



Belle's Consulting

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Narrative Description

The database being constructed is for the MinDS Community Hospital. This hospital is planning on growing larger and adding an assisted living facility in order to better serve their community. In order to ensure this be a successful transition all aspects of the transition must be accounted for. This is where the new relational database comes into play. The database will work to display all of the key services the hospital provides. The system will keep track of all patients, nurses, physicians, employees, care centers, procedures, beds, items, and all the attributes and relationships that come with each of those entities. This database will present a functional way in which all the hospital employees and patients can navigate the MinDS Community Hospital.

Data requirements

This section outlines what types of data must be stored in the database. It provides a framework for understanding what tables need to be made and what information will be stored in them.

- Employees should have their name, address, date of birth, phone number, email address, and hire date recorded in the database. Nurses should also have their specialty recorded.
- Physicians should have their name, address, date of birth, phone number, email address, pager number, and a DEA number recorded in the database.
- The database should keep track of each patient's medical record number (MRN), name, address, date of birth, phone number, email address, first date of contact with MinDS Community Hospital, emergency contact info, insurance information, information of the insurance subscriber, contact information for the patient's primary care provider, date of admittance, and date of discharge.
- At the beginning of each patient's visit, a nurse will record the patient's weight, blood pressure, pulse, temperature, reasons for visit, and any symptoms the patient is experiencing. The date and time is also recorded.
- Each patient has one and only one physician responsible for them at any given time. A physician, however, can see many patients at a time or no patients.
- The hospital is divided into care centers. Each care center has a care center ID, a care center name, and a location. Each care center can have multiple beds or no beds assigned to it. Each care center has one and only one employee designated as the nurse-in-charge.
- Each bed has a bed number, room number, and care center ID. A bed may be assigned to one or no patients at a time, and each resident patient must be assigned to a bed.
- Items (any medical or surgical items used in patient treatment) each have an item number, a description, and a unit cost. A patient can consume any number of items, and any given item may be used to treat any number of patients. When a patient uses an item, the date, time, quantity, and total cost (unit cost of item multiplied by quantity) is recorded.
- A physician may diagnose a patient with any number of conditions, and a diagnosis may affect multiple patients. The records for each diagnosis should include a date and time, a diagnosis code, and a diagnosis name.
- Treatments are any test or procedure ordered by and/or performed by a physician for a patient. Each treatment has an ID/code and treatment name. A treatment may be performed by or ordered by any number of physicians and a treatment may be ordered for multiple patients. For every treatment performed, the database should record physician ordering the treatment, treatment date and time, and results.
- Treating a patient requires a physician to issue an order. Each order includes an order ID, order date, and order time.

