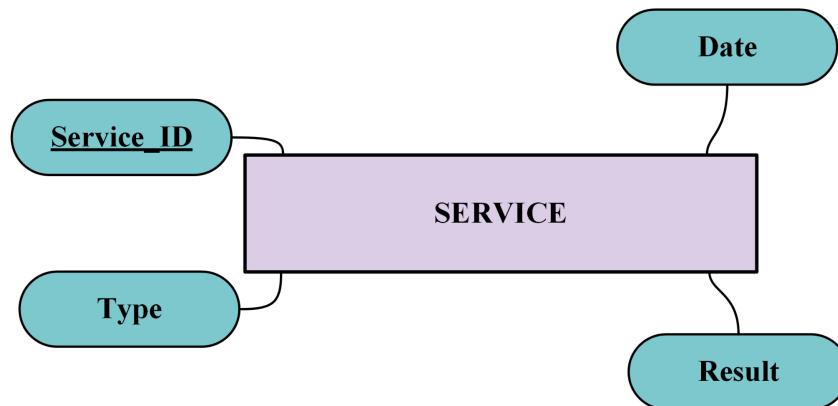
The MEDICAL_RECORD is a **weak** entity type which serves as a comprehensive history of diagnoses, treatments, and care provided within the hospital. Each record is identified through **Record_ID** and the specific PATIENT linked with this record.

Other attributes are:

- **Blood_Type:** stores the blood type of the patient, format: R+/-.
- **Weight:** indicates the last measured weight of the patient in Kilograms.
- **Height:** indicates the last measured height of the patient in Meters.
- **BMI:** derived attribute that stores the patient's body mass index, calculated from weight and height, formula: Weight / Height².
- **Diagnosis_History:** multivalued composite attribute showing the history of diagnoses of the patient, it includes:
 - **Diagnosis:** indicates any previous or current diagnoses associated with the patient.

- **Status:** indicates whether a specific diagnosis is presently active or inactive, as in if the patient still suffers from the given condition.
- **Allergies:** a multivalued attribute holding any allergies the patient possesses; this assists in their treatment.
- **Current_Treatment_Plan:** multivalued attribute that shows what treatment the patient is currently undergoing.
- **Medication:** a multivalued attribute to store any prescription medication the patient is currently on.

SERVICE



The SERVICE entity represents various medical procedures or treatments provided to patients during their visits to the hospital (they are definitely not being experimented on, don't worry). This can include consultations, diagnostic tests, and surgeries. It has a unique identifier called **Service_ID**.

Other attributes:

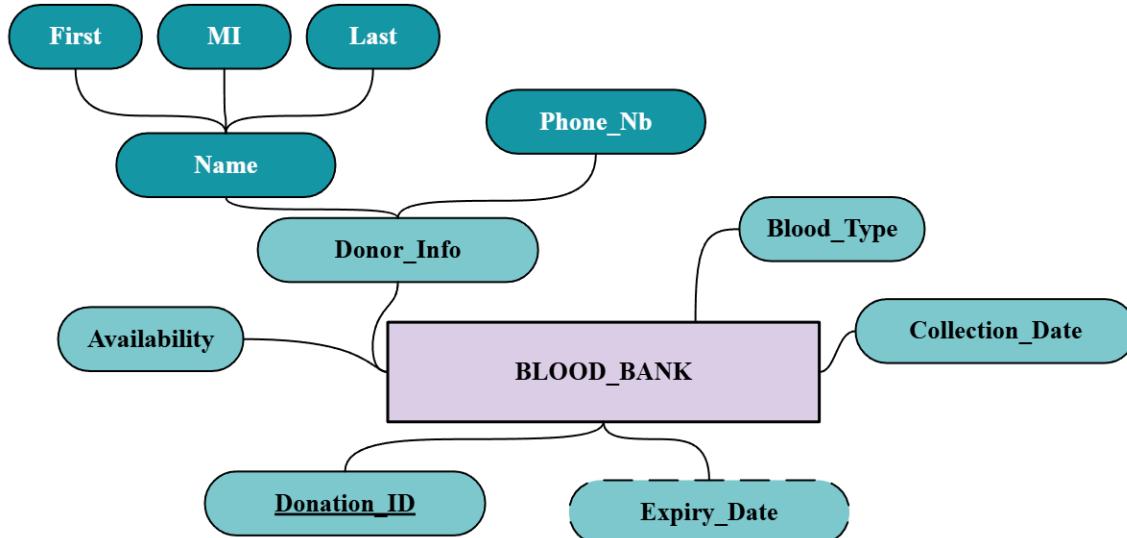
- **Type:** describes the type of service (e.g., consultation, test, surgery).
- **Date:** the date on which the service was performed, format: DD-MM-YYYY.
- **Result:** outcome or findings from the service.



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BLOOD_BANK



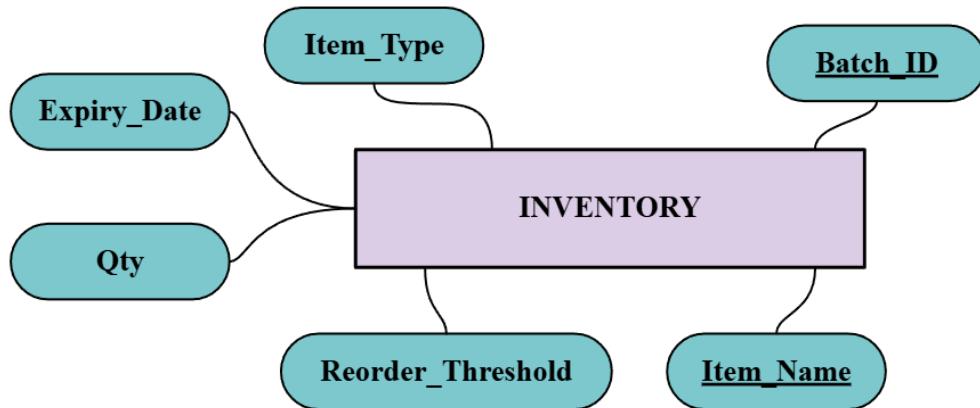
The BLOOD_BANK represents all the blood donations to the H³ hospital. Having an organized blood bank is extremely important for surgeries, especially in case of emergencies. This entity has a unique identifying number, **Donation_ID**.

Other BLOOD_BANK attributes are:

- **Blood_Type:** stores the blood type of the donation, format: R+/-.
- **Donor_Info:** composite attribute to identify the donor:
 - **Name:** composite attribute to store the donor's full name, includes:
 - **First:** the donor's first name.
 - **MI:** the donor's middle initial.
 - **Last:** the donor's last name.
 - **Phone_Nb:** stores the donor's phone number in case we need to contact them, format: XX / XXX XXX.
- **Collection_Date:** stores the date in which the blood donation was collected, format: DD-MM-YYYY.
- **Expiry_Date:** attribute derived from the collection date, calculated by adding 42 days to the Collection_Date.

- **Availability:** indicates the availability of the donation, since a specific blood donation could be reserved for a surgery.

INVENTORY

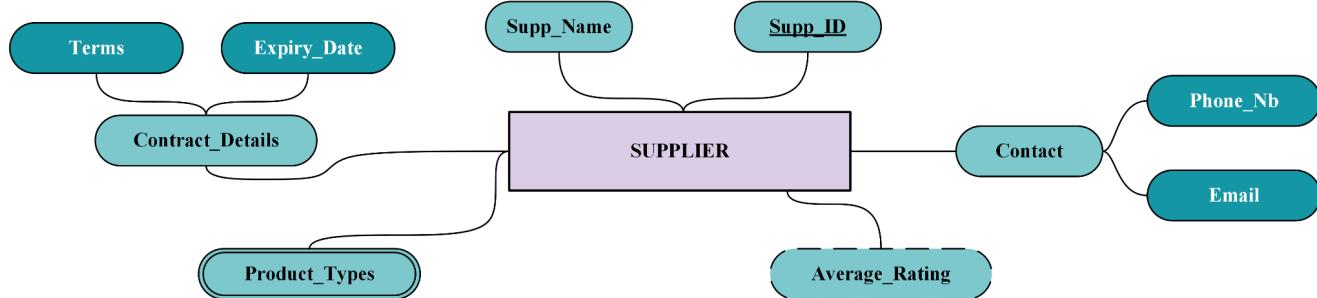


The **INVENTORY** is a collection of all items, medication, utilities, and other equipment the hospital possesses. It stores the different batches of items in the inventory. Each entity is identified through the **Item Name**, storing the name of the item, as well as the **Batch ID**, an identifying number for the batch being added to the inventory.

Other attributes of the **INVENTORY** entity type:

- **Item_Type:** stores the category the item falls under (medication, surgical utility, etc).
- **Qty:** stores the quantity of the items in the batch. This number decrements every time a service uses an item from a given batch.
- **Expiry_Date:** stores the expiration date of the item, this is useful for medication as well as surgical utilities such as needles. In case the item does not have an expiration date, this attribute is null, format: DD-MM-YYYY.
- **Reorder_Threshold:** stores the threshold at which the hospital needs to order a new batch of this item, a.k.a. when the quantity of this item reaches the threshold, flagging a drop in inventory, raising the need for a new order.

SUPPLIER



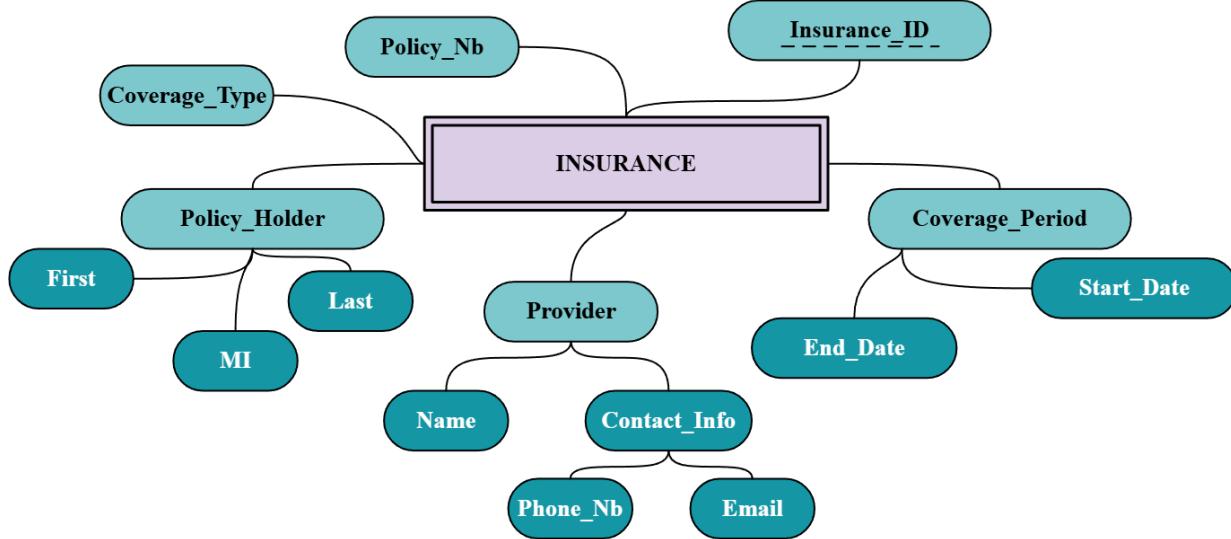
A **SUPPLIER** is a given company or organization providing the hospital with the equipment and items it needs to operate. A supplier is identified through a unique number **Supp_ID**.

Other **SUPPLIER** attributes:

- **Supp_Name**: stores the name of the supplier.
- **Contact**: composite attribute storing:
 - **Phone_Nb**: the phone number used to reach the supplier, format: XX / XXX XXX.
 - **Email**: the contact email of the supplier, format: *@*.*
- **Product_Types**: multivalued attribute storing the types of products this given supplier offers (medicine, utilities, machines, etc).
- **Contract_Details**: composite attribute containing:
 - **Terms**: terms of the contract (delivery time, payment method, product quality)
 - **Expiry_Date**: the date in which the contract terminates, format: DD-MM-YYYY.
- **Average_Rating**: derived attribute calculated by averaging out the ratings for every batch H^3 receives from this supplier. This is useful to assess the quality of and the relationship with the supplier as a whole. (the batch ratings will be given as a **SUPPLIES** relation attribute).



INSURANCE



The INSURANCE entity is a **weak** entity type that represents the information of the insurance coverage of a specific patient. It is identified by a key named **Insurance_ID** and the patient associated with it.

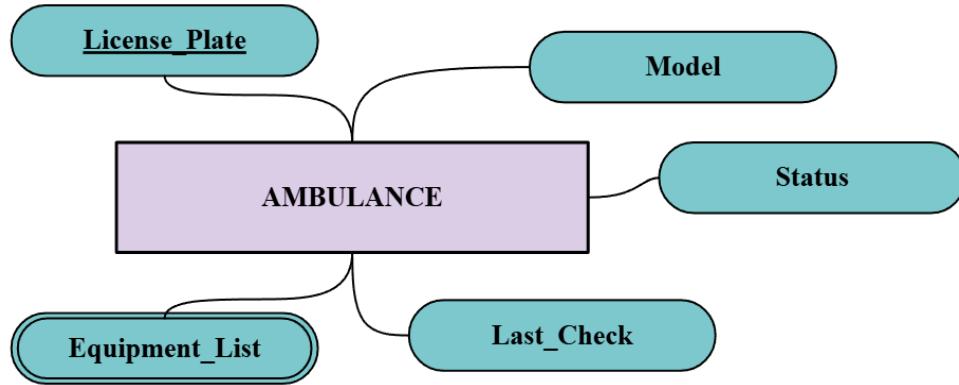
Other attributes of INSURANCE are:

- **Policy_Holder:** it is a composite attribute which stores the insurance policy holder's full name. This is important due to the fact that the person using the insurance isn't always the policy holder in cases of family for example, where the parent holds the policy while the child utilizes the service, it includes:
 - **First:** the employee's first name.
 - **MI:** the employee's middle initial.
 - **Last:** the employee's last name.
- **Policy_Nb:** number issued by the insurance provider for the specific policy, format: RR-XXXXXXX.
- **Coverage_Type:** it is the class of the insurance policy of the patient (class A, class B, class C).
- **Provider:** a composite attribute including:
 - **Name:** the name of the insurance company.
 - **Contact_Info:** a composite attribute storing:
 - **Phone_Nb:** the provider's phone number, format: XX / XXX XXX.

■ **Email:** the provider's email, format: *@*.*

- **Coverage_Period:** a composite attribute indicating:
 - **Start_Date:** the start date of the insurance coverage, format: DD-MM-YYYY.
 - **End_Date:** the end date of the insurance coverage, format: DD-MM-YYYY

AMBULANCE



The **AMBULANCE** entity represents all the ambulances operated and owned by the hospital. Every ambulance is identified through its **License Plate**, which is unique for every ambulance.

Other **AMBULANCE** attributes include:

- **Status:** stores the current status and availability of the ambulance (available, in use, under maintenance).
- **Model:** the model of the ambulance vehicle.
- **Equipment_List:** multivalued attribute storing the different equipments and utilities in the vehicle.
- **Last_Check:** stores the date of the last maintenance check the ambulance went through, this is important as ambulances should remain functional in case of emergencies, format: DD-MM-YYYY.

Relationships

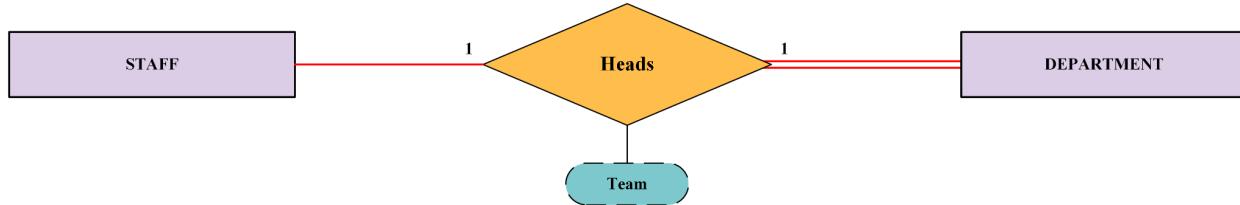
Works For



Every staff member employed by the hospital falls under a certain department. Thus, a “**Works For**” relationship is added linking the **STAFF** entity with their given **DEPARTMENT** entity. This relationship has total participation on both sides as each employee belongs to a department, and every department has staff members which operate under it.

The cardinality ratio is N:1 (many-to-one) as multiple employees can work in the same department, but no employee can work in more than one department.

Heads



For every department, a given staff member is tasked with managing it, serving as its head. Therefore, a “**Heads**” relationship was created to link the **STAFF** and the **DEPARTMENT** entity types, in order to signify that a staff member heads a given department. This relationship has partial participation on the **STAFF** side, as not all employees serve as heads of departments, while it has total participation on the **DEPARTMENT** side, since all departments must have an employee overseeing them.

The cardinality ratio is 1:1 (one-to-one) since an employee can only head one department, and a department can only have one manager.

The “**Heads**” relationship has one attribute:

- **Team**: derived attribute storing the number of employees the head of the department manages.

Operates



An ambulance must have certain staff members operating it, either as drivers or as paramedics. Thus, a relationship "***Operates***" is added to link the **STAFF** entity with a given **AMBULANCE** entity, to keep track of what employees are tasked with operating what ambulance. This relationship is total on the **AMBULANCE** side, as any ambulance needs staff members to operate it (we do NOT use alien technology in our vehicles, how would we even do that). It is partial on the **STAFF** side as only a fraction of staff members are ambulance drivers or paramedics.

The cardinality ratio is N:1 (many-to-one) as multiple staff members can operate one ambulance, but once assigned an ambulance, they only operate this one.

Belongs To



Doctors are considered part of the hospital's staff members. Therefore, a "***Belongs To***" relationship is added to link the **DOCTOR** entity with the **STAFF** entity, in order to link a doctor's profile with their more general staff profile. This relationship has partial participation for **STAFF**, as not all staff members are doctors, but total participation for **DOCTOR**, as every doctor is a staff member.

The cardinality ratio is 1:1 (one-to-one) since one doctor is still only one staff member, and vice versa.

Treats



When a patient is admitted to the hospital, a doctor has to oversee their condition and treatment. Thus, a “**Treats**” relationship is created to link the **DOCTOR** entity with the **PATIENT** entity. The relationship has total participation on both sides, as all doctors treat patients, and all patients are treated by doctors in the hospital.

The cardinality ratio is N:M (many-to-many) since a doctor could treat many patients, and a patient could be treated by several doctors throughout their visits.

Is Covered By



Patients are often covered by **insurance** policies. Therefore, an “**Is Covered By**” relationship is created to link the individual **PATIENT** with their corresponding **INSURANCE** plan. The participation is total from the latter side as every insurance plan has to have a covered patient, while it is a partial participation from the patient side since some patients do not have insurance.

The cardinality ratio is 1:1 (one-to-one) since every patient is covered by a single insurance policy and vice versa.

Occupies A



Patients occupy rooms for most procedures done at a hospital, creating a need for a “**Occupies A**” relationship between the **PATIENT** and **ROOM** entity types. Participation is partial on both sides as not all patients require rooms for services (in consultations they visit the doctor’s office), additionally, rooms could be vacant thus having no patients.

The ratio is N:1 (many-to-one) since ,depending on the type of the room, it could be occupied by multiple patients, but a patient can only occupy one room at a time.

Has A



Each **patient** that is admitted to H³ has a comprehensive **medical record** that stores all previous information for future use. Thus, a “**Has A**” relationship is created to link the **PATIENT** entity and **MEDICAL_RECORD** weak entity. The participation is total on both sides since each patient has a medical record that is created upon entering the hospital, and each medical record must be linked to a patient.

The ratio is 1:1 (one-to-one) since there is 1 corresponding medical record for each individual patient and vice versa.

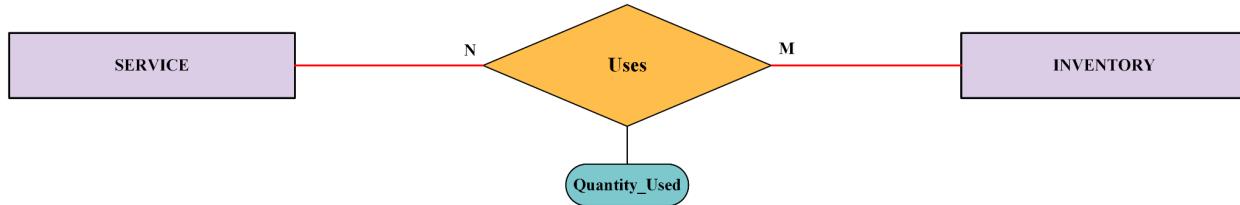
Is Part Of



Every service done in H³ is subsequently recorded in the patient’s medical record. Thus, creating an “**Is Part Of**” relationship between the **SERVICE** entity type and the **MEDICAL_RECORD** weak entity type. The participation is total on both sides as each service will be included in the patient’s medical record, and each medical record will include at least one service.

The cardinality ratio is N:1 (many-to-one) as one medical record could hold multiple services, meanwhile a particular service is only registered in one medical record, that of the patient the service concerns.

Uses



Often when performing hospital **services**, multiple items from the **inventory** are used. Therefore, there is a relationship "**Uses**" between the **INVENTORY** and **SERVICE** entity types. The participation is partial from both sides as not every service requires inventory items (some consultations), and many inventory items could be unused.

The cardinality ratio is N:M (many-to-many) as one surgery can use material from multiple batches of inventory, and the same batch of items could be used for different services (different items from the same batch, not the same item being used multiple times).

The relationship has one attribute which is:

- **Quantity_Used**: stores the quantity of the item that was used during the given service.