Functional requirements

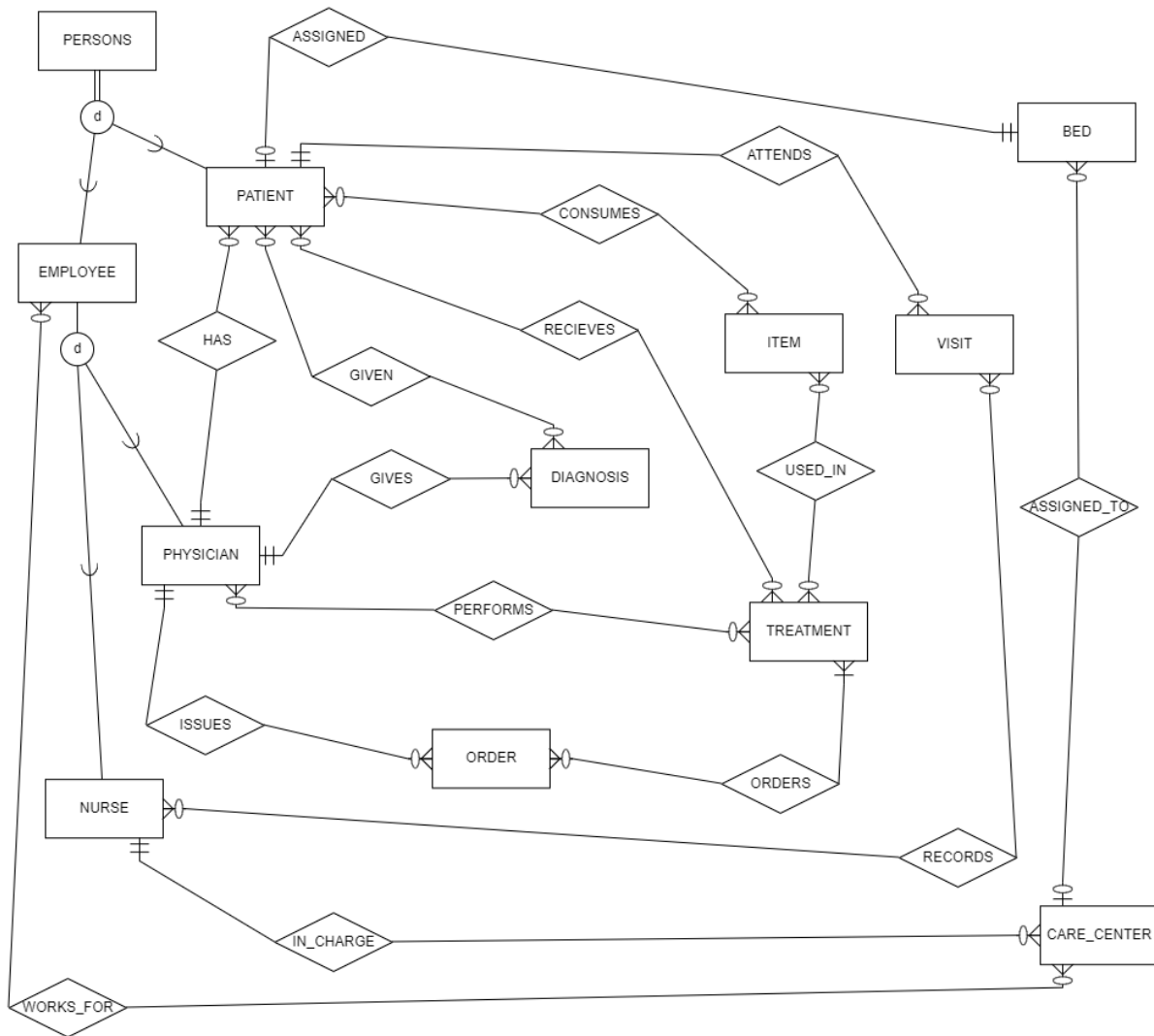
This section lists the things the users of the database should be able to do. It outlines who should have access to what data.

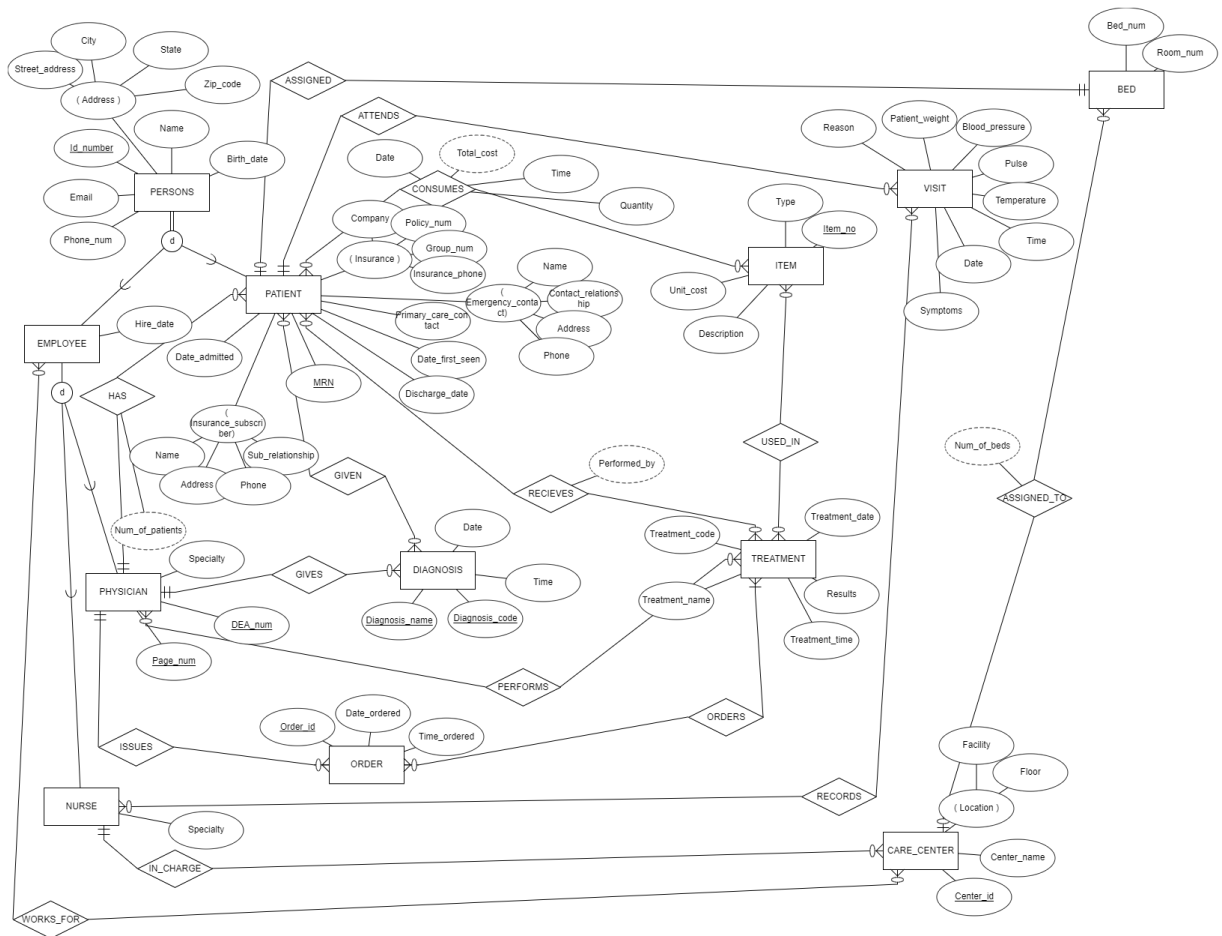
- Specific uses:
 - a. The database should allow nurses to be able to view which patients are in which rooms.
 - b. Nurses should be able to access the patient list and know which treatment center they are in for the entire hospital.
 - c. In case a doctor is needed for a specific case, nurses should be able to access the doctors information including their specialities.
 - d. Change patient medical history if needed.
 - e. Updates physician and nurse personal information.
 - f. Updates physician and nurse hospital information.
 - g. Updates patient room information in case of transfers or referrals.
 - h. Update beds available in each care center.
 - i. Allow physicians to see what treatments have been offered to patients by fellow physicians.
 - j. Nurses and physicians need to access patient usage of items.
 - k. Allow nurses and physicians to see prior patient diagnosis'.
 - l. Allow nurses and physicians to look up any ID/code of patient treatment.
 - m. Allows nurses to add to the system with patients current health readings when they visit.
 - n. Allows physicians to edit which and how many patients they are taking care of.
 - o. Allows nurses and physicians to update which nurse is working in which care center.

Conceptual Data Model

This section outlines the conceptual framework for the medical database. Below we have both the Initial and Final ER diagrams which map the relationships between each of the entities.

Initial ER diagram



Full ER diagram**Data Model Object Definitions (Data Dictionary)****Entities, Attributes, and Relationships*****Entities & Their Attributes***

This section describes the entities and attributes that will make up the database. The entities represent people or things while the attributes are their descriptors.

Persons: Supertype of Employee and Patient.

Attribute(s): unique identifier, name, address, city/state/zip, date of birth, phone number, and email address

Patient:

Subtype of Person

Attribute(s): date of first contact with the hospital, MRN, emergency contact information(last and first name, relationship to patient, address, phone), insurance information(insurance company name, policy number, group number, insurance phone number), info on insurance subscriber(last name, first name, relationship to patient,

address, phone)- in case the patient is not the subscriber, primary care physician contact info, date admitted, discharge date.