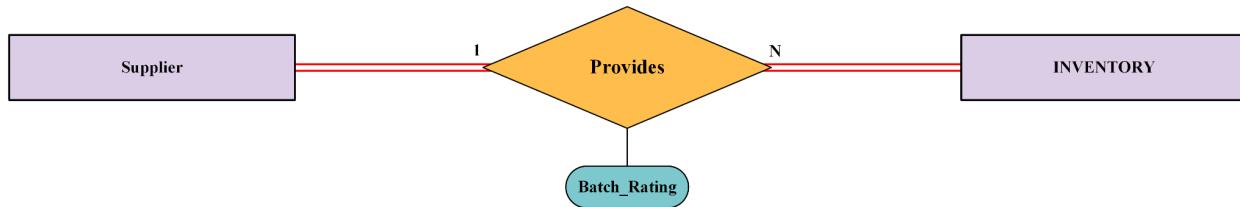
Reserves



Some services, such as surgeries, require blood transfusions, therefore requiring the service to reserve a blood donation from the blood bank. Thus, a relationship "**Reserves**" is used to link the **SERVICE** entity type with the **BLOOD_BANK** entity type. The participation is partial on both sides as not every service requires blood, and not every blood donation will be used for a service, some of them are discarded upon expiry or donated to other hospitals.

The cardinality ratio is 1:N (one-to-many) as one service could use multiple blood donations while a single blood donation is only used for one surgery to avoid cross contamination.

Provides



All **inventory** in the hospital is provided by different **suppliers**. Thus, a “**Provides**” relationship represents this link between the **SUPPLIER** and **INVENTORY** entity types. The participation is total on both sides as every batch in inventory is provided by a supplier, and every supplier in the database must have at least provided one item or batch of items to H^3.

The cardinality ratio is 1:N (one-to-many) as one supplier can provide multiple batches, but a single batch could not have been provided by more than one supplier.

The relationship has one attribute which is:

- **Batch_Rating**: stores the rating of every batch of items received from the supplier and helps evaluate suppliers, must be between 1 and 10.

Performs A



Every **service** performed in the hospital has a performing or overseeing **doctor**. Therefore, prompting the creation of a “**Performs A**” relation between **DOCTOR** and **SERVICE** entity types. The relationship is total from both sides as every service should have a providing doctor and every doctor performs services.

The relationship cardinality ratio is 1:N (one-to-many) as one doctor can perform multiple services but every service has only one performing doctor.

ER to Relational Mapping Algorithms

After the ER schema has been created and the database for Haraty Hospital For Humans has been represented as a collection of entities, attributes, and relationships, this high-level design must then be converted into a relational database structure. To accomplish this mapping we need to follow a seven step algorithm. Below is a detailed explanation of how each step is implemented in our database design.

Step 1: Mapping of Regular Entity Types

In the first step, mapping the regular entity types into relations is required. Each regular entity is going to have its own relation that includes its primary key underlined and all of its simple attributes. Multivalued attributes will be mapped in Step 6 and composite attributes will be represented by their simple attributes. The strong entities in this database design are: STAFF, DOCTOR, PATIENT, DEPARTMENT, ROOM, SERVICE, BLOOD_BANK, INVENTORY, SUPPLIER, AMBULANCE.

STAFF

<u>ID</u>	First	MI	Last	DOB	SSN
Address	Emergency_Name	Rel	Phone_Nb	Position	Hiring_Date
Emp_Type	Weekly_Hours	Hourly_Rate	Vacation_Per_Year	End_Date	

The STAFF entity contains simple, derived, composite, foreign and multivalued attributes. The attributes not represented in this relation are the derived attributes: Wage, Tenure, Available Vacations, and Age, as well as, the multivalued attributes: Phone_Nb and Email. This relation only includes all simple attributes and the primary key ID which is underlined. The STAFF entity has Name and Emergency_Contact as composite attributes of which only their simple attributes are included in the relation, in addition to Contact_info that is composed of the 2 multivalued attributes Phone_Nb and Email.

- Name: First, MI, Last
- Emergency_Contact: Name, Rel, Phone_Nb



DOCTOR

<u>D_ID</u>	License_Nb	Specialty	Salary	Bldg_Nb	Office_Nb
Availability	Paging_Nb				

The DOCTOR entity contains simple, composite, foreign and multivalued attributes. The multivalued attribute Subspecialties is not represented in this relation. Thus, this relation only includes all simple attributes and the primary key **D_ID** which is underlined. The DOCTOR entity has Office as a composite attribute of which only the simple attributes are included in the relation.

- Office: Bldg_Nb, Office_Nb.

PATIENT

<u>Patient_ID</u>	First	MI	Last	Sex	DOB
Address	Phone_Nb	Email	E_Name	E_Rel	E_Phone_Nb

The PATIENT entity contains simple, foreign and composite attributes. This relation only includes all simple attributes and the primary key **Patient_ID** which is underlined. The PATIENT entity has Name, Contact_Info and Emergency_Contact as composite attributes of which only their simple attributes are included in the relation.

- Name: First, MI, Last
- Contact_Info: Phone_Nb, Email
- Emergency: E_Name, E_Rel, E_Phone_Nb

DEPARTMENT

<u>Dept_ID</u>	Name	Ext	Email	Bldg_Nb
----------------	------	-----	-------	---------

The DEPARTMENT entity contains simple, derived, composite and multivalued attributes. The attributes not represented in this relation are the derived attribute: Staff_Count, as well as the multivalued attributes: Floor_Nb and Working_Hours. Thus this relation only includes all simple attributes and the primary key





Dept_ID which is underlined. The DEPARTMENT entity has Location and Contact as composite attributes of which only their simple attributes are included in the relation.

- Location: Bldg_Nb, Floor_Nb
- Contact: Ext , Email

ROOM

<u>Bldg_Nb</u>	<u>Room_Nb</u>	Type	Capacity	Status
----------------	----------------	------	----------	--------

The ROOM entity contains simple and derived attributes. The derived attribute Availability is not represented in this relation. Thus only the simple attributes and the primary key **Room_Nb** and **Bldg_Nb** which is underlined are included in this relation.

SERVICE

<u>Service_ID</u>	Type	Date	Result
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The SERVICE entity contains only simple attributes so we simply include in this relation the four attributes: Type, Date, Result, and **Service_ID** which is underlined because it is a primary key.

BLOOD_BANK

<u>Donation_ID</u>	Blood_Type	First	MI	Last	Phone_Nb
Collection_Date	Availabilty				

The BLOOD_BANK entity contains simple, derived and composite attributes. The derived attribute Expiry_Date is not represented in this relation. This relation only includes all simple attributes and the primary key **Donation_ID** which is underlined. The BLOOD_BANK entity has Donor_Info, Name as composite attributes of which only their simple attributes are included in the relation.

- Donor_Info: Name, Phone_Nb
- Name: First, MI, Last



INVENTORY

<u>Item_Name</u>	<u>Batch_Id</u>	Item_Type	Qty	Expiry_Date	Reorder_Threshold
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The INVENTORY entity contains only simple attributes so we simply include all of them along with the primary key **Item_Name** and **Batch_Id** which are underlined.

SUPPLIER

<u>Supp_ID</u>	Supp_Name	Phone_Nb	Email	Terms	Expiry_Date
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The SUPPLIER entity contains simple, derived, composite, and multivalued attributes. The derived attribute Average_Rating and the multivalued attribute Product_Types are not represented in this relation. This relation only includes all simple attributes and the primary key **Supp_ID** which is underlined. The SUPPLIER entity has Contact and Contract_Details as composite attributes of which only their simple attributes are included in the relation.

- Contact: Phone_Nb, Email
- Contract_Details : Terms, Expiry_Date

AMBULANCE

<u>License_Plate</u>	Status	Model	Last_Check
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The AMBULANCE entity contains simple and multivalued attributes. The multivalued attribute Equipment_List is not represented in this relation. This relation only includes all simple attributes and the primary key **License_Plate** which is underlined.

Step 2: Mapping of Weak Entity Types

In this step, weak entity types are converted into relations. Similar to Step 1, only simple attributes are included, while multivalued and derived attributes are excluded. Each weak entity relation contains a foreign key attribute, which corresponds to the primary key of the owner entity type. The primary key of the relation is formed by combining this foreign key with the partial key of the weak entity. The weak entities in our database design include: MEDICAL_RECORD and INSURANCE.

MEDICAL_RECORD

Patient_ID	Record_ID	Blood_Type	Height	Weight
------------	-----------	------------	--------	--------

The weak entity **MEDICAL_RECORD** contains derived and multivalued attributes which are not going to be included in this relation. The derived attribute is: BMI and the multivalued attributes are: Medication, Allergies, Diagnosis_History, and Current_Treatment_Plan. Only the simple attributes are included. Additionally, the Patient_ID, the primary key of the owner entity PATIENT, is included. Patient_ID and the partial key Record_ID are combined to represent the primary key of this relation. The **MEDICAL_RECORD** entity has Diagnosis_History as a composite multivalued attribute, so its simple attributes are not included in the relation.

INSURANCE

Insurance_ID	Patient_ID	First	MI	Last	Policy_Nb
Coverage_Type	P_Name	Phone_Nb	Email	Start_Date	End_Date

The weak entity **INSURANCE** contains only simple and composite attributes. Additionally, the Patient_ID, the primary key of the owner entity PATIENT, is included. Patient_ID and the partial key INSURANCE_ID are combined to represent the primary key of this relation. The INSURANCE entity



has Policy_Holder, Provider, Contact_Info and Coverage_Period as composite attributes of which only their simple attributes are included in the relation.

- Policy_Holder: First, MI, Last
- Provider: P_Name, Contact_Info
- Contact_Info: Phone_Nb, Email
- Coverage_Period: Start_Date, End_Date



Step 3: Mapping of Binary 1:1 Relationship Types

Binary one-to-one relationships represent a link between two entity types, where each record appears in each table only once. In this step, we are going to be mapping these relationships. To do that we can follow one of the following three approaches:

1. **Foreign key approach:** Where we choose an entity type A (usually on the side of the total participation) and include a foreign key in it, which is the primary key of the other side of the relationship.
2. **Merged relation option:** An alternate mapping of a one-to-one relationship. It is made possible by merging the two entity types into a single relation.
3. **Cross-reference or relationship relation option:** This entails setting up a third relation for the purpose of referencing the primary keys of the entity types.

For our purposes, in our database management system we will follow the Foreign key because it proves to be the more efficient option.

The binary one-to-one relationships that need to be mapped are:

DEPARTMENT (Heads)

Dept_ID	Name	Ext	Email	Bldg_Nb	Head_ID
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As each department is headed by one person, the “**Heads**” relationship links DEPARTMENT and STAFF. The participation is total from the side of the former, thus we will place the primary key of the STAFF entity ID in the DEPARTMENT relation, and rename Head_ID.

The “**Heads**” relationship has a derived attribute “Team”, specifying the number of employees under the individual heading the department, we will not place it in the DEPARTMENT relation as it is not simple.

DOCTOR (Belongs To)

<u>D_ID</u>	License_Nb	Specialty	Salary	Bldg_Nb	Office_Nb
Availability	Paging_Nb	Staff_ID			

As every doctor is a part of staff, the “*Belongs to*” relationship links the DOCTOR and STAFF entity types. The participation is total on the DOCTOR side, while it is partial on the side of STAFF. Therefore, we will place the primary key of STAFF entity ID in the DOCTOR relation, renaming it to Staff_ID.

INSURANCE (Is Covered By)

<u>Insurance_ID</u>	<u>Patient_ID</u>	First	MI	Last	Policy_Nb
Coverage_Type	P_Name	Phone_Nb	Email	Start_Date	End_Date
Patient_ID					

Every Insurance plan belongs to a patient, the “*Is Covered By*” relationship links the INSURANCE and PATIENT entity types. The participation is total on the INSURANCE side, while it is partial on the side of the PATIENT. Hence, we will place the primary key of PATIENT entity Patient_ID in the INSURANCE relation, but there’s no need to as it is already present as the INSURANCE’s owner entity’s primary key.

PATIENT (Has_A)

<u>Patient_ID</u>	First	MI	Last	Sex	DOB
Address	Phone_Nb	Email	E_Name	E_Rel	E_Phone_Nb
Record_ID					

Every patient has a medical record and vice versa. Therefore, the “*Has A*” relationship serves as the connection between the PATIENT and MEDICAL RECORD. The relationship is total on both sides. Therefore, we will place the partial key of the MEDICAL_RECORD entity Record_ID, to the PATIENT entity.

Step 4: Mapping of Binary 1:N Relationship Types

In this step, we are going to be mapping the one-to-many binary relationships. In order to do so, we'll take the relation of the entity type with N cardinality, and add to it a foreign key: the primary key of the participating entity type with 1 cardinality. Additionally, if the relationship itself has any simple attributes, they will be added as attributes of the relation.

The 1:N relationships to be mapped are: Works For, Operates, Occupies A, Performs A, Is Part Of, Reserves, and Provides.

STAFF (Works_For, Operates)

ID	First	MI	Last	DOB	SSN
Address	Emergency_Name	Rel	Phone_Nb	Position	Hiring_Date
Emp_Type	Weekly_Hours	Hourly_Rate	Vacation_Per_Year	End_Date	Dept_ID
License_Plate					

The “*Works For*” relationship links the STAFF and the DEPARTMENT entity types. With one department having multiple staff members working for it, the STAFF entity is on the N cardinality side. Therefore, we add to STAFF’s relation the foreign key Dept_ID: the primary key of the DEPARTMENT entity type.

The “*Operates*” relationship linked the STAFF and the AMBULANCE entity types. Multiple staff member can operate the same ambulance, thus STAFF is on the N cardinality side. We will therefore add the AMBULANCE entity type’s primary key License_Plate as a foreign key in the STAFF relation.

PATIENT (Occupies_A)

Patient_ID	First	MI	Last	Sex	DOB
Address	Phone_Nb	Email	E_Name	E_Rel	E_Phone_Nb
Bldg_Nb	Room_Nb				



The “***Occupies A***” relationship links the PATIENT and the ROOM entity types. Many patients can reside in the same room. Hence, with PATIENT being the entity with N cardinality, we will add the ROOM’s primary key attributes Bldg_Nb and Room_Nb as foreign keys in the PATIENT relation.

SERVICE (Performs A, Is Part Of)

Service_ID	Type	Date	Result	D_ID	Record_ID
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To link the SERVICE entity with the DOCTOR entity who’s performing the service, the “***Performs A***” relationship was added. A doctor can perform multiple services, therefore SERVICE is the entity with N cardinality. We will thus add to the SERVICE relation the primary key of the DOCTOR entity type D_ID as a foreign key.

The “***Is Part Of***” relationship links a given SERVICE entity with a MEDICAL_RECORD entity. One medical record can hold many service, putting the SERVICE entity on the N cardinality side. Hence, we will add the MEDICAL_RECORD’s partial key Record_ID to the SERVICE relation as a foreign key.

BLOOD_BANK (Reserves)

Donation_ID	Blood_Type	First	MI	Last	Phone_Nb
Collection_Date	Availabilty	Service_ID			

A medical record could reserve an entry to the blood bank in order to use it; therefore, the “***Reserves***” relationship was added, linking the SERVICE and the BLOOD_BANK entity types. A given service could reserve many donations from the blood bank, and so the BLOOD_BANK entity is on the N cardinality side. Thus, we add to the BLOOD_BANK entity’s relation a foreign key Service_ID, the primary key of the SERVICE entity type.

INVENTORY (Provides)

Item_Name	Batch_ID	Item_Type	Qty	Expiry_Date	Reorder_Threshold
Supp_ID	Batch_Rating				

The “***Provides***” relationship links the SUPPLIER entity type with the INVENTORY entity type. A given supplier could provide many items of the inventory, therefore the INVENTORY entity has N cardinality.

Hence, we will add the SUPPLIER entity type's primary key Supp_ID to the INVENTORY relation as a foreign key.

Additionally, the “***Provides***” relationship has a simple attribute Batch_Rating, which will also be added to the INVENTORY relation.

Step 5: Mapping of Binary M:N Relationship Types

DOCTOR (Treats)

<u>Doctor_ID</u>	<u>Patient_ID</u>

Many doctors treat many patients. The “***Treats***” relationship links the DOCTOR entity and the PATIENT entity. We create a new relation called “***Treats***” that includes the primary keys of the DOCTOR and PATIENT entities. The primary key of the DOCTOR entity, **ID**, is added to the “***Treats***” relation and renamed **Doctor_ID**. Also, the primary key of the PATIENT entity, **Patient_ID**, is added. The combination of both added keys represents the primary key of the “***Treats***” relation and thus are underlined.

SERVICE (Uses)

<u>Service_ID</u>	<u>Item_Name</u>

Many services use many inventory items. The “***Uses***” relationship links the SERVICE entity and the INVENTORY entity. We create a new relation called “***Uses***” that includes the primary keys of the SERVICE and INVENTORY entities. The primary key of the SERVICE entity, **ID**, is added to the “***Uses***” relation and renamed **Service_ID**. Also, the primary key of the INVENTORY entity, **Item_Name**, is added and renamed **Inventory_ID**. The combination of both added keys represents the primary key of the “***Uses***” relation and thus are underlined.

Step 6: Mapping of Multivalued Attributes

In this step, we will map the multivalued attributes that were previously set aside. For each multivalued attribute, a new relation is created, containing the attribute itself along with the primary key of the entity it is associated with. Together, these will form the primary key of the new relation.

STAFF_PHONE_NB

<u>Staff_ID</u>	<u>Phone_Nb</u>

The multivalued attribute **Phone_Nb** belongs to the STAFF entity. To represent it, we create a relation called “**STAFF_PHONE_NB**”. Its primary key is composed of **Staff_ID**, the primary key of the STAFF entity, and the attribute **Phone_Nb** which represents the multiple contact numbers a STAFF member may have.

STAFF_EMAIL

<u>Staff_ID</u>	<u>Email</u>

The multivalued attribute **Email** is associated with the STAFF entity. To represent it, we create a relation called “**STAFF_EMAIL**”. Its primary key is composed of **Staff_ID**, the primary key of the STAFF entity, and the attribute **Email** reflecting the multiple email addresses a STAFF member may have.

DR_SUBSPECIALTIES

<u>Doctor_ID</u>	<u>Subspecialties</u>

The multivalued attribute Subspecialties is associated with the DOCTOR entity. To represent it, we establish a relation called "DR_SUBSPECIALTIES". Its primary key is composed of **Doctor_ID**, the primary key of the DOCTOR entity, along with the **Subspecialties** attribute, which captures the various subspecialties and qualifications a DOCTOR may possess (Cardiology, Echocardiography, Orthopedics, Neurology, Gastroenterology).

DEP_WORKING_HOURS

<u>Dept_ID</u>	<u>Working_Hours</u>

The multivalued attribute Working_Hours is associated with the DEPARTMENT entity. To represent this, we create a relation called "DEP_WORKING_HOURS". The primary key for this relation includes **Dept_ID**, the primary key of the DEPARTMENT entity, along with the **Working_Hours** attribute, which records the specific working hours for each department (it might operate from "08:00 to 12:00" and "13:00 to 17:00").

DEP_FLOOR_NB

<u>Dept_ID</u>	<u>Floor_Nb</u>

The multivalued attribute Floor_NB is associated with the DEPARTMENT entity, and it is represented by a relation called "DEP_FLOOR_NB". The primary key for this relation includes **Dept_ID**, the primary key of the DEPARTMENT entity, along with the **Floor_Nb** attribute, which allows for storing multiple floor numbers associated with each department.

PATIENT_ALLERGIES

<u>Record_ID</u>	<u>Allergies</u>
------------------	------------------

The relation "PATIENT_ALLERGIES" is designed to capture the multiple allergies associated with each patient. This relation contains two key fields: **Record_ID**, which is the key that uniquely identifies each patient record, and Allergies, which represents the various allergies a patient may have (Anesthesia Agents, Penicillin ,Peanuts)

PATIENT_DIAGNOSIS_HISTORY

<u>Record_ID</u>	<u>Diagnosis_History</u>
------------------	--------------------------

The multivalued attribute Diagnosis_History is linked to the PATIENT entity. To represent it, we create a relation named "PATIENT_DIAGNOSIS_HISTORY". Its primary key consists of **Record_ID**, unique to each MEDICAL_RECORD, along with the **Diagnosis_History** attribute, allowing for detailed tracking of each diagnosis to track a patient's medical history (Type 2 Diabetes, Hypertension, Asthma, Migraine).

PATIENT_MEDICATION

<u>Record_ID</u>	<u>Medication</u>
------------------	-------------------

The PATIENT_MEDICATION relation records each patient's current medications. It includes a **Record_ID** to uniquely identify each patient's medical record and a **Medications** attribute that lists the

medications they are currently taking. For example: Insulin, Aspirin, Warfarin. This relation ensures that each patient's active medications are clearly tracked and easily accessible for medical staff.

PATIENT_CURRENT_TREATMENT_PLAN

<u>Record_ID</u>	<u>Current_Treatment_Plan</u>
------------------	-------------------------------

The PATIENT_CURRENT_TREATMENT_PLAN relation is designed to track the multivalued **Current_Treatment_Plan** for each patient. It contains a **Record_ID**, which uniquely identifies the patient, and a **Current_Treatment_Plan** field, which stores the different treatments or therapies that the patient is undergoing. Since a patient may be receiving multiple treatments or therapies simultaneously, the **Current_Treatment_Plan** is a multivalued attribute.(For example:Chemotherapy ,Post-surgical recovery treatments,Physical therapy)

SUP_PRODUCT_TYPES

<u>Supp_ID</u>	<u>Product_Types</u>
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The SUP_PRODUCT_TYPES relation is designed to represent the multivalued **Product_Types** for each supplier. It contains a **Supp_ID** key, which uniquely identifies the supplier, and a **Product_Types** field, which stores the various types of products provided by the supplier, since a supplier may offer multiple types of products (Emergency Medical Equipment, First Aid Kits, Oxygen Tanks, Portable Ventilators, Machines, CT Scanners).

AMBULANCE EQUIPMENT LIST

<u>License_Plate</u>	<u>Equipment_List</u>
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The **Equipment_List** is a multivalued attribute associated with the AMBULANCE entity, as an ambulance can carry multiple pieces of equipment. To represent this multivalued attribute, we create a relation called AMBULANCE_EQIPMENT_LIST. This relation consists of two key components: the **License_Plate**, which serves as the primary identifier for each ambulance, and the **Equipment_List** (For example: Oxygen tanks, IV fluids and drips, Defibrillator ,Epipens)

Step 7: Mapping of Binary N-ary Relationship Types

Now that you mention it.. we found no N-ary relationships in our ER schema! Maybe the aliens ate them. Wait what? No, no, we're joking, there are NO aliens here. (and no N-ary relationships).

Final Display:

STAFF

<u>ID</u>	<u>First</u>	<u>MI</u>	<u>Last</u>	<u>DOB</u>	<u>SSN</u>
<u>Address</u>	<u>Emergency_Name</u>	<u>Rel</u>	<u>Phone_Nb</u>	<u>Position</u>	<u>Hiring_Date</u>
<u>Emp_Type</u>	<u>Weekly_Hours</u>	<u>Hourly_Rate</u>	<u>Vacation_Per_Year</u>	<u>End_Date</u>	

DOCTOR

<u>D_ID</u>	<u>License_Nb</u>	<u>Specialty</u>	<u>Salary</u>	<u>Bldg_Nb</u>	<u>Office_Nb</u>
<u>Availabilty</u>	<u>Paging_Nb</u>				



HARATY HOSPITAL
FOR HUMANS



PATIENT

Patient_ID	First	MI	Last	Sex	DOB
Address	Phone_Nb	Email	E_Name	E_Rel	E_Phone_Nb

DEPARTMENT

Dept_ID	Name	Ext	Email	Bldg_Nb
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ROOM

Bldg_Nb	Room_Nb	Type	Capacity	Status
---------	---------	------	----------	--------

SERVICE

Service_ID	Type	Date	Result
------------	------	------	--------

BLOOD_BANK

Donation_ID	Blood_Type	First	MI	Last	Phone_Nb
Collection_Date	Availabilty				

INVENTORY

Item_Name	Batch_ID	Item_Type	Qty	Expiry_Date	Reorder_Threshold
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SUPPLIER

Supp_ID	Supp_Name	Phone_Nb	Email	Terms	Expiry_Date
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AMBULANCE

License_Plate	Status	Model	Last_Check
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MEDICAL_RECORD

Patient_ID	Record_ID	Blood_Type	Height	Weight
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INSURANCE

Insurance_ID	Patient_ID	First	MI	Last	Policy_Nb
Coverage_Type	P_Name	Phone_Nb	Email	Start_Date	End_Date

DEPARTMENT (Heads)

Dept_ID	Name	Ext	Email	Bldg_Nb	Head_ID
---------	------	-----	-------	---------	---------

DOCTOR (Belongs_To)

D_ID	License_Nb	Specialty	Salary	Bldg_Nb	Office_Nb
Availabilty	Paging_Nb	Staff_ID			

INSURANCE (Is_Covered_By)

Insurance_ID	Patient_ID	First	MI	Last	Policy_Nb
Coverage_Type	P_Name	Phone_Nb	Email	Start_Date	End_Date
Patient_ID					

PATIENT (Has_A)

Patient_ID	First	MI	Last	Sex	DOB
Address	Phone_Nb	Email	E_Name	E_Rel	E_Phone_Nb
Record_ID					



STAFF (Works For, Operates)

<u>ID</u>	First	MI	Last	DOB	SSN
Address	Emergency_Name	Rel	Phone_Nb	Position	Hiring_Date
Emp_Type	Weekly_Hours	Hourly_Rate	Vacation_Per_Year	End_Date	Dept_ID
License_Plate					

PATIENT (Occupies A)

<u>Patient_ID</u>	First	MI	Last	Sex	DOB
Address	Phone_Nb	Email	E_Name	E_Rel	E_Phone_Nb
Bldg_Nb	Room_Nb				

Service (Performs A, Is Part Of)

<u>Service_ID</u>	Type	Date	Result	D_ID	Record_ID

BLOOD BANK (Reserves)

<u>Donation_ID</u>	Blood_Type	First	MI	Last	Phone_Nb
Collection_Date	Availabilty	Service_ID			

INVENTORY (Provides)

<u>Item_Name</u>	<u>Batch_ID</u>	Item_Type	Qty	Expiry_Date	Reorder_Threshold
Supp_ID	Batch_Rating				

DOCTOR (Treats)

<u>Doctor_ID</u>	<u>Patient_ID</u>

SERVICE (Uses)



HARATY HOSPITAL
FOR HUMANS



<u>Service_ID</u>	<u>Item_Name</u>
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STAFF_PHONE_NB

<u>Staff_ID</u>	<u>Phone_Nb</u>
-----------------	-----------------

STAFF_EMAIL

<u>Staff_ID</u>	<u>Email</u>
-----------------	--------------

DR_SUBSPECIALTIES

<u>Doctor_ID</u>	<u>Subspecialties</u>
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DEP_WORKING_HOURS

<u>Dept_ID</u>	<u>Working_Hours</u>
----------------	----------------------

DEP_FLOOR_NB

<u>Dept_ID</u>	<u>Floor_Nb</u>
----------------	-----------------

PATIENT_ALLERGIES

<u>Record_ID</u>	<u>PAllergies</u>

PATIENT_DIAGNOSIS_HISTORY

<u>Record_ID</u>	<u>Diagnosis_History</u>

PATIENT_MEDICATION

<u>Record_ID</u>	<u>Medication</u>

PATIENT_CURRENT_TREATMENT_PLAN

<u>Record_ID</u>	<u>Current_Treatment_Plan</u>

SUP_PRODUCT_TYPES

<u>Supp_ID</u>	<u>Product_Types</u>





HARATY HOSPITAL
FOR HUMANS



AMBULANCE EQUIPMENT LIST

<u>License Plate</u>	<u>Equipment List</u>
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Table Structure for the Haraty Hospital for Humans

After building the ER model for Haraty Hospital for Humans and translating it into a relational schema, the next phase involves building the database on the Oracle Database Server. This process includes creating the necessary tables to represent each entity and relationship, populating these tables with data, and executing various queries to demonstrate the database's functionality and its critical role in managing hospital operations.

1- STAFF

```
CREATE TABLE STAFF (
    ID CHAR(9) PRIMARY KEY,
    First VARCHAR2(30) NOT NULL,
```

4.1 / 24

HaratyHumanHospital~1.sql

```
MI CHAR(1),
Last VARCHAR2(30) NOT NULL,
DOB DATE,
SSN CHAR(9) NOT NULL,
Address VARCHAR2(50) NOT NULL,
Emergency_Name VARCHAR2(30) NOT NULL,
Rel VARCHAR2(20) NOT NULL,
Phone_Nb CHAR(10) NOT NULL,
Email VARCHAR2(100) CHECK (REGEXP_LIKE>Email, '^[^@]+@[^@]+\.[^@]+$',),
Position VARCHAR2(30) NOT NULL,
Hiring_Date DATE,
Emp_Type CHAR(30) CHECK (Emp_Type IN ('Full Time', 'Part Time')),
Weekly_Hours NUMBER(2),
Hourly_Rate NUMBER(5, 2),
Vacations_Per_Year NUMBER(3),
End_Date DATE,
Dept_ID VARCHAR2(3),
License_Plate CHAR(10),
FOREIGN KEY (Dept_ID) REFERENCES DEPARTMENT (Dept_ID),
FOREIGN KEY (License_Plate) REFERENCES AMBULANCE (License_Plate)
);
```



2- DOCTOR

```
CREATE TABLE DOCTOR (
    D_ID CHAR(9) PRIMARY KEY,
    License_Nb CHAR(9) NOT NULL,
    Specialty VARCHAR(100),
    Salary NUMBER(10,2),
    Bldg_Nb VARCHAR(2) NOT NULL,
    Office_Nb CHAR(3),
    Availability CHAR(1) CHECK (Availability IN ('Y', 'N')),
    Paging_Nb CHAR(4),
    Staff_ID CHAR(9),
    FOREIGN KEY (Staff_ID) REFERENCES STAFF(ID)
);
```

3- PATIENT

```
CREATE TABLE PATIENT (
    Patient_ID CHAR(9) PRIMARY KEY,
    First VARCHAR(30) NOT NULL,
    MI CHAR(1),
    Last VARCHAR(30) NOT NULL,
    Sex CHAR(1) CHECK (Sex IN ('F', 'M', 'I')),
    DOB DATE,
    Address VARCHAR(50) NOT NULL,
```

6.1 / 24

HaratyHumanHospital~1.sql

```
Phone_Nb CHAR(10) NOT NULL,
Email VARCHAR(100) NOT NULL,
CHECK (REGEXP_LIKE(Email, '^[^@]+@[^@]+\.[^@]+$')),
E_Name VARCHAR(30) NOT NULL,
E_Rel VARCHAR(30) NOT NULL,
E_Phone_Nb CHAR(10) NOT NULL
--Record_ID CHAR(9)
--FOREIGN KEY (Record_ID) REFERENCES MEDICAL_RECORD(Record_ID) DEFERRABLE INITIALLY DEFERRED
);
```



HARATY HOSPITAL
FOR HUMANS



4- DEPARTMENT

```
CREATE TABLE DEPARTMENT (
    Dept_ID VARCHAR(3) PRIMARY KEY,
    Name VARCHAR(20) NOT NULL,
    Ext NUMBER(3),
    Email VARCHAR(100) NOT NULL,
    CHECK (REGEXP_LIKE(Email, '^[^@]+@[^@]+\.[^@]+$')),
    Bldg_Nb VARCHAR(2) NOT NULL
);
```

5- ROOM

```
CREATE TABLE ROOM(
    Bldg_Nb VARCHAR(2),
    Room_Nb VARCHAR(3),
    Type VARCHAR(20),
    Capacity NUMBER(2),
    Status VARCHAR(20) CHECK(Status IN ('Available', 'Occupied',
```

3.1 / 24

HaratyHumanHospital~1.sql

```
'Under Maintenance', 'Cleaning Required')),
PRIMARY KEY (Bldg_Nb, Room_Nb)
);
```

6- MEDICAL_RECORD

```
CREATE TABLE MEDICAL_RECORD (
    Record_ID CHAR(9) PRIMARY KEY,
    Patient_ID CHAR(9) NOT NULL,
    Record_Date DATE NOT NULL,

    Blood_Type CHAR(3) CHECK (Blood_Type IN ('A+', 'A-', 'B+', 'B-', 'AB+', 'AB-', 'O+', 'O-')),
    Weight NUMERIC(5, 2) CHECK (Weight > 0 AND Weight <= 700),
    Height NUMERIC(4, 2) CHECK (Height > 0 AND Height <= 3),

    Diagnosis VARCHAR2(100) NOT NULL,
    Treatment VARCHAR2(255) ,
    FOREIGN KEY (Patient_ID) REFERENCES PATIENT (Patient_ID)
);
```

7- SERVICE

```
CREATE TABLE SERVICES (
    Services_ID CHAR(9) PRIMARY KEY,
    Type VARCHAR(40) NOT NULL,
    Service_Date DATE,
    Result VARCHAR(255),
    Doctor_ID CHAR(9),
    FOREIGN KEY (Doctor_ID) REFERENCES DOCTOR(D_ID)
);
```

8- BLOOD_BANK

```
CREATE TABLE BLOOD_BANK (
    Donation_ID CHAR(9) PRIMARY KEY,
    Blood_Type CHAR(3) CHECK (Blood_Type IN ('A+', 'A-', 'B+', 'B-', 'AB+', 'AB-', 'O+', 'O-')),
    First VARCHAR(30) NOT NULL,
    MI CHAR(1),
    Last VARCHAR(30) NOT NULL,
    Phone_Nb CHAR(10) NOT NULL CHECK (Phone_Nb LIKE ''),
    Collection_Date DATE NOT NULL,
    Availability CHAR(1) CHECK (Availability IN ('Y', 'N')),
    Services_ID CHAR(9),
    FOREIGN KEY (Services_ID) REFERENCES SERVICES(Services_ID)
);
```



9- INVENTORY

```
CREATE TABLE INVENTORY (
    Item_Name VARCHAR(50) NOT NULL,
    Batch_ID CHAR(9) PRIMARY KEY,
    Qty NUMBER(6) NOT NULL CHECK (Qty >= 0),
    Expiry_Date DATE NOT NULL,
    Reorder_Threshold NUMBER(6) NOT NULL CHECK (Reorder_Threshold >= 0),
    Supp_ID CHAR(9),
    Batch_Rating NUMBER(2, 1) CHECK (Batch_Rating BETWEEN 0 AND 5),
    FOREIGN KEY (Supp_ID) REFERENCES SUPPLIER(Supp_ID)
);
```

10- SUPPLIER

```
CREATE TABLE SUPPLIER (
    Supp_ID CHAR(9) PRIMARY KEY,
```

1.1 / 24

HaratyHumanHospital~1.sql

```
Supp_Name VARCHAR(50) NOT NULL,
Phone_Nb CHAR(10) NOT NULL,
Email VARCHAR(100) CHECK (REGEXP_LIKE>Email, '^[^@]+@[^@]+\.[^@]+$',),
Terms VARCHAR(500),
Expiry_Date DATE
);
```



11- INSURANCE

```
CREATE TABLE INSURANCE (
    Insurance_ID CHAR(9) PRIMARY KEY,
    First VARCHAR(30) NOT NULL,
    MI CHAR(1),
    Last VARCHAR(30) NOT NULL,
    Policy_Nb VARCHAR(11) NOT NULL CHECK (REGEXP_LIKE(Policy_Nb, '^[A-Z]{2}-[0-9]{8}$')),
    Coverage_Type VARCHAR(7) CHECK (Coverage_Type IN ('class A', 'class B', 'class C')),
    P_Name VARCHAR(30) NOT NULL,
    Phone_Nb CHAR(10) NOT NULL CHECK (Phone_Nb LIKE ''),
    Email VARCHAR(100) CHECK (REGEXP_LIKE(Email, '^[^@]+@[^@]+\.[^@]+$')),
    Start_Date DATE NOT NULL,
    End_Date DATE,
    Patient_ID CHAR(9),
    FOREIGN KEY (Patient_ID) REFERENCES PATIENT(Patient_ID)
);
```

12- AMBULANCE

```
CREATE TABLE AMBULANCE (
    License_Plate CHAR(10) PRIMARY KEY,
    Status VARCHAR(20) NOT NULL CHECK (Status IN ('Available', 'In Use',
    'Under Maintenance')),
    Model CHAR(4) NOT NULL,
    Last_Check DATE
);
```

13- TREATS

```
CREATE TABLE TREATS (
    Patient_ID CHAR(9),
    Doctor_ID CHAR(9),
    PRIMARY KEY (Patient_ID, Doctor_ID),
    FOREIGN KEY (Patient_ID) REFERENCES PATIENT(Patient_ID),
    FOREIGN KEY (Doctor_ID) REFERENCES DOCTOR(D_ID)
);
```



HARATY HOSPITAL
FOR HUMANS



14- USES

```
CREATE TABLE USES (
```

14.1 / 24

HaratyHumanHospital~1.sql

```
Services_ID CHAR(9),
Batch_ID CHAR(9),
FOREIGN KEY (Services_ID) REFERENCES SERVICES(Services_ID),
FOREIGN KEY (Batch_ID) REFERENCES INVENTORY(Batch_ID),
PRIMARY KEY (Services_ID, Batch_ID)
);
```

15- DR_SUBSPECIALTIES

```
CREATE TABLE DR_SUBSPECIALTIES (
Doctor_ID CHAR(9),
Subspecialties VARCHAR(200),
PRIMARY KEY (Doctor_ID, Subspecialties),
FOREIGN KEY (Doctor_ID) REFERENCES DOCTOR(D_ID)
);
```



16- DEP_WORKING_HOURS

```
CREATE TABLE DEP_WORKING_HOURS (
    Dept_ID VARCHAR(3),
    Working_Hours VARCHAR(35) NOT NULL CHECK (
        REGEXP_LIKE(
            Working_Hours,
            '^[0-9]{2}:[0-9]{2}-[0-9]{2}:[0-9]{2}( and [0-9]{2}:[0-9]{2}-[0-9]{2}:[0-9]{2})?:$'
        )
    ),
    PRIMARY KEY (Dept_ID, Working_Hours),
    FOREIGN KEY (Dept_ID) REFERENCES DEPARTMENT(Dept_ID)
);
```

17- DEP_FLOOR_NB

```
CREATE TABLE DEP_FLOOR_NB (
    Dept_ID VARCHAR(3),
    Floor_Nb VARCHAR(2),
    PRIMARY KEY (Dept_ID, Floor_Nb),
    FOREIGN KEY (Dept_ID) REFERENCES DEPARTMENT(Dept_ID)
);
```

18- PATIENT_ALLERGIES

```
CREATE TABLE PATIENT_ALLERGIES (
    Record_ID CHAR(9),
    PAllergies VARCHAR(100),
    PRIMARY KEY (Record_ID, PAllergies),
    FOREIGN KEY (Record_ID) REFERENCES MEDICAL_RECORD(Record_ID)
);
```

19- PATIENT_DIAGNOSIS_HISTORY

```
CREATE TABLE PATIENT_DIAGNOSIS_HISTORY (
    Record_ID CHAR(9),
    Diagnosis_History VARCHAR(100),
    PRIMARY KEY (Record_ID, Diagnosis_History),
    FOREIGN KEY (Record_ID) REFERENCES MEDICAL_RECORD(Record_ID)
);
```

20- PATIENT_MEDICATION

```
CREATE TABLE PATIENT_MEDICATION (
    Record_ID CHAR(9),
    Medication VARCHAR(100),
    PRIMARY KEY (Record_ID, Medication),
    FOREIGN KEY (Record_ID) REFERENCES MEDICAL_RECORD(Record_ID)
);
```

21- PATIENT_CURRENT_TREATMENT_PLAN

```
CREATE TABLE PATIENT_CURRENT_TREATMENT_PLAN (
    Record_ID CHAR(9),
    Current_Treatment_Plan VARCHAR(200),
    PRIMARY KEY (Record_ID, Current_Treatment_Plan),
    FOREIGN KEY (Record_ID) REFERENCES MEDICAL_RECORD(Record_ID)
);
```

22- SUB_PRODUCT_TYPES

```
CREATE TABLE SUP_PRODUCT_TYPES (
    Supp_ID CHAR(9),
    Product_Types CHAR(50),
    PRIMARY KEY (Supp_ID, Product_Types),
    FOREIGN KEY (Supp_ID) REFERENCES SUPPLIER(Supp_ID)
);
```

23- AMBULANCE_EQUIPMENT_LIST

```
CREATE TABLE AMBULANCE_EQUIPMENT_LIST (
    License_Plate CHAR(10),
    Equipment_List VARCHAR(200),
    PRIMARY KEY (License_Plate, Equipment_List),
    FOREIGN KEY (License_Plate) REFERENCES AMBULANCE(License_Plate)
```



Inserting Data

1- STAFF

```
INSERT INTO STAFF VALUES ('S00000001', 'John', 'A', 'Doe', TO_DATE('1990-01-15', 'YYYY-MM-DD'), '123456789', '123 Main St', 'Jane Doe', 'Sister', '1234567890',  
INSERT INTO STAFF VALUES ('S00000002', 'Mary', 'B', 'Smith', TO_DATE('1985-05-20', 'YYYY-MM-DD'), '987654321', '456 Oak St', 'John Smith', 'Brother', '987654321',  
INSERT INTO STAFF VALUES ('S00000003', 'James', NULL, 'Brown', TO_DATE('1992-08-10', 'YYYY-MM-DD'), '456123789', '789 Pine St', 'Emily Brown', 'Wife', '456123789',  
INSERT INTO STAFF VALUES ('S00000004', 'Emma', 'C', 'Johnson', TO_DATE('1980-12-25', 'YYYY-MM-DD'), '321654987', '321 Elm St', 'Chris Johnson', 'Husband', '321654987',  
INSERT INTO STAFF VALUES ('S00000005', 'Oliver', 'D', 'Williams', TO_DATE('1975-07-04', 'YYYY-MM-DD'), '654789123', '654 Maple St', 'Sophia Williams', 'Daughter',  
INSERT INTO STAFF VALUES ('S00000006', 'Isabella', 'E', 'Taylor', TO_DATE('1988-09-17', 'YYYY-MM-DD'), '789123456', '789 Cedar St', 'Liam Taylor', 'Father', '789123456',  
INSERT INTO STAFF VALUES ('S00000007', 'Liam', 'F', 'White', TO_DATE('1995-03-30', 'YYYY-MM-DD'), '123789456', '123 Birch St', 'Emma White', 'Mother', '123789456',  
INSERT INTO STAFF VALUES ('S00000008', 'Sophia', NULL, 'Martin', TO_DATE('1983-11-22', 'YYYY-MM-DD'), '987321654', '987 Walnut St', 'Ethan Martin', 'Brother', '987321654',  
INSERT INTO STAFF VALUES ('S00000009', 'Noah', 'G', 'Clark', TO_DATE('1978-02-18', 'YYYY-MM-DD'), '321987654', '321 Cherry St', 'Mia Clark', 'Sister', '321987654',  
INSERT INTO STAFF VALUES ('S00000010', 'Mia', 'H', 'Lewis', TO_DATE('1993-06-05', 'YYYY-MM-DD'), '654123987', '654 Spruce St', 'Oliver Lewis', 'Son', '654123987',  
INSERT INTO STAFF VALUES ('S00000011', 'Ethan', 'I', 'Walker', TO_DATE('1987-12-01', 'YYYY-MM-DD'), '852741963', '789 Aspen St', 'Ella Walker', 'Wife', '852741963',  
INSERT INTO STAFF VALUES ('S00000012', 'Olivia', 'J', 'Hall', TO_DATE('1990-04-22', 'YYYY-MM-DD'), '741852963', '951 Willow St', 'Jack Hall', 'Father', '741852963',  
INSERT INTO STAFF VALUES ('S00000013', 'Alexander', 'K', 'Allen', TO_DATE('1979-06-30', 'YYYY-MM-DD'), '963258741', '369 Cypress St', 'Grace Allen', 'Mother', '963258741')
```