Employee:

Subtype of Person

Supertype of Nurse and Physician

Attribute(s): hire date

Nurse:

Subtype of Employee

The nurse obtains information about the patient prior to appointment.

Attribute(s): specialty

Physician:

Subtype of Employee

Each physician is responsible for the quality of medical care provided to their patients.

Attribute(s): pager number, DEA number, specialty

Order:

An order is used to receive treatment.

Attribute(s): Order ID, order date, order time

Item:

Attribute(s): medical or surgical, item number, description, unit cost.

Diagnosis:

The reason why a patient is suffering, otherwise known as a condition.

Attribute(s): date and time of diagnosis, diagnosis code, diagnosis name

Treatment:

Attribute(s): treatment ID/treatment code, treatment name, treatment date, treatment time, results

Bed:

The place in which a patient sleeps/rests.

Attribute(s): Bed number, room number

Care center:

The hospital consists of many care centers. Examples of care centers are maternity, emergency care, or multiple sclerosis centers.

Attribute(s): ID, name, location (facility, floor)

Visit:

When a patient comes into the hospital.

Attribute(s): patient's weight, blood pressure, pulse, temperature, date, time, reason for the visit, and symptoms

Relationships & Their Attributes

This section describes the relationships along with their attributes that make up the database. The relationships are descriptions that connect attributes to each other.

[PATIENT] GIVEN [DIAGNOSIS]: A patient's medical condition is diagnosed by a physician. A physician may diagnose any number of conditions affecting a patient, and a diagnosis may apply to many patients.

Structural Constraint: (0,N)

[PATIENT] CONSUMES [ITEM]: A patient may consume any number of items. A given item may be consumed by one or more patients, or may not be consumed.

Attributes: date, time, quantity, and total cost

Structural Constraints: (0,N)

[PATIENT] RECEIVES [TREATMENT]: A patient may receive a treatment, which is any test or procedure by and/or performed by a physician for a patient.

Attributes: physician performed by

Structural Constraint: (0,N)

[PHYSICIAN] PERFORMS [TREATMENT]: A patient may have treatments performed by any number of physicians.

Structural Constraints: (0,N)

[ORDER] ORDERS [TREATMENT]: A patient may have treatments ordered by any number of physicians.

Structural Constraints: (1,N)

[PHYSICIAN] ISSUES [ORDER]: An order is issued by a physician for treatment and/or services such as diagnostic tests (radiology, laboratory) and therapeutic procedures (physical therapy, diet orders), or for drugs and devices (prescriptions).

Structural Constraints: (0,N)

[NURSE] RECORDS [VISIT]: A nurse typically obtains and records relevant information about the patient's visit.

Structural Constraint: (0,N)

[PATIENT] HAS [PHYSICIAN]: Each patient has one (and only one) physician responsible for that patient. A given physician may not be responsible for a patient at a given time or may be responsible for one or more patients.

Attributes: Quantity of patients

Structural Constraints: (1,1)

[BED] ASSIGNED_TO [CARE_CENTER]: A care center often has one or more beds (up to any number) assigned to it, but there are also care centers without assigned beds.

Attributes: Quantity of beds

Structural Constraints: (0,1)

[PATIENT] ASSIGNED [BED]: Any of the hospital beds may be assigned to a patient who is admitted to the hospital, but because the hospital doesn't always fill all its beds, a bed need not have a resident patient assigned to it. Each patient resident must be assigned to a bed.

Structural Constraint: (0,1)

[EMPLOYEE] WORKS_FOR [CARE_CENTER]: Each care center has exactly one employee who is designated nurse-in-charge for that care center.

Structural Constraints: (1,1)

[NURSE] IN_CHARGE [CARE_CENTER]: Each care center has exactly one employee who is designated nurse-in-charge for that care center

Structural Constraint: (1,1)

[PATIENT] ATTENDS [VISIT]:

Structural Constraint: (1,1)

Conceptual Data Modeling Notes

Assumptions

We made these assumptions about how the database should function. These assumptions were taken into consideration when designing the database.

- A physician is a type of employee.
- A nurse is a type of employee.
- An employee may or may not be a physician or a nurse.
- A bed may only be assigned to one or no patient at any given time.
- A patient must only be assigned to exactly one bed at any given time.