5.1 / 24

2024.11.28 17:33:45

HaratyHumanHospital~1.sql

6/24

```
INSERT INTO STAFF VALUES ('S00000014', 'Ella', NULL, 'Young', TO_DATE('1983-08-12', 'YYYY-MM-DD'), '159753468', '753 Oakridge St', 'Henry Young', 'Husband', '159753468',  
INSERT INTO STAFF VALUES ('S00000015', 'Benjamin', 'L', 'King', TO_DATE('1994-11-03', 'YYYY-MM-DD'), '753159846', '147 Maplewood St', 'Sophia King', 'Sister', '753159846',  
INSERT INTO STAFF VALUES ('S00000016', 'Charlotte', 'M', 'Wright', TO_DATE('1982-03-28', 'YYYY-MM-DD'), '357951852', '258 Elmwood St', 'Liam Wright', 'Brother', '357951852',  
INSERT INTO STAFF VALUES ('S00000017', 'Lucas', 'N', 'Scott', TO_DATE('1985-10-18', 'YYYY-MM-DD'), '456852159', '951 Cedarwood St', 'Emma Scott', 'Daughter', '456852159',  
INSERT INTO STAFF VALUES ('S00000018', 'Amelia', 'O', 'Adams', TO_DATE('1991-07-09', 'YYYY-MM-DD'), '654123456', '123 Pinewood St', 'Oliver Adams', 'Son', '654123456',  
INSERT INTO STAFF VALUES ('S00000019', 'Mason', 'P', 'Perez', TO_DATE('1988-09-01', 'YYYY-MM-DD'), '789654123', '789 Willowood St', 'Sophia Perez', 'Mother', '789654123',  
INSERT INTO STAFF VALUES ('S00000020', 'Ava', 'Q', 'Rivera', TO_DATE('1976-02-24', 'YYYY-MM-DD'), '852963741', '456 Sprucewood St', 'Benjamin Rivera', 'Husband', '852963741',  
INSERT INTO STAFF VALUES ('S00000021', 'Hasan', 'R', 'Diab', TO_DATE('2004-08-19', 'YYYY-MM-DD'), '719444385', '789 Beirut St', 'Yasmine pepwew', 'Wife', '99999',  
INSERT INTO STAFF VALUES ('S00000022', 'William', 'S', 'Harris', TO_DATE('1980-12-05', 'YYYY-MM-DD'), '951753852', '357 Palm St', 'Charlotte Harris', 'Wife', '951753852',  
INSERT INTO STAFF VALUES ('S00000023', 'Harper', 'T', 'Clark', TO_DATE('1993-05-22', 'YYYY-MM-DD'), '357258951', '789 Maple St', 'Lucas Clark', 'Husband', '357258951',  
INSERT INTO STAFF VALUES ('S00000024', 'Evelyn', 'U', 'Lopez', TO_DATE('1987-09-17', 'YYYY-MM-DD'), '159486753', '951 Cedar St', 'Mason Lopez', 'Brother', '159486753',  
INSERT INTO STAFF VALUES ('S00000025', 'Elijah', 'V', 'Mitchell', TO_DATE('1978-11-25', 'YYYY-MM-DD'), '123789654', '654 Pine St', 'Ava Mitchell', 'Sister', '123789654',  
INSERT INTO STAFF VALUES ('S00000026', 'Abigail', 'W', 'Carter', TO_DATE('1995-03-19', 'YYYY-MM-DD'), '741963852', '357 Spruce St', 'Ethan Carter', 'Brother', '741963852',  
INSERT INTO STAFF VALUES ('S00000027', 'Alice', 'X', 'Green', TO_DATE('1980-05-20', 'YYYY-MM-DD'), '123456780', '123 Forest Lane', 'John Green', 'Brother', '123456780',  
INSERT INTO STAFF VALUES ('S00000028', 'Bob', 'Y', 'Harrison', TO_DATE('1975-12-15', 'YYYY-MM-DD'), '987654321', '456 Maple Ave', 'Sarah Harrison', 'Wife', '987654321',  
INSERT INTO STAFF VALUES ('S00000029', 'Cathy', 'Z', 'Adams', TO_DATE('1983-06-01', 'YYYY-MM-DD'), '456123780', '789 Cedar Street', 'Paul Adams', 'Husband', '456123780',  
INSERT INTO STAFF VALUES ('S00000030', 'David', 'A', 'Taylor', TO_DATE('1987-03-18', 'YYYY-MM-DD'), '321654987', '654 Oak Drive', 'Linda Taylor', 'Mother', '321654987',  
INSERT INTO STAFF VALUES ('S00000031', 'Emily', 'B', 'Wilson', TO_DATE('1990-09-22', 'YYYY-MM-DD'), '789123450', '321 Pine Road', 'James Wilson', 'Father', '789123450',  
INSERT INTO STAFF VALUES ('S00000032', 'Frank', 'C', 'Martin', TO_DATE('1982-02-12', 'YYYY-MM-DD'), '123789450', '111 Willow Street', 'Grace Martin', 'Daughter', '123789450',  
INSERT INTO STAFF VALUES ('S00000033', 'Grace', 'D', 'Clark', TO_DATE('1985-08-28', 'YYYY-MM-DD'), '987321654', '222 Cherry Lane', 'Ethan Clark', 'Husband', '987321654',  
INSERT INTO STAFF VALUES ('S00000034', 'Henry', 'E', 'Scott', TO_DATE('1988-11-30', 'YYYY-MM-DD'), '654321987', '333 Birch Blvd', 'Sophia Scott', 'Wife', '654321987',  
INSERT INTO STAFF VALUES ('S00000035', 'Isla', 'F', 'Lee', TO_DATE('1992-04-05', 'YYYY-MM-DD'), '852741963', '444 Spruce Way', 'Oliver Lee', 'Brother', '852741963',  
INSERT INTO STAFF VALUES ('S00000036', 'Jack', 'G', 'Brown', TO_DATE('1978-10-25', 'YYYY-MM-DD'), '963258741', '555 Maple Circle', 'Liam Brown', 'Son', '963258741')
```



HARATY HOSPITAL
FOR HUMANS



2- DOCTOR

```
INSIDE DOCTORS BASED ON THE STAFF POSITION USING DOCTOR
INSERT INTO DOCTOR (D_ID, License_Nb, Specialty, Salary, Bldg_Nb, Office_Nb, Availability, Paging_Nb, Staff_ID)
SELECT
    'D' || LPAD(ROWNUM, 8, '0') AS D_ID, -- Generate unique Doctor ID
    'LIC' || LPAD(ROWNUM, 6, '0') AS License_Nb, -- Generate unique License Number
    CASE WHEN Staff.ID = 'S00000002' THEN 'Cardiologist'
        WHEN Staff.ID = 'S00000014' THEN 'General Practitioner'
        WHEN Staff.ID = 'S00000020' THEN 'Surgeon'
        ELSE 'Specialist' END AS Specialty, -- Assign specialties based on staff ID
    100000 + ROWNUM * 5000 AS Salary, -- Assign example salary
    SUBSTR(Staff.Dept_ID, 2, 1) AS Bldg_Nb, -- Extract building number from Dept_Nb
    LPAD(ROWNUM, 3, '0') AS Office_Nb, -- Generate unique Office Number
    'Y' AS Availability, -- Default availability as 'Yes'
    LPAD(ROWNUM, 4, '0') AS Paging_Nb, -- Generate unique Paging Number
    Staff.ID AS Staff_ID -- Reference the staff ID
FROM
    STAFF
WHERE
    Position IN ( 'Doctor', 'Surgeon'); -- Filter only doctors from STAFF
SELECT * FROM DOCTOR;
```



HARATY HOSPITAL
FOR HUMANS



3- PATIENT

```
BEGIN
    FOR i IN 1..30 LOOP
        INSERT INTO PATIENT (
            Patient_ID,
            First,
            MI,
            Last,
            Sex,
            DOB,
            Address,
            Phone_Nb,
            Email,
            E_Name,
            E_Rel,
            E_Phone_Nb
        )
        VALUES (
            LPAD(i, 9, '0'), -- Patient_ID, e.g., '000000001'
            'FirstName' || i, -- First name: 'FirstName1', 'FirstName2', etc.
            'M', -- Middle initial: 'M'
            'LastName' || i, -- Last name: 'LastName1', 'LastName2', etc.
            CASE WHEN MOD(i, 2) = 0 THEN 'M' ELSE 'F' END, -- Sex: alternating 'M' and 'F'
            TO_DATE('01-JAN-1990', 'DD-MON-YYYY') + (i * 365), -- DOB: incrementing each year
            'Address ' || i, -- Address: 'Address1', 'Address2', etc.
        );
    END LOOP;
    COMMIT;
END;
```

7.1 / 24

HaratyHumanHospital~1.sql

```
LPAD(i, 9, '1'), -- Phone number: '1234567891', '1234567892', etc.
'email' || i || '@domain.com', -- Email: 'email1@domain.com', 'email2@domain.com', etc.
'EmergencyName' || i, -- Emergency contact name: 'EmergencyName1', etc.
'EmergencyRelation' || i, -- Emergency relation: 'EmergencyRelation1', etc.
LPAD(i, 9, '2')-- Emergency phone number: '9876543211', etc.
);
END LOOP;
COMMIT;
END;
```



HARATY HOSPITAL
FOR HUMANS



4- DEPARTMENT

INSERT ALL

```
INTO DEPARTMENT VALUES ('001', 'Cardiology', 101, 'cardiology@hospital.com', '01')
INTO DEPARTMENT VALUES ('002', 'Neurology', 102, 'neurology@hospital.com', '02')
INTO DEPARTMENT VALUES ('003', 'Pediatrics', 103, 'pediatrics@hospital.com', '03')
INTO DEPARTMENT VALUES ('004', 'Orthopedics', 104, 'orthopedics@hospital.com', '04')
INTO DEPARTMENT VALUES ('005', 'Radiology', 105, 'radiology@hospital.com', '05')
```

2.1 / 24

HaratyHumanHospital~1.sql

```
INTO DEPARTMENT VALUES ('006', 'Emergency', 106, 'emergency@hospital.com', '06')
INTO DEPARTMENT VALUES ('007', 'Oncology', 107, 'oncology@hospital.com', '07')
INTO DEPARTMENT VALUES ('008', 'Dermatology', 108, 'dermatology@hospital.com', '08')
```



HARATY HOSPITAL
FOR HUMANS



5- ROOM

```
;;
BEGIN
  FOR i IN 1..100 LOOP
    INSERT INTO ROOM (
      Bldg_Nb,
      Room_Nb,
      Type,
      Capacity,
      Status
    ) VALUES (
      LPAD(CEIL(i / 25), 2, '0'),
      LPAD(MOD(i, 25), 3, '0'),
      CASE MOD(i, 4)
        WHEN 1 THEN 'ICU'
        WHEN 2 THEN 'General'
        WHEN 3 THEN 'Private'
        ELSE 'Surgery'
      END,
      CEIL(DBMS_RANDOM.VALUE(1, 5)),
      CASE MOD(i, 4)
        WHEN 1 THEN 'Available'
        WHEN 2 THEN 'Occupied'
        WHEN 3 THEN 'Under Maintenance'
        ELSE 'Cleaning Required'
      END
    );
  END LOOP;
END;
```



6- MEDICAL_RECORD

```
INSERT INTO MEDICAL_RECORD VALUES ('R00000001', '00000001', TO_DATE('2023-01-01', 'YYYY-MM-DD'), 'A+', 70.50, 1.75, 'Hypertension', 'Lifestyle modification and diet');
INSERT INTO MEDICAL_RECORD VALUES ('R00000002', '00000002', TO_DATE('2023-01-10', 'YYYY-MM-DD'), 'O-', 82.00, 1.80, 'Diabetes Mellitus Type 2', 'Diet control and oral hypoglycemics');
INSERT INTO MEDICAL_RECORD VALUES ('R00000003', '00000003', TO_DATE('2023-01-20', 'YYYY-MM-DD'), 'B+', 65.20, 1.68, 'Asthma', 'Inhaler therapy with salbutamol');
INSERT INTO MEDICAL_RECORD VALUES ('R00000004', '00000004', TO_DATE('2023-01-30', 'YYYY-MM-DD'), 'AB-', 74.30, 1.62, 'Hyperlipidemia', 'Statins and diet');
INSERT INTO MEDICAL_RECORD VALUES ('R00000005', '00000005', TO_DATE('2023-02-01', 'YYYY-MM-DD'), 'O+', 90.40, 1.88, 'Migraine', 'Preventive medications and pain relief');
INSERT INTO MEDICAL_RECORD VALUES ('R00000006', '00000006', TO_DATE('2023-02-11', 'YYYY-MM-DD'), 'A-', 60.00, 1.70, 'Chronic Obstructive Pulmonary Disease', 'Pneumotherapy');
INSERT INTO MEDICAL_RECORD VALUES ('R00000007', '00000007', TO_DATE('2023-02-21', 'YYYY-MM-DD'), 'B-', 55.70, 1.58, 'Gastroesophageal Reflux Disease', 'Proton pump inhibitors');
INSERT INTO MEDICAL_RECORD VALUES ('R00000008', '00000008', TO_DATE('2023-03-01', 'YYYY-MM-DD'), 'AB+', 78.20, 1.82, 'Osteoarthritis', 'Physical therapy and pain management');
INSERT INTO MEDICAL_RECORD VALUES ('R00000009', '00000009', TO_DATE('2023-03-11', 'YYYY-MM-DD'), 'O-', 68.90, 1.65, 'Epilepsy', 'Anticonvulsant therapy');
INSERT INTO MEDICAL_RECORD VALUES ('R00000010', '00000010', TO_DATE('2023-03-21', 'YYYY-MM-DD'), 'A+', 85.30, 1.72, 'Anemia', 'Iron supplementation and diet');
```

8.1 / 24

2024.11.28 17:33:45

HaratyHumanHospital1~1.sql

9/24

```
INSERT INTO MEDICAL_RECORD VALUES ('R00000011', '00000011', TO_DATE('2023-04-01', 'YYYY-MM-DD'), 'B+', 72.50, 1.76, 'Chronic Kidney Disease', 'Renal replacement therapy');
INSERT INTO MEDICAL_RECORD VALUES ('R00000012', '00000012', TO_DATE('2023-04-11', 'YYYY-MM-DD'), 'AB-', 60.80, 1.60, 'Coronary Artery Disease', 'Lifestyle changes and statins');
INSERT INTO MEDICAL_RECORD VALUES ('R00000013', '00000013', TO_DATE('2023-04-21', 'YYYY-MM-DD'), 'O+', 81.10, 1.80, 'Depression', 'Cognitive-behavioral therapy');
INSERT INTO MEDICAL_RECORD VALUES ('R00000014', '00000014', TO_DATE('2023-05-01', 'YYYY-MM-DD'), 'A-', 65.50, 1.68, 'Anxiety Disorder', 'Psychotherapy and anxiety medication');
INSERT INTO MEDICAL_RECORD VALUES ('R00000015', '00000015', TO_DATE('2023-05-11', 'YYYY-MM-DD'), 'B-', 78.00, 1.85, 'Hypothyroidism', 'Thyroid hormone replacement');
INSERT INTO MEDICAL_RECORD VALUES ('R00000016', '00000016', TO_DATE('2023-05-21', 'YYYY-MM-DD'), 'AB+', 88.90, 1.90, 'Hyperthyroidism', 'Antithyroid medication');
INSERT INTO MEDICAL_RECORD VALUES ('R00000017', '00000017', TO_DATE('2023-06-01', 'YYYY-MM-DD'), 'O+', 73.40, 1.75, 'Psoriasis', 'Topical and systemic therapy');
INSERT INTO MEDICAL_RECORD VALUES ('R00000018', '00000018', TO_DATE('2023-06-11', 'YYYY-MM-DD'), 'A+', 62.20, 1.62, 'Gout', 'Urate-lowering therapy and diet');
INSERT INTO MEDICAL_RECORD VALUES ('R00000019', '00000019', TO_DATE('2023-06-21', 'YYYY-MM-DD'), 'B+', 80.00, 1.78, 'Parkinson's Disease', 'Dopamine agonists and levodopa');
INSERT INTO MEDICAL_RECORD VALUES ('R00000020', '00000020', TO_DATE('2023-07-01', 'YYYY-MM-DD'), 'AB-', 69.80, 1.63, 'Alzheimer's Disease', 'Cholinesterase inhibitors');
INSERT INTO MEDICAL_RECORD VALUES ('R00000021', '00000021', TO_DATE('2023-07-11', 'YYYY-MM-DD'), 'O+', 91.20, 1.87, 'Rheumatoid Arthritis', 'DMARDs and physical therapy');
INSERT INTO MEDICAL_RECORD VALUES ('R00000022', '00000022', TO_DATE('2023-07-21', 'YYYY-MM-DD'), 'A-', 75.60, 1.74, 'Lupus', 'Immunosuppressive therapy');
INSERT INTO MEDICAL_RECORD VALUES ('R00000023', '00000023', TO_DATE('2023-08-01', 'YYYY-MM-DD'), 'B+', 67.80, 1.60, 'Chronic Fatigue Syndrome', 'Symptom management');
INSERT INTO MEDICAL_RECORD VALUES ('R00000024', '00000024', TO_DATE('2023-08-11', 'YYYY-MM-DD'), 'AB+', 70.50, 1.71, 'Multiple Sclerosis', 'Disease-modifying therapy');
INSERT INTO MEDICAL_RECORD VALUES ('R00000025', '00000025', TO_DATE('2023-08-21', 'YYYY-MM-DD'), 'O-', 84.00, 1.85, 'Chronic Sinusitis', 'Nasal corticosteroid inhalers');
INSERT INTO MEDICAL_RECORD VALUES ('R00000026', '00000026', TO_DATE('2023-09-01', 'YYYY-MM-DD'), 'A+', 78.20, 1.75, 'Sleep Apnea', 'CPAP therapy');
INSERT INTO MEDICAL_RECORD VALUES ('R00000027', '00000027', TO_DATE('2023-09-11', 'YYYY-MM-DD'), 'B-', 58.50, 1.62, 'Irritable Bowel Syndrome', 'Dietary management');
INSERT INTO MEDICAL_RECORD VALUES ('R00000028', '00000028', TO_DATE('2023-09-21', 'YYYY-MM-DD'), 'AB-', 64.70, 1.70, 'Celiac Disease', 'Gluten-free diet');
INSERT INTO MEDICAL_RECORD VALUES ('R00000029', '00000029', TO_DATE('2023-10-01', 'YYYY-MM-DD'), 'O+', 72.50, 1.77, 'Vertigo', 'Vestibular rehabilitation');
INSERT INTO MEDICAL_RECORD VALUES ('R00000030', '00000030', TO_DATE('2023-10-11', 'YYYY-MM-DD'), 'A-', 68.30, 1.68, 'Hepatitis C', 'Antiviral therapy');
```



7- SERVICE

```
INSERT INTO SERVICES VALUES ('SRV000001', 'MRI Scan', TO_DATE('2023-11-01', 'YYYY-MM-DD'), 'Clear results', 'D00000001');
INSERT INTO SERVICES VALUES ('SRV000002', 'X-ray', TO_DATE('2023-11-02', 'YYYY-MM-DD'), 'Fracture detected', 'D00000002');
INSERT INTO SERVICES VALUES ('SRV000003', 'Blood Test', TO_DATE('2023-11-03', 'YYYY-MM-DD'), 'Normal', 'D00000003');
INSERT INTO SERVICES VALUES ('SRV000004', 'CT Scan', TO_DATE('2023-11-04', 'YYYY-MM-DD'), 'No abnormalities', 'D00000004');
INSERT INTO SERVICES VALUES ('SRV000005', 'ECG', TO_DATE('2023-11-06', 'YYYY-MM-DD'), 'Irregular rhythm detected', 'D00000002');
INSERT INTO SERVICES VALUES ('SRV000006', 'Blood Pressure Test', TO_DATE('2023-11-07', 'YYYY-MM-DD'), 'High BP', 'D00000003');
```

10.1 / 24

2024.11.2

HaratyHumanHospital~1.sql

```
INSERT INTO SERVICES VALUES ('SRV000007', 'Dialysis', TO_DATE('2023-11-08', 'YYYY-MM-DD'), 'Session complete', 'D00000004');
INSERT INTO SERVICES VALUES ('SRV000008', 'Vaccination', TO_DATE('2023-11-09', 'YYYY-MM-DD'), 'Completed', 'D00000003');
INSERT INTO SERVICES VALUES ('SRV000009', 'Physical Therapy', TO_DATE('2023-11-10', 'YYYY-MM-DD'), 'Improved mobility', 'D00000001');
INSERT INTO SERVICES VALUES ('SRV000010', 'Dental Cleaning', TO_DATE('2023-11-11', 'YYYY-MM-DD'), 'Teeth cleaned', 'D00000002');
INSERT INTO SERVICES VALUES ('SRV000011', 'Vision Test', TO_DATE('2023-11-12', 'YYYY-MM-DD'), '20/20 vision', 'D00000003');
INSERT INTO SERVICES VALUES ('SRV000012', 'Emergency Surgery', TO_DATE('2024-11-13', 'YYYY-MM-DD'), 'Successful', 'D00000001');
INSERT INTO SERVICES VALUES ('SRV000013', 'Emergency Blood Transfusion', TO_DATE('2024-11-14', 'YYYY-MM-DD'), 'Completed', 'D00000002');
INSERT INTO SERVICES VALUES ('SRV000014', 'Emergency Dialysis', TO_DATE('2023-11-15', 'YYYY-MM-DD'), 'Session complete', 'D00000003');
INSERT INTO SERVICES VALUES ('SRV000015', 'Emergency C-section', TO_DATE('2024-11-16', 'YYYY-MM-DD'), 'Mother and baby healthy', 'D00000004');
INSERT INTO SERVICES VALUES ('SRV000016', 'Emergency Trauma Care', TO_DATE('2024-11-17', 'YYYY-MM-DD'), 'Stable condition', 'D00000002');
INSERT INTO SERVICES VALUES ('SRV000017', 'General Surgery', TO_DATE('2024-11-18', 'YYYY-MM-DD'), 'Successful', 'D00000003');
INSERT INTO SERVICES VALUES ('SRV000018', 'Cardiac Surgery', TO_DATE('2024-11-19', 'YYYY-MM-DD'), 'Stable condition', 'D00000001');
INSERT INTO SERVICES VALUES ('SRV000019', 'Orthopedic Surgery', TO_DATE('2024-11-20', 'YYYY-MM-DD'), 'Improved mobility', 'D00000002');
INSERT INTO SERVICES VALUES ('SRV000020', 'Emergency Appendectomy', TO_DATE('2024-11-21', 'YYYY-MM-DD'), 'Patient stable', 'D00000004');
INSERT INTO SERVICES VALUES ('SRV000021', 'Neurosurgery', TO_DATE('2024-11-22', 'YYYY-MM-DD'), 'Patient recovering', 'D00000003');
```



HARATY HOSPITAL
FOR HUMANS



8- BLOOD_BANK

```
INSERT INTO BLOOD_BANK VALUES ('BB0000006', 'A-', 'Noah', 'H', 'Clark', '6543210987', TO_DATE('2023-11-06', 'YYYY-MM-DD'), 'Y', 'SRV000006');
INSERT INTO BLOOD_BANK VALUES ('BB0000007', 'B+', 'Emma', 'I', 'Johnson', '9876543201', TO_DATE('2023-11-07', 'YYYY-MM-DD'), 'Y', 'SRV000007');
INSERT INTO BLOOD_BANK VALUES ('BB0000008', 'O+', 'Liam', 'J', 'Brown', '5678901234', TO_DATE('2023-11-08', 'YYYY-MM-DD'), 'Y', 'SRV000008');
INSERT INTO BLOOD_BANK VALUES ('BB0000009', 'AB+', 'Sophia', 'K', 'Taylor', '8765432190', TO_DATE('2023-11-09', 'YYYY-MM-DD'), 'Y', 'SRV000009');
```

11.1 / 24

2024.11.28 17:3

HaratyHumanHospital~1.sql

12

```
INSERT INTO BLOOD_BANK VALUES ('BB0000010', 'O-', 'Charlotte', 'L', 'White', '4321098765', TO_DATE('2023-11-10', 'YYYY-MM-DD'), 'Y', 'SRV000010');
INSERT INTO BLOOD_BANK VALUES ('BB0000011', 'A+', 'Lucas', 'M', 'Harris', '3456789012', TO_DATE('2023-11-11', 'YYYY-MM-DD'), 'Y', 'SRV000011');
INSERT INTO BLOOD_BANK VALUES ('BB0000012', 'B-', 'Amelia', 'N', 'Martin', '6547890123', TO_DATE('2023-11-12', 'YYYY-MM-DD'), 'Y', 'SRV000010');
INSERT INTO BLOOD_BANK VALUES ('BB0000013', 'A+', 'Mason', 'O', 'Davis', '5432109876', TO_DATE('2023-11-13', 'YYYY-MM-DD'), 'Y', 'SRV000012');
INSERT INTO BLOOD_BANK VALUES ('BB0000014', 'B-', 'Ella', 'P', 'Garcia', '2109876543', TO_DATE('2023-11-14', 'YYYY-MM-DD'), 'Y', 'SRV000013');
INSERT INTO BLOOD_BANK VALUES ('BB0000015', 'O+', 'Oliver', 'Q', 'Martinez', '8901234567', TO_DATE('2023-11-15', 'YYYY-MM-DD'), 'Y', 'SRV000014');
INSERT INTO BLOOD_BANK VALUES ('BB0000016', 'AB+', 'Isabella', 'R', 'Hernandez', '7654321098', TO_DATE('2023-11-16', 'YYYY-MM-DD'), 'Y', 'SRV000015');
INSERT INTO BLOOD_BANK VALUES ('BB0000017', 'A-', 'James', 'S', 'Lopez', '3210987654', TO_DATE('2023-11-17', 'YYYY-MM-DD'), 'Y', 'SRV000016');
INSERT INTO BLOOD_BANK VALUES ('BB0000018', 'B+', 'Ava', 'T', 'Thomas', '9876512340', TO_DATE('2024-11-18', 'YYYY-MM-DD'), 'Y', 'SRV000017');
INSERT INTO BLOOD_BANK VALUES ('BB0000019', 'A-', 'Elijah', 'U', 'Moore', '6543298710', TO_DATE('2024-11-19', 'YYYY-MM-DD'), 'Y', 'SRV000018');
INSERT INTO BLOOD_BANK VALUES ('BB0000020', 'O+', 'Mia', 'V', 'King', '5432198760', TO_DATE('2024-11-20', 'YYYY-MM-DD'), 'Y', 'SRV000019');
INSERT INTO BLOOD_BANK VALUES ('BB0000021', 'AB-', 'Benjamin', 'W', 'Scott', '2109876453', TO_DATE('2024-11-21', 'YYYY-MM-DD'), 'Y', 'SRV000020');
INSERT INTO BLOOD_BANK VALUES ('BB0000022', 'B+', 'Harper', 'X', 'Young', '1234567890', TO_DATE('2024-11-22', 'YYYY-MM-DD'), 'Y', 'SRV000021');
```



HARATY HOSPITAL
FOR HUMANS



9- INVENTORY

```
INSERT INTO INVENTORY VALUES ('Thermometers', 'B00000006', 300, TO_DATE('2024-09-01', 'YYYY-MM-DD'), 50, 'SUP000006', 4.7);
INSERT INTO INVENTORY VALUES ('Scalpel Blades', 'B00000007', 200, TO_DATE('2025-03-01', 'YYYY-MM-DD'), 30, 'SUP000007', 4.5);
INSERT INTO INVENTORY VALUES ('IV Stands', 'B00000008', 100, TO_DATE('2024-07-01', 'YYYY-MM-DD'), 20, 'SUP000008', 4.6);
INSERT INTO INVENTORY VALUES ('Surgical Masks', 'B00000009', 5000, TO_DATE('2025-05-01', 'YYYY-MM-DD'), 1000, 'SUP000009', 4.8);
INSERT INTO INVENTORY VALUES ('Hand Sanitizers', 'B00000010', 1000, TO_DATE('2025-01-01', 'YYYY-MM-DD'), 200, 'SUP000010', 4.9);

INSERT INTO INVENTORY VALUES ('Gloves', 'B00000011', 10, TO_DATE('2024-12-01', 'YYYY-MM-DD'), 50, 'SUP000006', 4.5);
INSERT INTO INVENTORY VALUES ('Face Shields', 'B00000012', 15, TO_DATE('2024-10-01', 'YYYY-MM-DD'), 60, 'SUP000007', 4.4);
INSERT INTO INVENTORY VALUES ('Ventilator Tubes', 'B00000013', 8, TO_DATE('2024-08-01', 'YYYY-MM-DD'), 25, 'SUP000008', 4.3);
```

12.1 / 24

HaratyHumanHospital~1.sql

```
INSERT INTO INVENTORY VALUES ('Sterile Syringes', 'B00000014', 5, TO_DATE('2024-11-15', 'YYYY-MM-DD'), 40, 'SUP000009', 4.2);
INSERT INTO INVENTORY VALUES ('IV Fluids', 'B00000015', 12, TO_DATE('2024-06-15', 'YYYY-MM-DD'), 30, 'SUP000010', 4.6);
```

10- SUPPLIER

```
INSERT INTO SUPPLIER VALUES ('SUP000001', 'MedSupply Inc.', '1234567890', 'contact@medsupply.com', 'Net 30', TO_DATE('2025-12-31', 'YYYY-MM-DD'));
INSERT INTO SUPPLIER VALUES ('SUP000002', 'HealthEquip Co.', '0987654321', 'info@healthequip.com', 'Net 45', TO_DATE('2026-06-30', 'YYYY-MM-DD'));
INSERT INTO SUPPLIER VALUES ('SUP000003', 'FastMeds Ltd.', '1122334455', 'support@fastmeds.com', 'Net 60', TO_DATE('2024-03-15', 'YYYY-MM-DD'));
INSERT INTO SUPPLIER VALUES ('SUP000004', 'Hasan Medical Supplies', '7164733555', 'info@hms.com', 'Net 60', TO_DATE('2026-08-20', 'YYYY-MM-DD'));
INSERT INTO SUPPLIER VALUES ('SUP000005', 'Wael Khaddaj Facilities', '1010101010', 'support@wkf.com', 'Net 30', TO_DATE('2025-09-25', 'YYYY-MM-DD'));
INSERT INTO SUPPLIER VALUES ('SUP000006', 'Beijing Pharma', '7777777777', 'contact@beijingpharma.com', 'Net 45', TO_DATE('2024-12-15', 'YYYY-MM-DD'));
INSERT INTO SUPPLIER VALUES ('SUP000007', 'Diah Unlimited Supply of Awesome Goods Ltd.', '9443857194', 'support@hasanisawesome.com', 'Net 60', TO_DATE('2025-12-31', 'YYYY-MM-DD'));
INSERT INTO SUPPLIER VALUES ('SUP000008', 'Local Dealer Co.', '9999999999', 'support@shh.com', 'Net 30', TO_DATE('2025-03-15', 'YYYY-MM-DD'));
INSERT INTO SUPPLIER VALUES ('SUP000009', 'Totally Not Selling to Aliens Inc.', '8888888888', 'info@sellingtohumans.com', 'Net 45', TO_DATE('2026-03-15', 'YYYY-MM-DD'));
INSERT INTO SUPPLIER VALUES ('SUP000010', 'No You're the Alien Ltd.', '5555555555', 'contact@nebulameds.com', 'Net 30', TO_DATE('2027-09-15', 'YYYY-MM-DD'));
```

11- INSURANCE

```
INSERT INTO INSURANCE VALUES ('INS000004', 'Emily', 'M', 'Stone', 'EF-09876543', 'class A', 'InsureMed', '2345678901', 'emily.stone@domain.com', TO_DATE('2023-07-15', 'YYYY-MM-DD'));
INSERT INTO INSURANCE VALUES ('INS000005', 'Matthew', 'O', 'Ray', 'GH-87654321', 'class B', 'HealthSecure', '3456789012', 'matthew.ray@domain.com', TO_DATE('2023-08-20', 'YYYY-MM-DD'));
INSERT INTO INSURANCE VALUES ('INS000006', 'Sophia', 'P', 'Perry', 'IJ-65432109', 'class C', 'CareShield', '4567890123', 'sophia.perry@domain.com', TO_DATE('2023-09-25', 'YYYY-MM-DD'));
INSERT INTO INSURANCE VALUES ('INS000007', 'Olivia', 'Q', 'Evans', 'KL-54321098', 'class A', 'GuardianLife', '5678901234', 'olivia.evans@domain.com', TO_DATE('2023-10-30', 'YYYY-MM-DD'));
```



HARATY HOSPITAL
FOR HUMANS



12- AMBULANCE

```
INSERT INTO AMBULANCE VALUES ('ABC1234567', 'Available', '2020', TO_DATE('2023-10-01', 'YYYY-MM-DD'));
INSERT INTO AMBULANCE VALUES ('DEF2345678', 'In Use', '2019', TO_DATE('2023-09-15', 'YYYY-MM-DD'));
INSERT INTO AMBULANCE VALUES ('GHI3456789', 'Under Maintenance', '2021', TO_DATE('2023-11-20', 'YYYY-MM-DD'));
INSERT INTO AMBULANCE VALUES ('JKL4567890', 'Available', '2022', TO_DATE('2023-08-10', 'YYYY-MM-DD'));
INSERT INTO AMBULANCE VALUES ('MNO5678901', 'In Use', '2018', TO_DATE('2023-07-25', 'YYYY-MM-DD'));
INSERT INTO AMBULANCE VALUES ('PQR6789012', 'Available', '2023', TO_DATE('2023-06-30', 'YYYY-MM-DD'));
INSERT INTO AMBULANCE VALUES ('STU7890123', 'Under Maintenance', '2020', TO_DATE('2023-12-01', 'YYYY-MM-DD'));
INSERT INTO AMBULANCE VALUES ('VWX8901234', 'Available', '2021', TO_DATE('2023-05-15', 'YYYY-MM-DD'));
INSERT INTO AMBULANCE VALUES ('YZA9012345', 'In Use', '2022', TO_DATE('2023-04-20', 'YYYY-MM-DD'));
INSERT INTO AMBULANCE VALUES ('BCD0123456', 'Available', '2019', TO_DATE('2023-03-10', 'YYYY-MM-DD'));
```

13- TREATS

```
BEGIN
  FOR i IN 1..30 LOOP
    INSERT INTO TREATS (Patient_ID, Doctor_ID)
    VALUES (
      LPAD(i, 9, '0'), -- Patient_ID: '000000001', '000000002', ...
      CASE
        WHEN MOD(i, 4) = 1 THEN 'D00000001' -- Assign to Doctor 1
        WHEN MOD(i, 4) = 2 THEN 'D00000002' -- Assign to Doctor 2
        WHEN MOD(i, 4) = 3 THEN 'D00000003' -- Assign to Doctor 3
        ELSE 'D00000004' -- Assign to Doctor 4
      END
    );
  END LOOP;
  COMMIT;
END;
```

14- USES

```
INSERT INTO USES VALUES ('SRV000006', 'B00000006');
INSERT INTO USES VALUES ('SRV000007', 'B00000007');
INSERT INTO USES VALUES ('SRV000008', 'B00000008');
INSERT INTO USES VALUES ('SRV000009', 'B00000009');
INSERT INTO USES VALUES ('SRV000010', 'B00000010');
```



15- DR_SUBSPECIALTIES

```
INSERT INTO DR_SUBSPECIALTIES VALUES ('D00000001', 'Pediatrics');
INSERT INTO DR_SUBSPECIALTIES VALUES ('D00000002', 'Oncology');
INSERT INTO DR_SUBSPECIALTIES VALUES ('D00000003', 'Emergency Medicine');
INSERT INTO DR_SUBSPECIALTIES VALUES ('D00000004', 'General Surgery');
```

13.1 / 24

HaratyHumanHospital~1.sql

```
INSERT INTO DR_SUBSPECIALTIES VALUES ('D00000005', 'Cardiology');
INSERT INTO DR_SUBSPECIALTIES VALUES ('D00000006', 'Orthopedics');
INSERT INTO DR_SUBSPECIALTIES VALUES ('D00000007', 'Cardiology');
INSERT INTO DR_SUBSPECIALTIES VALUES ('D00000008', 'Neurology');
INSERT INTO DR_SUBSPECIALTIES VALUES ('D00000009', 'Cardiology');
INSERT INTO DR_SUBSPECIALTIES VALUES ('D00000010', 'Psychiatry');
SELECT * FROM DR_SUBSPECIALTIES;
```

16- DEP_WORKING_HOURS

```
INSERT INTO DEP_WORKING_HOURS VALUES ('001', '08:00-16:00');
INSERT INTO DEP_WORKING_HOURS VALUES ('002', '09:00-17:00');
INSERT INTO DEP_WORKING_HOURS VALUES ('003', '10:00-18:00');
INSERT INTO DEP_WORKING_HOURS VALUES ('004', '07:00-15:00');
INSERT INTO DEP_WORKING_HOURS VALUES ('005', '12:00-20:00');
INSERT INTO DEP_WORKING_HOURS VALUES ('006', '06:00-14:00');
INSERT INTO DEP_WORKING_HOURS VALUES ('007', '11:00-19:00');
INSERT INTO DEP_WORKING_HOURS VALUES ('008', '08:00-16:00 and 18:00-22:00');
INSERT INTO DEP_WORKING_HOURS VALUES ('001', '16:00-00:00');
INSERT INTO DEP_WORKING_HOURS VALUES ('002', '00:00-08:00');
```



HARATY HOSPITAL
FOR HUMANS



17- DEP_FLOOR_NB

```
INSERT INTO DEP_FLOOR_NB VALUES ('001', '01');
INSERT INTO DEP_FLOOR_NB VALUES ('002', '02');
INSERT INTO DEP_FLOOR_NB VALUES ('003', '03');
INSERT INTO DEP_FLOOR_NB VALUES ('004', '04');
INSERT INTO DEP_FLOOR_NB VALUES ('005', '05');
INSERT INTO DEP_FLOOR_NB VALUES ('006', '06');
INSERT INTO DEP_FLOOR_NB VALUES ('007', '07');
INSERT INTO DEP_FLOOR_NB VALUES ('008', '08');
INSERT INTO DEP_FLOOR_NB VALUES ('001', '09');
INSERT INTO DEP_FLOOR_NB VALUES ('002', '10');
```

18- PATIENT_ALLERGIES

```
INSERT INTO PATIENT_ALLERGIES VALUES ('R00000006', 'Latex');
INSERT INTO PATIENT_ALLERGIES VALUES ('R00000007', 'Bee Stings');
INSERT INTO PATIENT_ALLERGIES VALUES ('R00000008', 'Soy');
INSERT INTO PATIENT_ALLERGIES VALUES ('R00000009', 'Eggs');
INSERT INTO PATIENT_ALLERGIES VALUES ('R00000010', 'Dairy');
```



HARATY HOSPITAL
FOR HUMANS



19- PATIENT_DIAGNOSIS_HISTORY

```
INSERT INTO PATIENT_DIAGNOSIS_HISTORYVALUES ('R00000006', 'Asthma');
INSERT INTO PATIENT_DIAGNOSIS_HISTORYVALUES ('R00000007', 'Hypertension');
```

15.1 / 24

HaratyHumanHospital~1.sql

```
INSERT INTO PATIENT_DIAGNOSIS_HISTORYVALUES ('R00000008', 'Diabetes Type 1');
INSERT INTO PATIENT_DIAGNOSIS_HISTORYVALUES ('R00000009', 'Arthritis');
INSERT INTO PATIENT_DIAGNOSIS_HISTORYVALUES ('R00000010', 'Migraine');
INSERT INTO PATIENT_DIAGNOSIS_HISTORYVALUES ('R00000015', 'Hypertension');
INSERT INTO PATIENT_DIAGNOSIS_HISTORYVALUES ('R00000022', 'Hypertension');
INSERT INTO PATIENT_DIAGNOSIS_HISTORYVALUES ('R00000003', 'Hypertension');
INSERT INTO PATIENT_DIAGNOSIS_HISTORYVALUES ('R00000005', 'HIV');
INSERT INTO PATIENT_DIAGNOSIS_HISTORYVALUES ('R00000004', 'HIV');
```

20- PATIENT_MEDICATION

```
INSERT INTO PATIENT_MEDICATION VALUES ('R00000001', 'Lisinopril');
INSERT INTO PATIENT_MEDICATION VALUES ('R00000002', 'Metformin');
INSERT INTO PATIENT_MEDICATION VALUES ('R00000003', 'Salbutamol Inhaler');
INSERT INTO PATIENT_MEDICATION VALUES ('R00000004', 'Atorvastatin');
INSERT INTO PATIENT_MEDICATION VALUES ('R00000005', 'Sumatriptan');
INSERT INTO PATIENT_MEDICATION VALUES ('R00000006', 'Fluticasone Nasal Spray');
INSERT INTO PATIENT_MEDICATION VALUES ('R00000007', 'Omeprazole');
INSERT INTO PATIENT_MEDICATION VALUES ('R00000008', 'Paracetamol');
INSERT INTO PATIENT_MEDICATION VALUES ('R00000009', 'Ibuprofen');
INSERT INTO PATIENT_MEDICATION VALUES ('R00000010', 'Clopidogrel');
```



HARATY HOSPITAL
FOR HUMANS



21- PATIENT_CURRENT_TREATMENT_PLAN

```
INSERT INTO PATIENT_CURRENT_TREATMENT_PLANVALUES ('R00000001', 'Daily Lisinopril and low-sodium diet');
INSERT INTO PATIENT_CURRENT_TREATMENT_PLANVALUES ('R00000002', 'Diet control with Metformin twice daily');
INSERT INTO PATIENT_CURRENT_TREATMENT_PLANVALUES ('R00000003', 'Use Salbutamol inhaler as needed for asthma symptoms');
INSERT INTO PATIENT_CURRENT_TREATMENT_PLANVALUES ('R00000004', 'Daily Atorvastatin for cholesterol management');
INSERT INTO PATIENT_CURRENT_TREATMENT_PLANVALUES ('R00000005', 'Sumatriptan during migraines');
INSERT INTO PATIENT_CURRENT_TREATMENT_PLANVALUES ('R00000006', 'Fluticasone nasal spray daily');
INSERT INTO PATIENT_CURRENT_TREATMENT_PLANVALUES ('R00000007', 'Omeprazole before meals');
INSERT INTO PATIENT_CURRENT_TREATMENT_PLANVALUES ('R00000008', 'Paracetamol for fever');
INSERT INTO PATIENT_CURRENT_TREATMENT_PLANVALUES ('R00000009', 'Ibuprofen for joint pain');
INSERT INTO PATIENT_CURRENT_TREATMENT_PLANVALUES ('R00000010', 'Daily Clopidogrel for heart condition');
```