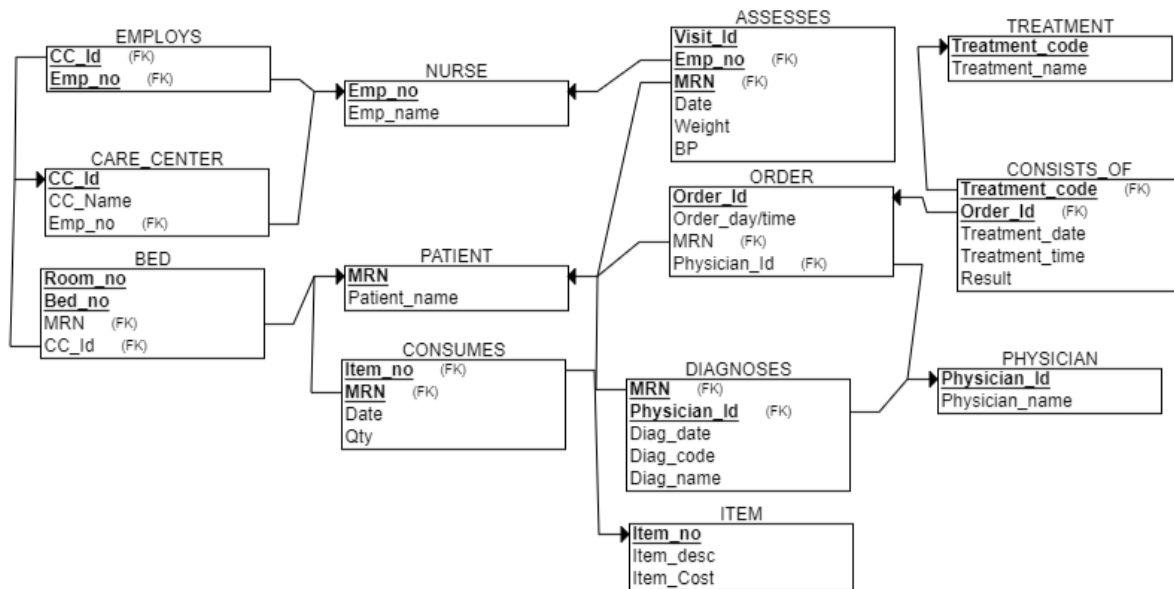
- A patient must have exactly one physician.
- A bed may be assigned to one or zero care centers at any given time.
- A care center must have exactly one nurse in charge.
- A care center may have zero or many employees.
- An employee may work for zero or many care centers.
- A care center may have zero or many employees.
- A diagnosis must be given by exactly one physician.
- A physician may give zero or many diagnoses.
- A diagnosis may be given to zero or many patients.
- A patient may be given zero or many diagnoses.
- A treatment may be performed on zero or many patients.
- A patient may be given zero or many treatments.
- A treatment may be performed by zero or many physicians.
- A physician may perform zero or many treatments.
- A physician may issue zero or many orders.
- An order must be issued by exactly one physician.
- An order may order one or many treatments.
- A treatment may be ordered by zero or many orders.
- An item may be used in zero or many treatments.
- A treatment may order zero or many items.
- A patient may attend zero or many visits.
- A visit is attended by exactly one patient.
- A visit must be recorded by one or many nurses.
- A nurse may record zero or many visits.

Comments

This section is made up of comments that we have collected for constraints the database faces.

- The VISIT entity will need either a unique ID attribute or a composite key (Patient, Date, Time) to serve as a primary key.
- An instance of the DIAGNOSIS entity refers to an individual diagnosis made for a specific patient, as opposed to a condition.
- An instance of the ITEM entity refers to an item type, but not to an individual item.
- The attribute of the number of beds of the ASSIGNED_TO relationship can be derived.
- The attribute of the physician who performed a treatment may be derived.
- The attribute of the number of patients a physician has may be derived.