22- SUB_PRODUCT_TYPES

```
INSERT INTO SUP_PRODUCT_TYPES VALUES ('SUP000001', 'Surgical Instruments');
INSERT INTO SUP_PRODUCT_TYPES VALUES ('SUP000002', 'Medical Furniture');
INSERT INTO SUP_PRODUCT_TYPES VALUES ('SUP000003', 'Personal Protective Equipment');
INSERT INTO SUP_PRODUCT_TYPES VALUES ('SUP000004', 'Pharmaceutical Products');
INSERT INTO SUP_PRODUCT_TYPES VALUES ('SUP000005', 'Diagnostic Devices');
INSERT INTO SUP_PRODUCT_TYPES VALUES ('SUP000006', 'Hospital Consumables');
INSERT INTO SUP_PRODUCT_TYPES VALUES ('SUP000007', 'Laboratory Supplies');
INSERT INTO SUP_PRODUCT_TYPES VALUES ('SUP000008', 'Cleaning Products');
```

18.1 / 24

HaratyHumanHospital~1.sql

```
INSERT INTO SUP_PRODUCT_TYPES VALUES ('SUP000009', 'Respiratory Equipment');
INSERT INTO SUP_PRODUCT_TYPES VALUES ('SUP000010', 'Monitoring Systems');
```



23- AMBULANCE_EQUIPMENT_LIST

```

INSERT INTO AMBULANCE_EQUIPMENT_LIST VALUES ('ABC1234567', 'First Aid Kit');
INSERT INTO AMBULANCE_EQUIPMENT_LIST VALUES ('DEF2345678', 'Oxygen Cylinder');
INSERT INTO AMBULANCE_EQUIPMENT_LIST VALUES ('GHI3456789', 'Defibrillator');
INSERT INTO AMBULANCE_EQUIPMENT_LIST VALUES ('JKL4567890', 'Spinal Board');
INSERT INTO AMBULANCE_EQUIPMENT_LIST VALUES ('MNO5678901', 'Ventilator');
INSERT INTO AMBULANCE_EQUIPMENT_LIST VALUES ('PQR6789012', 'ECG Machine');
INSERT INTO AMBULANCE_EQUIPMENT_LIST VALUES ('STU7890123', 'Trauma Kit');
INSERT INTO AMBULANCE_EQUIPMENT_LIST VALUES ('VWX8901234', 'Pulse Oximeter');
INSERT INTO AMBULANCE_EQUIPMENT_LIST VALUES ('YZA9012345', 'Suction Machine');
INSERT INTO AMBULANCE_EQUIPMENT_LIST VALUES ('BCD0123456', 'IV Stand and Fluids');

```

Final Table State

1- STAFF

ID	FIRST	LAST	DOB	SSN	ADDRESS	EMERGENCY_NAME	REL	PHONE_NB	EMAIL	POSITION	HIRING_DATE	EMP_TYPE	WEEKLY_HOURS	HOURLY_RATE	VACATIONS_PER_YEAR	END_DATE	DEPT_ID	LICENSE_PLATE
S00000001	John	A. Doe	15-MAR-90	1234567890	123 Main St	Jane Doe	Sister	1234567890	john.doe@hospital.com	Nurse	01-JAN-10	Full Time	40	25.5	20 (null)	001 (null)	(null)	
S00000002	Mark	B. Smith	20-MAY-88	9876543210	456 Pine St	John Smith	Brother	6543210987	mark.smith@hospital.com	Doctor	01-AUG-18	Part Time	40	50	25 (null)	002 (null)	(null)	
S00000003	James	(null) Brown	20-AUG-92	4561237890	789 Pine St	Emily Brown	Wife	4561237890	james.brown@hospital.com	Technician	01-JUN-19	Part Time	40	15.75	10 (null)	003 (null)	(null)	
S00000004	Emma	C. Johnson	25-DEC-80	3216549873	321 Elm St	Chris Johnson	Husband	3216549870	emma.johnson@hospital.com	Receptionist	05-NOV-12	Part Time	40	20	15 (null)	004 (null)	(null)	
S00000005	Oliver	D. Williams	04-JUL-75	6547891230	654 Maple St	Sophia Williams	Daughter	6547891230	oliver.williams@hospital.com	Administrator	12-APR-10	Full Time	40	35	30 (null)	001 (null)	(null)	
S00000006	Isabella	E. Taylor	17-SEP-88	789123456	789 Cedar St	Liam Taylor	Father	7891234560	isabella.taylor@hospital.com	Nurse	20-FEB-22	Part Time	25	22.5	12 (null)	002 (null)	(null)	
S00000007	Liam	F. White	30-MAR-95	123789456	123 Birch St	Emma White	Mother	1237894560	liam.white@hospital.com	Pharmacist	15-JUL-19	Full Time	40	30	20 (null)	003 (null)	(null)	
S00000008	Sophia	(null) Martin	22-NOV-83	987321654	987 Walnut St	Ethan Martin	Brother	9873216540	sophia.martin@hospital.com	Lab Technician	25-MAY-16	Full Time	40	18	15 (null)	004 (null)	(null)	
S00000009	Noah	G. Clark	18-JUL-78	3219876543	123 Cherry St	Mia Clark	Sister	3219876543	mia.clark@hospital.com	Surgeon	10-JAN-23	Part Time	40	75	30 (null)	005 (null)	(null)	
S00000010	Mia	H. Lewis	05-JUN-85	6543210987	654 Spruce St	Olivia Lewis	Sister	65432109870	mia.lewis@hospital.com	Coroner	10-JAN-23	Part Time	15	12	5 (null)	006 (null)	(null)	
S00000011	Ethan	I. Walker	01-DEC-87	852741963	789 Aspen St	Ella Walker	Wife	8527419630	ethan.walker@hospital.com	Paramedic	15-MAR-17	Full Time	40	22	15 (null)	003 (null)	(null)	
S00000012	Olivia	J. Hall	22-APR-90	741652963	951 Willow St	Jack Hall	Father	7416529630	olivia.hall@hospital.com	Nurse	10-SEP-21	Part Time	30	24	10 (null)	004 (null)	(null)	
S00000013	Alexander	K. Allen	30-JUN-79	963258741	369 Cypress St	Grace Allen	Mother	9632587410	alexander.allen@hospital.com	Technician	15-FEB-10	Full Time	40	28	18 (null)	001 (null)	(null)	
S00000014	Ella	(null) Young	12-AUG-83	597534686	789 Cedar St	Henry Young	Husband	1597534686	ella.young@hospital.com	Doctor	25-JUL-15	Full Time	40	52	25 (null)	002 (null)	(null)	
S00000015	Benjamin	L. King	03-NOV-94	753159846	147 Maplewood St	Sophia King	Sister	7531598460	benjamin.king@hospital.com	Receptionist	20-JUN-22	Part Time	25	17.5	8 (null)	003 (null)	(null)	
S00000016	Charlotte	M. Wright	28-MAR-82	357985210	258 Elmwood St	Liam Wright	Brother	3579852100	charlotte.wright@hospital.com	Administrator	15-MAY-19	Full Time	40	40	25 (null)	004 (null)	(null)	
S00000017	Lucas	N. Scott	05-JUL-90	6543210987	123 Anderson St	John Scott	Daughter	65432109870	lucas.scott@hospital.com	Surgeon	10-JAN-23	Part Time	20	12.5	6 (null)	005 (null)	(null)	
S00000018	Amelia	O. Adams	09-JUL-91	654123456	123 Pinewood St	Oliver Adams	Son	6541234560	amelia.adams@hospital.com	Technician	05-NOV-20	Full Time	40	19.5	12 (null)	002 (null)	(null)	
S00000019	Mason	P. Perez	01-SEP-88	789654123	789 Willowwood St	Sophia Perez	Mother	7896541230	mason.perez@hospital.com	Nurse	10-AUG-19	Full Time	40	25.5	18 (null)	003 (null)	(null)	
S00000020	Ava	Q. Rivera	24-FEB-76	852963741	456 Sprucewood St	Benjamin Rivera	Husband	8529637410	ava.rivera@hospital.com	Doctor	15-JAN-07	Full Time	40	60	28 (null)	004 (null)	(null)	
S00000021	Hasan	R. Diab	19-AUG-04	719444385	789 Beirut St	Yasmine Pewpew	Wife	9999999999	hasan.diab@hospital.com	Nurse	10-AUG-19	Full Time	40	25.5	18 (null)	003 (null)	(null)	
S00000022	William	S. Harris	05-DEC-80	951753852	357 Palm St	Charlotte Harris	Wife	9517538520	william.harris@hospital.com	Pharmacist	18-MAR-12	Full Time	40	30.5	20 (null)	001 (null)	(null)	
S00000023	Harper	T. Clark	22-MAY-93	357258951	789 Maple St	Lucas Clark	Husband	3572589510	harper.clark@hospital.com	Technician	12-OCT-21	Full Time	40	20.5	12 (null)	002 (null)	(null)	
S00000024	Evelyn	U. Lopez	17-SEP-87	159486753	951 Cedar St	Mason Lopez	Brother	1594867530	evelyn.lopez@hospital.com	Nurse	01-DEC-18	Full Time	40	24	15 (null)	003 (null)	(null)	
S00000025	Abigail	V. Carter	25-MAR-94	741653852	357 Spruce St	Ethan Carter	Daughter	7416538520	abigail.carter@hospital.com	Administrator	15-MAY-19	Full Time	40	38	22 (null)	001 (null)	(null)	
S00000026	Alice	W. Green	20-MAY-80	1234567890	123 Forest Lane	John Green	Brother	1234567890	alice.green@hospital.com	Cleaner	15-JUN-23	Part Time	15	11.5	5 (null)	001 (null)	(null)	
S00000027	Bob	X. Harrison	15-DEC-75	987654321	456 Maple Ave	Sarah Harrison	Wife	9876543210	bob.harrison@hospital.com	Doctor	15-MAR-15	Full Time	40	55	20 (null)	001 (null)	(null)	
S00000028	Cathy	Z. Adams	01-JUN-83	4561237890	789 Cedar Street	Paul Adams	Husband	4561237891	cathy.adams@hospital.com	Doctor	10-JUL-10	Full Time	40	60	25 (null)	002 (null)	(null)	
S00000029	David	D. Taylor	18-MAR-87	321654987	654 Oak Drive	Linda Taylor	Mother	3216549871	david.taylor@hospital.com	Doctor	10-APR-12	Full Time	40	70	25 (null)	004 (null)	(null)	
S00000030	Emily	E. Wilson	22-SEP-90	789123456	321 Pine Road	James Wilson	Father	7891234560	emily.wilson@hospital.com	Doctor	01-DEC-17	Full Time	40	58	20 (null)	001 (null)	(null)	
S00000031	Grace	F. Clark	12-AUG-95	741653851	123 Forest Lane	Grace Martin	Daughter	7416538510	grace.clark@hospital.com	Doctor	01-DEC-17	Full Time	40	62	22 (null)	003 (null)	(null)	
S00000032	Henry	G. Scott	30-NOV-88	6543210987	222 Cherry Lane	Sophia Scott	Wife	6543210987	henry.scott@hospital.com	Doctor	20-JAN-14	Full Time	40	72	25 (null)	003 (null)	(null)	
S00000033	Isla	H. Lee	05-APR-92	852741963	444 Spruce Way	Oliver Lee	Brother	8527419631	isla.lee@hospital.com	Doctor	10-NOV-21	Full Time	40	65	20 (null)	001 (null)	(null)	
S00000034	Jack	J. Brown	25-OCT-78	7963258741	555 Maple Circle	Liam Brown	Son	9632587411	jack.brown@hospital.com	Doctor	01-FEB-08	Full Time	40	80	30 (null)	002 (null)	(null)	



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FOR HUMANS



2- DOCTOR

D_ID	LICENSE_NB	SPECIALTY	SALARY	BLDG_NB	OFFICE_NB	AVAILABILITY	PAGING_NB	STAFF_ID
D000000001	LIC000001	Cardiologist	105000	0	001	Y	0001	S00000002
D000000002	LIC000002	Specialist	110000	0	002	Y	0002	S00000009
D000000003	LIC000003	General Practitioner	115000	0	003	Y	0003	S00000014
D000000004	LIC000004	Surgeon	120000	0	004	Y	0004	S00000020
D000000005	LIC000005	Specialist	125000	0	005	Y	0005	S00000027
D000000006	LIC000006	Specialist	130000	0	006	Y	0006	S00000028
D000000007	LIC000007	Specialist	135000	0	007	Y	0007	S00000029
D000000008	LIC000008	Specialist	140000	0	008	Y	0008	S00000030
D000000009	LIC000009	Specialist	145000	0	009	Y	0009	S00000031
D000000010	LIC000010	Specialist	150000	0	010	Y	0010	S00000032
D000000011	LIC000011	Specialist	155000	0	011	Y	0011	S00000033
D000000012	LIC000012	Specialist	160000	0	012	Y	0012	S00000034
D000000013	LIC000013	Specialist	165000	0	013	Y	0013	S00000035
D000000014	LIC000014	Specialist	170000	0	014	Y	0014	S00000036

3- PATIENT

PATIENT_ID	FIRST	MI	LAST	SEX	DOB	ADDRESS	PHONE_NB	EMAIL	E_NAME	E_REL	E_PHONE_NB
000000001	FirstName1	M	LastName1	F	01-JAN-91	Address 1	11111111	email1@domain.com	EmergencyName1	EmergencyRelation1	222222221
000000002	FirstName2	M	LastName2	M	01-JAN-92	Address 2	11111112	email2@domain.com	EmergencyName2	EmergencyRelation2	222222222
000000003	FirstName3	M	LastName3	F	31-DEC-92	Address 3	11111113	email3@domain.com	EmergencyName3	EmergencyRelation3	222222223
000000004	FirstName4	M	LastName4	M	31-DEC-93	Address 4	11111114	email4@domain.com	EmergencyName4	EmergencyRelation4	222222224
000000005	FirstName5	M	LastName5	F	31-DEC-94	Address 5	11111115	email5@domain.com	EmergencyName5	EmergencyRelation5	222222225
000000006	FirstName6	M	LastName6	M	31-DEC-95	Address 6	11111116	email6@domain.com	EmergencyName6	EmergencyRelation6	222222226
000000007	FirstName7	M	LastName7	F	30-DEC-96	Address 7	11111117	email7@domain.com	EmergencyName7	EmergencyRelation7	222222227
000000008	FirstName8	M	LastName8	M	30-DEC-97	Address 8	11111118	email8@domain.com	EmergencyName8	EmergencyRelation8	222222228
000000009	FirstName9	M	LastName9	F	30-DEC-98	Address 9	11111119	email9@domain.com	EmergencyName9	EmergencyRelation9	222222229
000000010	FirstName10	M	LastName10	M	30-DEC-99	Address 10	11111110	email10@domain.com	EmergencyName10	EmergencyRelation10	2222222210
000000011	FirstName11	M	LastName11	F	29-DEC-00	Address 11	11111111	email11@domain.com	EmergencyName11	EmergencyRelation11	2222222211
000000012	FirstName12	M	LastName12	M	29-DEC-01	Address 12	11111112	email12@domain.com	EmergencyName12	EmergencyRelation12	2222222212
000000013	FirstName13	M	LastName13	F	29-DEC-02	Address 13	11111113	email13@domain.com	EmergencyName13	EmergencyRelation13	2222222213
000000014	FirstName14	M	LastName14	M	29-DEC-03	Address 14	11111114	email14@domain.com	EmergencyName14	EmergencyRelation14	2222222214
000000015	FirstName15	M	LastName15	F	28-DEC-04	Address 15	11111115	email15@domain.com	EmergencyName15	EmergencyRelation15	2222222215
000000016	FirstName16	M	LastName16	M	28-DEC-05	Address 16	11111116	email16@domain.com	EmergencyName16	EmergencyRelation16	2222222216
000000017	FirstName17	M	LastName17	F	28-DEC-06	Address 17	11111117	email17@domain.com	EmergencyName17	EmergencyRelation17	2222222217
000000018	FirstName18	M	LastName18	M	28-DEC-07	Address 18	11111118	email18@domain.com	EmergencyName18	EmergencyRelation18	2222222218
000000019	FirstName19	M	LastName19	F	27-DEC-08	Address 19	11111119	email19@domain.com	EmergencyName19	EmergencyRelation19	2222222219
000000020	FirstName20	M	LastName20	M	27-DEC-09	Address 20	11111120	email20@domain.com	EmergencyName20	EmergencyRelation20	2222222220
000000021	FirstName21	M	LastName21	F	27-DEC-10	Address 21	11111121	email21@domain.com	EmergencyName21	EmergencyRelation21	2222222221
000000022	FirstName22	M	LastName22	M	27-DEC-11	Address 22	11111122	email22@domain.com	EmergencyName22	EmergencyRelation22	2222222222
000000023	FirstName23	M	LastName23	F	26-DEC-12	Address 23	11111123	email23@domain.com	EmergencyName23	EmergencyRelation23	2222222223
000000024	FirstName24	M	LastName24	M	26-DEC-13	Address 24	11111124	email24@domain.com	EmergencyName24	EmergencyRelation24	2222222224
000000025	FirstName25	M	LastName25	F	26-DEC-14	Address 25	11111125	email25@domain.com	EmergencyName25	EmergencyRelation25	2222222225
000000026	FirstName26	M	LastName26	M	26-DEC-15	Address 26	11111126	email26@domain.com	EmergencyName26	EmergencyRelation26	2222222226
000000027	FirstName27	M	LastName27	F	25-DEC-16	Address 27	11111127	email27@domain.com	EmergencyName27	EmergencyRelation27	2222222227
000000028	FirstName28	M	LastName28	M	25-DEC-17	Address 28	11111128	email28@domain.com	EmergencyName28	EmergencyRelation28	2222222228
000000029	FirstName29	M	LastName29	F	25-DEC-18	Address 29	11111129	email29@domain.com	EmergencyName29	EmergencyRelation29	2222222229
000000030	FirstName30	M	LastName30	M	25-DEC-19	Address 30	11111130	email30@domain.com	EmergencyName30	EmergencyRelation30	2222222230



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4- DEPARTMENT

DEPT_ID	NAME	EXT	EMAIL	BLDG_NB
001	Cardiology	101	cardiology@hospital.com	01
002	Neurology	102	neurology@hospital.com	02
003	Pediatrics	103	pediatrics@hospital.com	03
004	Orthopedics	104	orthopedics@hospital.com	04
005	Radiology	105	radiology@hospital.com	05
006	Emergency	106	emergency@hospital.com	06
007	Oncology	107	oncology@hospital.com	07
008	Dermatology	108	dermatology@hospital.com	08



5- ROOM

BLDG_NB	ROOM_NB	TYPE	CAPACITY	STATUS
01	001	ICU	5 Available	
01	002	General	5 Occupied	
01	003	Private	2 Under Maintenance	
01	004	Surgery	5 Cleaning Required	
01	005	ICU	4 Available	
01	006	General	4 Occupied	
01	007	Private	4 Under Maintenance	
01	008	Surgery	4 Cleaning Required	
01	009	ICU	4 Available	
01	010	General	5 Occupied	
01	011	Private	2 Under Maintenance	
01	012	Surgery	3 Cleaning Required	
01	013	ICU	5 Available	
01	014	General	4 Occupied	
01	015	Private	2 Under Maintenance	
01	016	Surgery	4 Cleaning Required	
01	017	ICU	3 Available	
01	018	General	5 Occupied	
01	019	Private	4 Under Maintenance	
01	020	Surgery	2 Cleaning Required	
01	021	ICU	3 Available	
01	022	General	3 Occupied	
01	023	Private	2 Under Maintenance	
01	024	Surgery	2 Cleaning Required	
01	000	ICU	5 Available	
02	001	General	3 Occupied	
02	002	Private	3 Under Maintenance	
02	003	Surgery	2 Cleaning Required	
02	004	ICU	3 Available	
02	005	General	2 Occupied	
02	006	Private	5 Under Maintenance	
02	007	Surgery	2 Cleaning Required	
02	008	ICU	5 Available	
02	009	General	4 Occupied	
02	010	Private	4 Under Maintenance	
02	011	Surgery	4 Cleaning Required	
02	012	ICU	5 Available	
02	013	General	5 Occupied	

BLDG_NB	ROOM_NB	TYPE	CAPACITY	STATUS
02	014	Private	3 Under Maintenance	
02	015	Surgery	5 Cleaning Required	
02	016	ICU	2 Available	
02	017	General	3 Occupied	
02	018	Private	3 Under Maintenance	
02	019	Surgery	4 Cleaning Required	
02	020	ICU	4 Available	
02	021	General	4 Occupied	
02	022	Private	2 Under Maintenance	
02	023	Surgery	3 Cleaning Required	
02	024	ICU	3 Available	
02	000	General	5 Occupied	
03	001	Private	4 Under Maintenance	
03	002	Surgery	2 Cleaning Required	
03	003	ICU	3 Available	
03	004	General	4 Occupied	
03	005	Private	2 Under Maintenance	
03	006	Surgery	4 Cleaning Required	
03	007	ICU	3 Available	
03	008	General	4 Occupied	
03	009	Private	2 Under Maintenance	
03	010	Surgery	5 Cleaning Required	
03	011	ICU	5 Available	
03	012	General	4 Occupied	
03	013	Private	5 Under Maintenance	
03	014	Surgery	3 Cleaning Required	
03	015	ICU	3 Available	
03	016	General	4 Occupied	
03	017	Private	5 Under Maintenance	
03	018	Surgery	4 Cleaning Required	
03	019	ICU	4 Available	
03	020	General	4 Occupied	
03	021	Private	3 Under Maintenance	
03	022	Surgery	4 Cleaning Required	
03	023	ICU	3 Available	
03	024	General	2 Occupied	
03	000	Private	4 Under Maintenance	
04	001	Surgery	5 Cleaning Required	