Initial Relational Schema

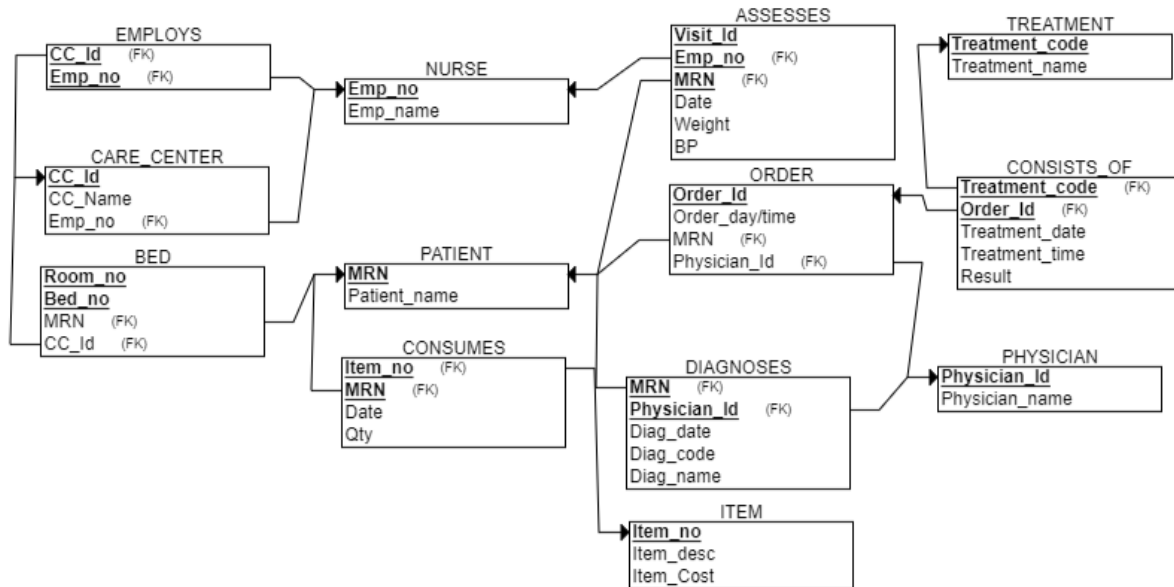


Functional Dependencies

This section lists which attributes are dependent on which other attributes.

1. The CC_Name is dependent on CC_Id which is the primary key of CARE_CENTER.
2. The Date and Qty are dependent on the Item_no and MRN which make up the primary key for CONSUMES.
3. The Date, Weight, and BP are dependent on the Visit_Id, Emp_no, and MRN which all make up the primary key for ASSESSES.
4. The Order_day/time is dependent on the Order_Id which is the primary key for ORDER.
5. The Diag_data, Diag_code, and Diag_name are dependent on the MRN and Physician_Id which make up the primary key for DIAGNOSES.
6. The Treatment_date, Treatment_time, and Result are dependent on the Treatment_code and Order_Id which make up the primary key for CONSISTS_OF.
7. The Emp_name is dependent on the Emp_no which is the primary key of NURSE.
8. The Patient_name is dependent on the MRN which is the primary key PATIENT.
9. The Item_desc and Item_Cost are dependent on the Item_no which is the primary key ITEM.
10. The Treatment_name is dependent on Treatment_code which is the primary key of TREATMENT.
11. The Physician_name is dependent on Physician_id which is the primary key of PHYSICIAN.

Final Relational Schema



Data Dictionary

This section includes the data dictionary which is a necessity in order to begin the SQL statements to build the database. Within this section we are deciding the attributes in each table, along with their data type. Certain tuples were given minimum and maximum values that correspond to the length of their codes or numbers.

TABLE	COLUMN	DATA TYPE	MIN VALUE	MAX VALUE	DE-FAULT	ISNULL	CONSTRAINT	REFERENCE	DESCRIPTION
Care Center	CC_id	SMALL INT(1)	0	9999		NOT NULL	Primary Key, Unsigned		Care center ID
Care Center	CC_Name	VAR CHAR (30)				NOT NULL			Care center name
Care Center	Nurse_in_charge	SMALL INT(1)	0	9999		NOT NULL	Foreign Key	Nurse	The nurse who is in charge of the care center
Nurse	Nurse_No	SMALL INT(1)	0	9999		NOT NULL	Primary Key, Unsigned		Nurse ID
Nurse	Nurse_Name	VAR CHAR (30)				NOT NULL			Nurse name
Employs	CC_id	SMALL INT(1)	0	9999		NOT NULL	Foreign Key, Primary Key	Care Center	The ID number of the care center

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									that the employee works for
Employs	EMP_No	SMALL INT(1)	0	9999		NOT NULL	Foreign Key, Primary Key		Employee ID
Employs	Hours	TINY INT(1)	0	125		NOT NULL			The number of hours an employee works per week
Assesses	Visit_ID	SMALL INT(1)	0	9999		NOT NULL	Primary Key, Unsigned		Visit ID
Assesses	Date	DATE TIME				NOT NULL			Date of the assessment
Assesses	Weight	SMALL INT(1)	0	900		NOT NULL			Weight of the patient at the time of the assessment
Assesses	BP	VARCHAR(7)				NOT NULL			Blood pressure of the patient at the time of the assessment
Assesses	EMP_No	SMALL INT(1)	0	9999		NOT NULL	Foreign Key	Employee	Employee ID
Assesses	Patient_MRN	SMALL INT(1)	0	9999999		NOT NULL	Foreign Key	Patient	Patient MRN
Diagnoses	Patient_MRN	SMALL INT(1)	0	9999999		NOT NULL	Foreign Key, Primary Key	Patient	Patient MRN
Diagnoses	Physician_ID	SMALL INT(1)	0	9999		NOT NULL	Foreign Key, Primary Key	Physician	Physician ID
Diagnoses	Diag_Date	DATE TIME				NOT NULL			Date of the diagnoses
Diagnoses	Diag_Code	SMALL INT(1)				NOT NULL			Diagnosis code
Diagnoses	Diag_Name	VARCHAR(30)				NOT NULL			Diagnosis name
Patient	Patient_MRN	SMALL INT(1)	0	9999999		NOT NULL	Primary Key, Unsigned		Patient MRN
Patient	Patient_Name	VARCHAR(30)				NOT NULL			Patient MRN

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Patient	Room_No	SMALL INT(1)	0	9999		NOT NULL	Foreign Key	Bed	Room number
Patient	Bed_No	SMALL INT(1)	0	9999		NOT NULL	Foreign Key	Bed	Bed number
Consumes	Item_No	SMALL INT(1)	0	9999		NOT NULL	Foreign Key, Primary Key	Item	Item number
Consumes	Patient_MRN	SMALL INT(1)	0	9999999		NOT NULL	Foreign Key, Primary Key	Patient	Patient MRN
Consumes	Date_consumed	DATE TIME				NOT NULL			Date the patient consumes & item
Consumes	Qty	SMALL INT(1)				NOT NULL			The quantity of an item that the patient consumes
Bed	Room_No	SMALL INT(1)	0	9999		NOT NULL	Primary Key, Unsigned		Room number
Bed	Bed_No	SMALL INT(1)	0	9999		NOT NULL	Primary Key, Unsigned		Bed number
Bed	CC_id	SMALL INT(1)	0	9999		NOT NULL	Foreign Key	Care Center	Care center ID
Item	Item_No	SMALL INT(1)	0	9999		NOT NULL	Primary Key, Unsigned		Item number
Item	Item_Desc	TEXT (2048)				NOT NULL			Item description
Item	Item_Cost	DECIMAL (10)				NOT NULL			Item cost in dollars
Physician	Physician_ID	SMALL INT(1)	0	9999		NOT NULL	Primary Key, Unsigned		Physician ID
Physician	Physician_Name	VAR CHAR(30)				NOT NULL			Physician name
Order	Order_ID	SMALL INT(1)	0	9999		NOT NULL	Primary Key, Unsigned		Order ID
Order	Physician_ID	SMALL INT(1)	0	9999		NOT NULL	Foreign Key	Physician	Physician ID
Order	Patient_MRN	SMALL INT(1)	0	9999999		NOT NULL	Foreign Key	Patient	Patient MRN
Order	Order_DayTime	DATE TIME				NOT NULL			Date & time the order was made