BLDG_NB	ROOM_NB	TYPE	CAPACITY	STATUS
04	002	ICU	2 Available	
04	003	General	2 Occupied	
04	004	Private	4 Under Maintenance	
04	005	Surgery	2 Cleaning Required	
04	006	ICU	2 Available	
04	007	General	2 Occupied	
04	008	Private	3 Under Maintenance	
04	009	Surgery	5 Cleaning Required	
04	010	ICU	5 Available	
04	011	General	2 Occupied	
04	012	Private	4 Under Maintenance	
04	013	Surgery	2 Cleaning Required	
04	014	ICU	2 Available	
04	015	General	4 Occupied	
04	016	Private	3 Under Maintenance	
04	017	Surgery	4 Cleaning Required	
04	018	ICU	3 Available	
04	019	General	2 Occupied	
04	020	Private	2 Under Maintenance	
04	021	Surgery	4 Cleaning Required	
04	022	ICU	2 Available	
04	023	General	3 Occupied	
04	024	Private	2 Under Maintenance	
04	000	Surgery	2 Cleaning Required	



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FOR HUMANS



6- MEDICAL_RECORD

RECORD_ID	PATIENT_ID	BLOOD_T...	WEIGHT	HEIGHT	RECORD...	DIAGNOSIS	TREATMENT
R0000... 000000001	A+	70.5	1.75	01-JA...	Hypert...	Lifestyl...	
R0000... 000000002	O-	82	1.8	10-JA...	Diabet...	Diet co...	
R0000... 000000003	B+	65.2	1.68	20-JA...	Asthma	Inhaler...	
R0000... 000000004	AB-	74.3	1.62	30-JA...	Hyperli...	Statin t...	
R0000... 000000005	O+	90.4	1.88	01-FE...	Migraine	Preven...	
R0000... 000000006	A-	60	1.7	11-FE...	Chroni...	Bronch...	
R0000... 000000007	B-	55.7	1.58	21-FE...	Gastro...	Proton...	
R0000... 000000008	AB+	78.2	1.82	01-MA...	Osteo...	Physic...	
R0000... 000000009	O-	68.9	1.65	11-MA...	Epilepsy	Antico...	
R0000... 000000010	A+	85.3	1.72	21-MA...	Anemia	Iron su...	
R0000... 000000011	B+	72.5	1.76	01-AP...	Chroni...	Renal ...	
R0000... 000000012	AB-	60.8	1.6	11-AP...	Coron...	Lifestyl...	
R0000... 000000013	O+	81.1	1.8	21-AP...	Depre...	Cogniti...	
R0000... 000000014	A-	65.5	1.68	01-MA...	Anxiety...	Psych...	
R0000... 000000015	B-	78	1.85	11-MA...	Hypoth...	Thyroi...	
R0000... 000000016	AB+	88.9	1.9	21-MA...	Hypert...	Antithy...	
R0000... 000000017	O-	73.4	1.75	01-JU...	Psoria...	Topica...	
R0000... 000000018	A+	62.2	1.62	11-JU...	Gout	Urate-l...	
R0000... 000000019	B+	80	1.78	21-JU...	Parkin...	Dopam...	
R0000... 000000020	AB-	69.8	1.63	01-JU...	Alzhei...	Cholin...	
R0000... 000000021	O+	91.2	1.87	11-JU...	Rheum...	DMAR...	
R0000... 000000022	A-	75.6	1.74	21-JU...	Lupus	Immun...	
R0000... 000000023	B+	67.8	1.6	01-AU...	Chroni...	Sympt...	
R0000... 000000024	AB+	70.5	1.71	11-AU...	Multipl...	Diseas...	
R0000... 000000025	O-	84	1.85	21-AU...	Chroni...	Nasal ...	
R0000... 000000026	A+	78.2	1.75	01-SE...	Sleep ...	CPAP ...	
R0000... 000000027	B-	58.5	1.62	11-SE...	Irritabl...	Dietary...	
R0000... 000000028	AB-	64.7	1.7	21-SE...	Celiac ...	Gluten...	
R0000... 000000029	O+	72.5	1.77	01-OC...	Vertigo	Vestib...	
R0000... 000000030	A-	68.3	1.68	11-OC...	Hepatit...	Antivir...	



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FOR HUMANS



7- SERVICE

SERVICES_ID	TYPE	SERVICE_DATE	RESULT	DOCTOR_ID
SRV000001	MRI Scan	01-NOV-23	Clear results	D00000001
SRV000002	X-ray	02-NOV-23	Fracture detected	D00000002
SRV000003	Blood Test	03-NOV-23	Normal	D00000003
SRV000004	CT Scan	04-NOV-23	No abnormalities	D00000004
SRV000005	ECG	06-NOV-23	Irregular rhythm detected	D00000002
SRV000006	Blood Pressure Test	07-NOV-23	High BP	D00000003
SRV000007	Dialysis	08-NOV-23	Session complete	D00000004
SRV000008	Vaccination	09-NOV-23	Completed	D00000003
SRV000009	Physical Therapy	10-NOV-23	Improved mobility	D00000001
SRV000010	Dental Cleaning	11-NOV-23	Teeth cleaned	D00000002
SRV000011	Vision Test	12-NOV-23	20/20 vision	D00000003
SRV000012	Emergency Surgery	13-NOV-24	Successful	D00000001
SRV000013	Emergency Blood Transfusion	14-NOV-24	Completed	D00000002
SRV000014	Emergency Dialysis	15-NOV-23	Session complete	D00000003
SRV000015	Emergency C-section	16-NOV-24	Mother and baby healthy	D00000004
SRV000016	Emergency Trauma Care	17-NOV-24	Stable condition	D00000002
SRV000018	Cardiac Surgery	19-NOV-24	Stable condition	D00000001
SRV000019	Orthopedic Surgery	20-NOV-24	Improved mobility	D00000002
SRV000020	Emergency Appendectomy	21-NOV-24	Patient stable	D00000004
SRV000021	Neurosurgery	22-NOV-24	Patient recovering	D00000003

8- BLOOD_BANK

DONATION_ID	BLOOD_TYPE	FIRST	MI	LAST	PHONE_NB	COLLECTION_DATE	AVAILABILITY	SERVICES_ID
BB0000006	A-	Noah	H	Clark	6543210987	06-NOV-23	Y	SRV000006
BB0000007	B+	Emma	I	Johnson	9876543201	07-NOV-23	Y	SRV000007
BB0000008	O+	Liam	J	Brown	5678901234	08-NOV-23	Y	SRV000008
BB0000009	AB+	Sophia	K	Taylor	8765432190	09-NOV-23	Y	SRV000009
BB0000010	O-	Charlotte	L	White	4321098765	10-NOV-23	Y	SRV000010
BB0000011	A+	Lucas	M	Harris	3456789012	11-NOV-23	Y	SRV000011
BB0000012	B-	Amelia	N	Martin	6547890123	12-NOV-23	Y	SRV000010
BB0000013	A+	Mason	O	Davis	5432109876	13-NOV-23	Y	SRV000012
BB0000014	B-	Ella	P	Garcia	2109876543	14-NOV-23	Y	SRV000013
BB0000015	O+	Oliver	Q	Martinez	8901234567	15-NOV-23	Y	SRV000014
BB0000016	AB+	Isabella	R	Hernandez	7654321098	16-NOV-23	Y	SRV000015
BB0000017	A-	James	S	Lopez	3210987654	17-NOV-23	Y	SRV000016
BB0000019	A-	Elijah	U	Moore	6543298710	19-NOV-24	Y	SRV000018
BB0000020	O+	Mia	V	King	5432198760	20-NOV-24	Y	SRV000019
BB0000021	AB-	Benjamin	W	Scott	2109876453	21-NOV-24	Y	SRV000020
BB0000022	B+	Harper	X	Young	1234567890	22-NOV-24	Y	SRV000021



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9- INVENTORY

ITEM_NAME	BATCH_ID	QTY	EXPIRY_DATE	REORDER_THRESHOLD	SUPP_ID	BATCH_RATING
Thermometers	B00000006	300	01-SEP-24	50	SUP000006	4.7
Scalpel Blades	B00000007	200	01-MAR-25	30	SUP000007	4.5
IV Stands	B00000008	100	01-JUL-24	20	SUP000008	4.6
Surgical Masks	B00000009	5000	01-MAY-25	1000	SUP000009	4.8
Hand Sanitizers	B00000010	1000	01-JAN-25	200	SUP000010	4.9
Gloves	B00000011	10	01-DEC-24	50	SUP000006	4.5
Face Shields	B00000012	15	01-OCT-24	60	SUP000007	4.4
Ventilator Tubes	B00000013	8	01-AUG-24	25	SUP000008	4.3
Sterile Syringes	B00000014	5	15-NOV-24	40	SUP000009	4.2
IV Fluids	B00000015	12	15-JUN-24	30	SUP000010	4.6

10- SUPPLIER

SUPP_ID	SUPP_NAME	PHONE_NB	EMAIL	TERMS	EXPIRY_DATE
SUP000001	MedSupply Inc.	1234567890	contact@medsupply.com	Net 30	31-DEC-25
SUP000002	HealthEquip Co.	0987654321	info@healthequip.com	Net 45	30-JUN-26
SUP000003	FastMeds Ltd.	1122334455	support@fastmeds.com	Net 60	15-MAR-24
SUP000004	Hasan Medical Supplies	7164733555	info@hms.com	Net 60	20-AUG-26
SUP000005	Wael Khaddaj Facilities	1010101010	support@wkf.com	Net 30	25-SEP-25
SUP000006	Beijing Pharma	7777777777	contact@beijingpharma.com	Net 45	15-DEC-24
SUP000007	Diab Unlimited Supply of Awesome Goods Ltd.	9443857194	support@hasanisawesome.com	Net 60	15-DEC-25
SUP000008	Local Dealer Co.	9999999999	support@shh.com	Net 30	15-MAR-25
SUP000009	Totally Not Selling to Aliens Inc.	8888888888	info@sellingtohumans.com	Net 45	15-MAR-26
SUP000010	No You're the Alien Ltd.	5555555555	contact@nebulameds.com	Net 30	15-SEP-27

11- INSURANCE

INSURANCE_ID	FIRST	MI	LAST	POLICY_NB	COVERAGE_TYPE	P_NAME	PHONE_NB	EMAIL	START_DATE	END_DATE	PATIENT_ID
INS000004	Emily	M	Stone	EF-09876543	class A	InsureMed	2345678901	emily.stone@domain.com	01-APR-23	01-APR-24	0000000004
INS000005	Matthew	O	Ray	GH-87654321	class B	HealthSecure	3456789012	matthew.ray@domain.com	01-MAY-23	01-MAY-24	0000000005
INS000006	Sophia	P	Perry	IJ-65432109	class C	CareShield	4567890123	sophia.perry@domain.com	01-JUN-23	01-JUN-24	0000000006
INS000007	Olivia	Q	Evans	KL-54321098	class A	GuardianLife	5678901234	olivia.evans@domain.com	01-JUL-23	01-JUL-24	0000000007



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12- AMBULANCE

LICENSE_PLATE	STATUS	MODEL	LAST_CHECK
1 ABC1234567	Available	2020	01-OCT-23
2 DEF2345678	In Use	2019	15-SEP-23
3 GHI3456789	Under Maintenance	2021	20-NOV-23
4 JKL4567890	Available	2022	10-AUG-23
5 MNO5678901	In Use	2018	25-JUL-23
6 PQR6789012	Available	2023	30-JUN-23
7 STU7890123	Under Maintenance	2020	01-DEC-23
8 VWX8901234	Available	2021	15-MAY-23
9 YZA9012345	In Use	2022	20-APR-23
10 BCD0123456	Available	2019	10-MAR-23



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13- TREATS

PATIENT_ID	DOCTOR_ID
000000001	D00000001
000000002	D00000002
000000003	D00000003
000000004	D00000004
000000005	D00000001
000000006	D00000002
000000007	D00000003
000000008	D00000004
000000009	D00000001
000000010	D00000002
000000011	D00000003
000000012	D00000004
000000013	D00000001
000000014	D00000002
000000015	D00000003
000000016	D00000004
000000017	D00000001
000000018	D00000002
000000019	D00000003
000000020	D00000004
000000021	D00000001
000000022	D00000002
000000023	D00000003
000000024	D00000004
000000025	D00000001
000000026	D00000002
000000027	D00000003
000000028	D00000004
000000029	D00000001
000000030	D00000002



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14- USES

SERVICES_ID	BATCH_ID
SRV000006	B00000006
SRV000007	B00000007
SRV000008	B00000008
SRV000009	B00000009
SRV000010	B00000010

15- DR_SUBSPECIALTIES

DOCTOR_ID	SUBSPECIALTIES
D00000001	Pediatrics
D00000002	Oncology
D00000003	Emergency Medicine
D00000004	General Surgery
D00000005	Cardiology
D00000006	Orthopedics
D00000007	Cardiology
D00000008	Neurology
D00000009	Cardiology
D00000010	Psychiatry



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16- DEP_WORKING_HOURS

DEPT_ID	WORKING_HOURS
001	08:00-16:00
002	09:00-17:00
003	10:00-18:00
004	07:00-15:00
005	12:00-20:00
006	06:00-14:00
007	11:00-19:00
008	08:00-16:00 and 18:00-22:00
001	16:00-00:00
002	00:00-08:00

17- DEP_FLOOR_NB

DEPT_ID	FLOOR_NB
001	01
002	02
003	03
004	04
005	05
006	06
007	07
008	08
001	09
002	10



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18- PATIENT_ALLERGIES

RECORD_ID	PALLERGIES
R00000006	Latex
R00000007	Bee Stings
R00000008	Soy
R00000009	Eggs
R00000010	Dairy

19- PATIENT_DIAGNOSIS_HISTORY

RECORD_ID	DIAGNOSIS_HISTORY
R00000006	Asthma
R00000007	Hypertension
R00000008	Diabetes Type 1
R00000009	Arthritis
R00000010	Migraine
R00000015	Hypertension
R00000022	Hypertension
R00000003	Hypertension
R00000005	HIV
R00000004	HIV



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20- PATIENT_MEDICATION

RECORD_ID	MEDICATION
R00000001	Lisinopril
R00000002	Metformin
R00000003	Salbutamol Inhaler
R00000004	Atorvastatin
R00000005	Sumatriptan
R00000006	Fluticasone Nasal Spray
R00000007	Omeprazole
R00000008	Paracetamol
R00000009	Ibuprofen
R00000010	Clopidogrel

21- PATIENT_CURRENT_TREATMENT_PLAN

RECORD_ID	CURRENT_TREATMENT_PLAN
R00000001	Daily Lisinopril and low-sodium diet
R00000002	Diet control with Metformin twice daily
R00000003	Use Salbutamol inhaler as needed for asthma symptoms
R00000004	Daily Atorvastatin for cholesterol management
R00000005	Sumatriptan during migraines
R00000006	Fluticasone nasal spray daily
R00000007	Omeprazole before meals
R00000008	Paracetamol for fever
R00000009	Ibuprofen for joint pain
R00000010	Daily Clopidogrel for heart condition



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22- SUB_PRODUCT_TYPES

SUPP_ID	PRODUCT_TYPES
SUP000001	Surgical Instruments
SUP000002	Medical Furniture
SUP000003	Personal Protective Equipment
SUP000004	Pharmaceutical Products
SUP000005	Diagnostic Devices
SUP000006	Hospital Consumables
SUP000007	Laboratory Supplies
SUP000008	Cleaning Products
SUP000009	Respiratory Equipment
SUP000010	Monitoring Systems

23- AMBULANCE_EQUIPMENT_LIST

LICENSE_PLATE	EQUIPMENT_LIST
ABC1234567	First Aid Kit
DEF2345678	Oxygen Cylinder
GHI3456789	Defibrillator
JKL4567890	Spinal Board
MNO5678901	Ventilator
PQR6789012	ECG Machine
STU7890123	Trauma Kit
VWX8901234	Pulse Oximeter
YZA9012345	Suction Machine
BCD0123456	IV Stand and Fluids

SQL Queries

1- Emergency Ambulance Allocation

This is used to retrieve the list of ambulances that specifically contain defibrillators for cardiac emergencies.

Query:

```
■ SELECT A.License_Plate, A.Model, E.Equipment_List
  FROM AMBULANCE A
 JOIN AMBULANCE_EQUIPMENT_LIST E ON A.License_Plate = E.License_Plate
 WHERE E.Equipment_List LIKE "%Defibrillator%" AND A.Status = 'Available';
```

Output:

LICENSE_PLATE	MODEL	EQUIPMENT_LIST
1 GHI3456789	2021	Defibrillator



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2- Blood Donation Requirements

This is helpful to see the highest requested blood types, which is especially useful in case of a crisis or a major incident.

Query:

```
SELECT BB.Blood_Type, COUNT(BB.Donation_ID) AS Units_Requested
FROM BLOOD_BANK BB
JOIN SERVICES S ON BB.Services_ID = S.Services_ID
WHERE S.Service_Date >= ADD_MONTHS(SYSDATE, -1) AND S.Type LIKE '%Emergency%'
GROUP BY BB.Blood_Type
```

Output:

BLOOD_TYPE	UNITS_REQUESTED
1 A+	1
2 A-	1
3 AB+	1
4 B-	1

3- Resource Depletion Alert

This query retrieves the inventory items whose quantity is below the reorder threshold, this helps the hospital know when they need to restock.

Query:

```
SELECT I.Item_Name, I.Qty, I.Reorder_Threshold, S.Supp_Name
FROM INVENTORY I
JOIN SUPPLIER S ON I.Supp_ID = S.Supp_ID
WHERE I.Qty < I.Reorder_Threshold
ORDER BY (I.Reorder_Threshold - I.Qty) DESC;
```

Output:

1 Face Shields	15	60 Diab Unlimited Supply of Awesome Goods Ltd.
2 Gloves	10	50 Beijing Pharma
3 Sterile Syringes	5	40 Totally Not Selling to Aliens Inc.
4 IV Fluids	12	30 No You're the Alien Ltd.
5 Ventilator Tubes	8	25 Local Dealer Co.



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4- List Patients Under the Care of a Specific Doctor

Sometimes we want to know all the patients that a specific doctor is treating. This could be useful in case of sudden absences or leaves in order to resume patient care without hurdles.

Query:

```
SELECT P.Patient_ID, P.First, P.MI, P.Last
FROM PATIENT P
JOIN TREATS T ON P.Patient_ID = T.Patient_ID
JOIN DOCTOR D ON T.Doctor_ID = D.D_ID
WHERE D.License_Nb = 'LIC000001'; -- Update with Jane Smith's License Number
SELECT * FROM DOCTOR
```

Output:

D_ID	LICENSE_NB	SPECIALTY	SALARY	BLDG_NB	OFFICE_NB	AVAILABILITY	PAGING_NB	STAFF_ID
1 D00000001	LIC000001	Cardiologist	105000 0	001	Y	0001	S00000002	
2 D00000002	LIC000002	Specialist	110000 0	002	Y	0002	S00000009	
3 D00000003	LIC000003	General Practitioner	115000 0	003	Y	0003	S00000014	
4 D00000004	LIC000004	Surgeon	120000 0	004	Y	0004	S00000020	

5- Available Doctors in a Specific Specialty

In case of emergencies or following patient needs, the hospital might need to get a doctor specializing in a specific domain. This query helps present all available doctors working in a specific specialty,

Query:

```

SELECT D.D_ID, S.ID AS Staff_ID, S.First AS First_Name, S.MI AS Middle_Initial, S.Last AS Last_Name
FROM DOCTOR D
JOIN DR_SUBSPECIALTIES DS ON D.D_ID = DS.Doctor_ID
JOIN STAFF S ON D.Staff_ID = S.ID
WHERE DS.Subspecialties = 'Cardiology' AND D.Availability = 'Y';

```

Output:

1	D00000005	S00000027	Alice	A	Green
2	D00000007	S00000029	Cathy	C	Adams
3	D00000009	S00000031	Emily	E	Wilson

6- Medicine per Diagnosis Tracker

The hospital needs to at times track what medicine patients who have the same diagnosis are taking. For example, patients diagnosed with “Hypertension” have been prescribed various medications, we need to identify the most commonly used ones.

Query:

```

SELECT
    PM.Medication,
    COUNT(*) AS Prescription_Count
FROM
    PATIENT_MEDICATION PM
JOIN
    MEDICAL_RECORD MR ON PM.Record_ID = MR.Record_ID
JOIN
    PATIENT_DIAGNOSIS_HISTORY PDH ON MR.Record_ID = PDH.Record_ID
WHERE
    PDH.Diagnosis_History = 'Hypertension'
GROUP BY |
    PM.Medication
ORDER BY
    Prescription_Count DESC
FETCH FIRST 3 ROWS ONLY;

```

Output:

1	Omeprazole	1
2	Salbutamol Inhaler	1

7- High-Risk Patients Epidemic Vaccination Tracking

If an epidemic disease is spreading rapidly, it is crucial to identify patients who are at a higher risk due to their immune-compromising conditions. This query retrieves the IDs and names of patients diagnosed with HIV who should be prioritized for vaccinations.

Query:

```

=SELECT
    P.Patient_ID,
    P.First,
    P.Last
FROM
    PATIENT P
JOIN
    MEDICAL_RECORD MR ON P.Patient_ID = MR.Patient_ID
JOIN
    PATIENT_DIAGNOSIS_HISTORY PDH ON MR.Record_ID = PDH.Record_ID
WHERE
    PDH.Diagnosis_History = 'HIV';

```

Output:

```

1 000000004 FirstName4 LastName4
2 000000005 FirstName5 LastName5

```



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FOR HUMANS



8- Patients Paying Out-Of-Pocket

This query retrieves all the patients not covered by insurance.

Query:

```


SELECT
    P.Patient_ID,
    P.First,
    P.Last,
    P.Sex,
    P.DOB,
    P.Address,
    P.Phone_Nb
FROM
    PATIENT P
LEFT JOIN
    INSURANCE I ON P.Patient_ID = I.Patient_ID
WHERE
    I.Patient_ID IS NULL;


```

Output:

PATIENT_ID	FIRST	LAST	SEX	DOB	ADDRESS	PHONE_NB
000000028	FirstName28	LastName28	M	25-DEC-17	Address 28	111111128
000000030	FirstName30	LastName30	M	25-DEC-19	Address 30	111111130
000000019	FirstName19	LastName19	F	27-DEC-08	Address 19	111111119
000000010	FirstName10	LastName10	M	30-DEC-99	Address 10	111111110
000000009	FirstName9	LastName9	F	30-DEC-98	Address 9	111111119
000000012	FirstName12	LastName12	M	29-DEC-01	Address 12	111111112
000000026	FirstName26	LastName26	M	26-DEC-15	Address 26	111111126
000000002	FirstName2	LastName2	M	01-JAN-92	Address 2	111111112
000000017	FirstName17	LastName17	F	28-DEC-06	Address 17	111111117
000000016	FirstName16	LastName16	M	28-DEC-05	Address 16	111111116
000000020	FirstName20	LastName20	M	27-DEC-09	Address 20	111111120
000000024	FirstName24	LastName24	M	26-DEC-13	Address 24	111111124
000000003	FirstName3	LastName3	F	31-DEC-92	Address 3	111111113
000000029	FirstName29	LastName29	F	25-DEC-18	Address 29	111111129
000000022	FirstName22	LastName22	M	27-DEC-11	Address 22	111111122
000000014	FirstName14	LastName14	M	29-DEC-03	Address 14	111111114
000000018	FirstName18	LastName18	M	28-DEC-07	Address 18	111111118
000000011	FirstName11	LastName11	F	29-DEC-00	Address 11	111111111
000000015	FirstName15	LastName15	F	28-DEC-04	Address 15	111111115
000000025	FirstName25	LastName25	F	26-DEC-14	Address 25	111111125
000000001	FirstName1	LastName1	F	01-JAN-91	Address 1	111111111
000000008	FirstName8	LastName8	M	30-DEC-97	Address 8	111111118
000000023	FirstName23	LastName23	F	26-DEC-12	Address 23	111111123
000000027	FirstName27	LastName27	F	25-DEC-16	Address 27	111111127
000000013	FirstName13	LastName13	F	29-DEC-02	Address 13	111111113
000000021	FirstName21	LastName21	F	27-DEC-10	Address 21	111111121

9- Highest Rated Suppliers

To ensure the hospital has the highest-quality supplies, we need to know which suppliers have the highest ratings to reorder from them.

Query:

```

SELECT
    S.Supp_ID,
    S.Supp_Name,
    AVG(I.Batch_Rating) AS Average_Rating
FROM
    SUPPLIER S
JOIN
    INVENTORY I ON S.Supp_ID = I.Supp_ID
GROUP BY
    S.Supp_ID, S.Supp_Name
ORDER BY
    Average_Rating DESC
FETCH FIRST 3 ROWS ONLY;

```

Output:

SUPP_ID	SUPP_NAME	AVERAGE_RATING
1 SUP000010	No You're the Alien Ltd.	4.75
2 SUP000006	Beijing Pharma	4.6
3 SUP000009	Totally Not Selling to Aliens Inc.	4.5

10- Staff with 8+ Year Tenure

This query identifies staff members who have been working at the hospital for more than 8 years. After the completion of 8 years of work, staff members are often rewarded with bonuses, that's why we need to keep track of them.

Query:

```

SELECT
    S.ID,
    S.First,
    S.Last
FROM
    STAFF S
WHERE
    S.End_Date IS NULL
    AND (SYSDATE - S.Hiring_Date) > (8 * 365); -- 8 years in days
  
```

Output:

ID	FIRST	LAST
1 S00000004	Emma	Johnson
2 S00000005	Oliver	Williams
3 S00000008	Sophia	Martin
4 S00000009	Noah	Clark
5 S00000013	Alexander	Allen
6 S00000014	Ella	Young
7 S00000016	Charlotte	Wright
8 S00000020	Ava	Rivera
9 S00000022	William	Harris
10 S00000025	Elijah	Mitchell
11 S00000027	Alice	Green
12 S00000028	Bob	Harrison
13 S00000030	David	Taylor
14 S00000032	Frank	Martin
15 S00000033	Grace	Clark
16 S00000036	Jack	Brown

Normalization Up to the BCNF Normal Form

Once all relations are created, we should enhance them by applying normalization based on several normal forms. In this process, we will normalize the database up to the Boyce-Codd Normal Form (BCNF). Each relation will undergo normalization sequentially, starting with the first normal form, followed by the second and third, and concluding with the BCNF. Before proceeding, let us provide a brief overview of each normal form.

First Normal Form

This form disallows composite attributes, multivalued attributes, and nested relations: attributes whose values for an individual tuple are non-atomic. The only attribute values that are permitted are single atomic values. In our database, there are no nested relations.

This form is considered to be part of the definition of a relation. In the mapping section, only the simple attributes of composite attributes were included in the relations, while multivalued attributes were assigned their own relations.

Second Normal Form

A relational schema R is in second normal form if every non-prime attribute (an attribute not part of any candidate key) is fully functionally dependent on every key of R. Additionally, no non-prime attribute in R should be partially dependent on any key in r. A **full functional dependency** refers to functional dependency $X \rightarrow Y$, where the removal of any attribute from X causes the dependency to no longer hold.

Third Normal Form

The third normal form is built upon the concept of transitive dependency. A transitive dependency occurs in a relation schema R when there exists a set of attributes Z in R such that Z is neither a candidate key nor a subset of any key of R, and $X \rightarrow Z$ and $Z \rightarrow Y$ hold.

A relational schema R is in **3NF** if it satisfies the conditions of the **2NF** and ensures that no non-prime attribute in R is transitively dependent on the primary key. In other words, for every functional dependency $X \rightarrow Y$:



1. X must be a superkey, or
2. Y must be a prime attribute

Boyce-Codd Normal Form

The Boyce-Codd normal form is similar to the third normal form but it differs from it in one condition. In the third normal form, for every functional dependency $X \rightarrow Y$, either X should be a superkey or Y should be a prime attribute. BCNF does not allow Y to be a prime attribute. Thus, whenever a functional dependency $X \rightarrow Y$ holds in R, then X is a superkey of R.

With the normal forms defined, we can now proceed to normalize our relations.

1- STAFF

<u>ID</u>	First	MI	Last	DOB	SSN
Address	Hiring_Date	End_Date	Emp_Type	Weekly_Hours	Vacation_Per_Year
Position	Hourly_Rate	Phone_Nb	Rel	Emergency_Name	Dept_ID
License_Plate					

A. The STAFF relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The STAFF relation schema satisfies all conditions of the 2NF because every non-prime attribute is fully functionally dependent on the primary key “ID”.

C. The STAFF relation schema does not satisfy all conditions of the 3NF because of the functional dependencies represented by :

- Position → Hourly_Rate
- Emp_Type → Weekly_Hours
- Emp_Type → Vacation_Per_Year
- Phone_Nb → Emergency_Name

Where neither Position, Emp_Type, Phone_Nb are super keys nor are Weekly_Hours, Hourly_Rate, Vacation_Per_Year , Emergency_Name prime attributes. Thus, further decomposition is needed.

STAFF_A

<u>ID</u>	First	MI	Last	DOB	SSN
Address	Hiring_Date	End_Date	Emp_Type	Phone_Nb	Rel
Position	Dept_ID	License_Plate			

STAFF_B

Position	Hourly_Rate



STAFF_C

<u>Emp_Type</u>	<u>Weekly_Hours</u>	<u>Vacation_Per_Year</u>
	↑	↑

STAFF_D

<u>Phone_Nb</u>	<u>Emergency_Name</u>
	↓

D. The STAFF relation schema satisfies all conditions of the BCNF because there exists no functional dependency $X \rightarrow A$ where X is not a super key or A is a prime attribute and X not a super key.

2- DOCTOR

<u>D_ID</u>	<u>License_Nb</u>	<u>Specialty</u>	<u>Salary</u>	<u>Bldg_Nb</u>	<u>Office_Nb</u>
<u>Availability</u>	<u>Paging_Nb</u>	<u>Staff_ID</u>			
↑	↑	↑			

A. The DOCTOR relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The DOCTOR relation schema satisfies all conditions of the 2NF because every non-prime attribute is fully functionally dependent on the primary key "D_ID"

C. The DOCTOR relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "D_ID".

D. The DOCTOR relation schema satisfies all conditions of the BCNF because there exists no functional dependency $X \rightarrow A$ where X is not a super key or A is a prime attribute and X not a super key.

3- PATIENT

<u>Patient_ID</u>	First	MI	Last	Sex	DOB
Address	Phone_Nb	Email	E_Phone_Nb	E_Rel	E_Name
Bldg_Nb	Room_Nb				

- A. The PATIENT relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
- B. The PATIENT relation schema satisfies all conditions of the 2NF because every non-prime attribute is fully functionally dependent on the primary key "Patient_ID".
- C. The PATIENT relation schema does not satisfy all conditions of the 3NF because of the functional dependencies represented by :
- $E_Phone_Nb \rightarrow E_Name$.

Where neither E_Phone_Nb is a super key nor E_Name are prime attributes. Thus, further decomposition is needed.

PATIENT_A

<u>Patient_ID</u>	First	MI	Last	Sex	DOB
Address	Phone_Nb	Email	E_Phone_Nb	E_Rel	Room_Nb
Bldg_Nb					

PATIENT_B

<u>E_Phone_Nb</u>	<u>E_Name</u>
-------------------	---------------

- D. The PATIENT relation schema satisfies all conditions of the BCNF because there exists no functional dependency $X \rightarrow A$ where X is not a super key or A is a prime attribute and X not a super key.

4- DEPARTMENT

<u>Dept_ID</u>	Name	Ext	Email	Bldg_Nb	Head_ID
----------------	------	-----	-------	---------	---------

- A. The DEPARTMENT relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
- B. The DEPARTMENT relation schema satisfies all conditions of the 2NF because every non-prime attribute is fully functionally dependent on the primary key “Dept_ID”
- C. The DEPARTMENT relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key “Dept_ID”.
- D. The DEPARTMENT relation schema satisfies all conditions of the BCNF because there exists no functional dependency $X \rightarrow A$ where X is not a super key or A is a prime attribute and X not a super key.

5- ROOM

<u>Bldg_Nb</u>	<u>Room_Nb</u>	Type	Capacity	Status
----------------	----------------	------	----------	--------

- A. The ROOM relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
- B. The ROOM relation schema satisfies all conditions of the 2NF because every non-prime attribute is fully functionally dependent on the composite primary key consisting of “Bldg_Nb” and “Room_Nb”
- C. The ROOM relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the composite primary key consisting of “Bldg_Nb” and “Room_Nb”.
- D. The ROOM relation schema satisfies all conditions of the BCNF because there exists no functional dependency $X \rightarrow A$ where X is not a super key or A is a prime attribute and X not a super key.

6- MEDICAL_RECORD

<u>Patient_ID</u>	<u>Record_ID</u>	Height	Weight	Blood_Type

- A. The MEDICAL_RECORD relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
- B. The MEDICAL_RECORD relation schema does not satisfy all conditions of the 2NF because not every nonprime attribute is fully functionally dependent on the primary key “Patient_ID” and “Record_ID” because the functional dependency represented by :
- $\text{Patient_ID} \rightarrow \text{Blood_Type}$.

Where Blood_Type is only dependent on Patient_ID alone. Thus, further decomposition is needed

MEDICAL_RECORD_A

<u>Patient_ID</u>	<u>Record_ID</u>	Height	Weight

MEDICAL_RECORD_B

<u>Patient_ID</u>	<u>Blood_Type</u>

- C. The MEDICAL_RECORD relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the composite primary key consisting of “Patient_ID” and “Record_ID”.
- D. The MEDICAL_RECORD relation schema satisfies all conditions of the BCNF because there exists no functional dependency $X \rightarrow A$ where X is not a super key or A is a prime attribute and X not a super key.



7- SERVICE

Service_ID	Type	Date	Result	D_ID	Record_ID
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- A. The SERVICE relational schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
- B. The SERVICE relational schema additionally satisfies the conditions for the 2NF since every non-prime attribute is fully functionally dependent on the primary key “Service_ID”.
- C. The SERVICE schema satisfies the conditions of 3NF because it satisfies 2NF and has no non-prime attributes that are transitively dependent on the primary key.
- D. SERVICE also satisfies BCNF conditions, since for all the FDs $X \rightarrow Y$ present, X is “Service_ID”, a prime attribute.

8- BLOOD_BANK

<u>Donation_ID</u>	Blood_Type	First	MI	Last	Phone_Nb
Collection_Date	Availability	Service_ID			

- A. The BLOOD_BANK relational schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
- B. All non-prime attributes are fully functionally dependent on the primary key’s attribute “Donation_ID”; therefore, the BLOOD_BANK relational schema satisfies the conditions of the 2NF.
- C. The BLOOD_BANK relational schema does not satisfy all 3NF conditions. It satisfies 2NF but the issue is raised regarding the following functional dependency:

- $\text{Phone_Nb} \rightarrow \text{Blood_Type}$

Since neither Phone_Nb is a super key, nor is Blood_Type a prime attribute, further decomposition is required.



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FOR HUMANS



BLOOD_BANK_A

<u>Donation_ID</u>	First	MI	Last
Phone_Nb	Collection_Date	Availabilty	Service_ID

BLOOD_BANK_B

<u>Phone_Nb</u>	Blood_Type
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- D. The BLOOD_BANK relational schema satisfies all BCNF conditions as there exists no functional dependency $X \rightarrow A$ where X is not a super key.

9- INVENTORY

<u>Item_Name</u>	<u>Batch_ID</u>	Item_Type	Qty	Expiry_Date	Reorder_Threshold
Supp_ID	Batch_Rating				

- A. The INVENTORY relational schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

- B. The INVENTORY relational schema does not satisfy all conditions of the 2NF since some non-prime attributes are not fully functionally dependent on the primary key composed of "Item_Name" and "Batch_ID". This is seen in the following functional dependency:

- $\text{Item_Name} \rightarrow \text{Item_Type}, \text{Reorder_Threshold}$

Item_Type and Reorder_Threshold are only partially dependent on "Item_Name", therefore decomposition is needed.

INVENTORY_A

<u>Item_Name</u>	<u>Batch_ID</u>	Qty	Expiry_Date
Supp_ID	Batch_Rating		

INVENTORY_B

<u>Item_Name</u>	<u>Item_Type</u>	Reorder_Threshold

- C. The INVENTORY relation schema satisfies all the conditions of the 3NF since it is now in 2NF and has no non-prime attributes transitively dependent on the primary key.
- D. The INVENTORY relation schema additionally satisfies the BCNF conditions since there exists no functional dependency $X \rightarrow A$ where X is not a super key.

10- SUPPLIER

<u>Supp_ID</u>	Supp_Name	Phone_Nb	Email	Terms	Expiry_Date

- A. The SUPPLIER relational schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
- B. The SUPPLIER relational schema additionally satisfies all 2NF conditions as all non-prime attributes are fully functionally dependent on the prime attribute "Supp_ID".
- C. The SUPPLIER relational schema does not satisfy all 3NF conditions because of the following functional dependency:

- $\text{Supp_Name} \rightarrow \text{Phone_Nb}, \text{Email}$

where Supp_Name is not a superkey, and Phone_Nb and Email are not prime attributes. Therefore, decomposition is needed.



SUPPLIER_A

<u>Supp_ID</u>	Supp_Name	Terms	Expiry_Date
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SUPPLIER_B

<u>Supp_Name</u>	Phone_Nb	Email
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- D. The SUPPLIER relational schema also satisfies all BCNF conditions since there are no functional dependencies $X \rightarrow A$ where X is not a super key.

11- INSURANCE

<u>Insurance_ID</u>	<u>Patient_ID</u>	First	MI	Last	Policy_Nb
Coverage_Type	P_Name	Phone_Nb	Email	Start_Date	End_Date
		↑	↑	↑	↑

- A. The INSURANCE relational schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
- B. The INSURANCE relational schema satisfies all 2NF conditions as all non-prime attributes are fully functionally dependent on the two attributes of the primary key “Insurance_ID” and “Patient_ID”.
- C. The INSURANCE relational schema does not satisfy all 3NF conditions because of the following functional dependency:

- $P_Name \rightarrow Phone_Nb, Email$

where P_Name is not a superkey, and $Phone_Nb$ and $Email$ are not prime attributes. Therefore, decomposition is needed.

INSURANCE_A

<u>Insurance_ID</u>	<u>Patient_ID</u>	First	MI	Last	Policy_Nb
Coverage_Type	P_Name	Start_Date	End_Date		

INSURANCE_B

P_Name	Phone_Nb	Email
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12- AMBULANCE

<u>License_Plate</u>	Status	Model	Last_Check
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- A. The AMBULANCE relational schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
- B. The AMBULANCE relational schema additionally satisfies all the conditions for the 2NF since every non-prime attribute is fully functionally dependent on the primary key “License_Plate”.
- C. The AMBULANCE schema satisfies the conditions of 3NF because it satisfies 2NF and has no non-prime attributes that are transitively dependent on the primary key.
- D. AMBULANCE also satisfies BCNF conditions, since for all the FDs $X \rightarrow Y$ present, X is “License_Plate”, a prime attribute.

Relation Schemas without non-prime attributes:

Some of the relations don't include non-prime attributes, therefore they satisfy the BCNF by nature.

DOCTOR (Treats)

<u>Doctor_ID</u>	<u>Patient_ID</u>
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SERVICE (Uses)

<u>Service_ID</u>	<u>Item_Name</u>
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STAFF_PHONE_NB

<u>Staff_ID</u>	<u>Phone_Nb</u>
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STAFF_EMAIL

<u>Staff_ID</u>	<u>Email</u>
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DR_SUBSPECIALTIES

<u>Doctor_ID</u>	<u>Subspecialties</u>
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DEP_WORKING_HOURS

<u>Dept_ID</u>	<u>Working_Hours</u>

DEP_FLOOR_NB

<u>Dept_ID</u>	<u>Floor_Nb</u>

PATIENT_ALLERGIES

<u>Record_ID</u>	<u>PAllergies</u>

PATIENT_DIAGNOSIS_HISTORY

<u>Record_ID</u>	<u>Diagnosis_History</u>

PATIENT_MEDICATION

<u>Record_ID</u>	<u>Medication</u>



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PATIENT_CURRENT_TREATMENT_PLAN

<u>Record_ID</u>	<u>Current_Treatment_Plan</u>

SUP_PRODUCT_TYPES

<u>Supp_ID</u>	<u>Product_Types</u>

AMBULANCE_EQUIPMENT_LIST

<u>License_Plate</u>	<u>Equipment_List</u>



Conclusion

In today's fast-paced world, where information grows exponentially, having a well-organized system to manage it has become essential—especially in healthcare, where every detail matters. At Haraty Hospital for Humans (for humans, by humans only), our newly developed database management system is transforming the way medical care is delivered to humans and their information is harvested. Designed with precision, efficiency and love for human meat, this system seamlessly organizes critical data of our operations.

As we look ahead, this advanced data management platform empowers us to meet the growing complexities of modern healthcare with confidence. It's not just about keeping up with current demands—it's about setting the stage for continuous innovation and better outcomes, ensuring that every individual who walks through our doors receives the care and dignity they deserve.

This system served as the backbone of our hospital's mission to provide exceptional care and harvest human brains and organs.

Oh so I guess our cover is blown... Yes, we have been using the hospital including its database as a front for our human gourmet farm on XRC-314 (what you call "Earth"). Humans are tasty, can you blame us?? We abduct only the finest of cured humans and export them to our great green overlords for huge amounts of Vietnamese Dong. We needed this amazing database so that we can add information about the meat on our menus to create a real authentic experience.

PS. We also committed insurance fraud, what are you gonna do about it?

PS. The healthcare systems on your tiny blue sphere are really messed up.



Instructor's Feedback

We invite Dr. Ramzi Haraty to fill the following survey in order to get a fuller idea of the performance and assessment of our project (this survey has no ulterior motive)

★ How would you rate the overall quality of the H^3 project?

- Excellent Good Average Poor

★ How would you rate the visual presentation and organization of the project?

- Excellent Good Average Poor

★ Did the project capture and hold your attention?

- Yes Of course Absolutely No (please say yes)

★ Would you rather:

- Give us a 20/20 Also give us a 20/20 Please give us a 20/20

★ If, hypothetically, the H^3 hospital was run by aliens (it absolutely is not), would you:

- Keep the secret(pinky promise?) Tell the authorities (please don't)

★ Would you describe yourself as a worthy candidate for human experimentation?

- Yes No What?

★ What flavor profile would you say best represents you?

- Toothpaste and orange juice Pickles and motor oil Ketchup and portal fluid

★ Depending on your previous responses, would you rather:

- A surprise abduction A scheduled abduction No abduction (this will be ignored)

★ Please use the below section to provide general comments, feedback, or opinions regarding the project.