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Consists of	Order_ID	SMALL INT(1)	0	9999		NOT NULL	Foreign Key, Primary Key	Order	Order ID
Consists of	Treatment_Code	SMALL INT(1)				NOT NULL	Foreign Key, Primary Key	Treatment	Treatment code
Consists of	Treatment_Date	DATE				NOT NULL			Treatment date
Consists of	Treatment_Time	TIME				NOT NULL			Treatment time
Consists of	Result	VAR CHAR (30)				NOT NULL			The result of the treatment
Treatment	Treatment_Code	SMALL INT(1)	0	9999		NOT NULL	Primary Key, Unsigned		Treatment code
Treatment	Treatment_Name	VAR CHAR (30)				NOT NULL			Treatment name

Appendix - SQL Statements

DDL Statements

```
DROP TABLE IF EXISTS Consists_of;
DROP TABLE IF EXISTS Physician_order;
DROP TABLE IF EXISTS Diagnoses;
DROP TABLE IF EXISTS Assesses;
DROP TABLE IF EXISTS Employs;
DROP TABLE IF EXISTS Consumes;
DROP TABLE IF EXISTS Patient;
DROP TABLE IF EXISTS Bed;
DROP TABLE IF EXISTS Care_Center;
DROP TABLE IF EXISTS Nurse;
DROP TABLE IF EXISTS Treatment;
DROP TABLE IF EXISTS Item;
DROP TABLE IF EXISTS Physician;
```

```
CREATE TABLE IF NOT EXISTS Physician (
    Physician_ID SMALLINT(1) NOT NULL AUTO_INCREMENT,
    Physician_Name VARCHAR(30) NOT NULL,
    PRIMARY KEY (Physician_ID)
);
```

```
CREATE TABLE IF NOT EXISTS Item (
    Item_No SMALLINT(1) NOT NULL AUTO_INCREMENT,
    Item_Desc TEXT(2048),
    Item_Cost DECIMAL(10),
    PRIMARY KEY (Item_No)
);
```

```
CREATE TABLE IF NOT EXISTS Treatment (
    Treatment_Code SMALLINT(1) NOT NULL,
    Treatment_Name VARCHAR(30) NOT NULL,
    PRIMARY KEY (Treatment_Code)
);
```

```
CREATE TABLE IF NOT EXISTS Nurse (
    Nurse_No SMALLINT(1) NOT NULL AUTO_INCREMENT,
    Nurse_Name VARCHAR(30) NOT NULL,
    PRIMARY KEY (Nurse_No)
);
```

```

CREATE TABLE IF NOT EXISTS Care_Center(
    CC_id          SMALLINT(1)    NOT NULL,
    CC_Name        VARCHAR(30) NOT NULL,
    Nurse_in_charge SMALLINT(1) NOT NULL,
    PRIMARY KEY (CC_id)
);

CREATE TABLE IF NOT EXISTS Bed (
    Room_No        SMALLINT(1)    NOT NULL,
    Bed_No         SMALLINT(1)    NOT NULL,
    CC_id          SMALLINT(1)    NOT NULL,
    PRIMARY KEY (Room_No, Bed_No),
    FOREIGN KEY (CC_id)
        REFERENCES Care_Center(CC_id)
        ON DELETE RESTRICT
        ON UPDATE CASCADE
);

CREATE TABLE IF NOT EXISTS Patient (
    Patient_MRN    SMALLINT(1)    NOT NULL,
    Patient_Name   VARCHAR(30)    NOT NULL,
    Room_No        SMALLINT(1)    NOT NULL,
    Bed_No         SMALLINT(1)    NOT NULL,
    PRIMARY KEY (Patient_MRN),
    FOREIGN KEY (Room_No, Bed_No)
        REFERENCES Bed(Room_No, Bed_No)
        ON DELETE RESTRICT
        ON UPDATE CASCADE
);

CREATE TABLE IF NOT EXISTS Consumes (
    Item_No        SMALLINT(1)    NOT NULL,
    Patient_MRN    SMALLINT(1)    NOT NULL,
    Date_consumed  DATETIME       NOT NULL,
    Qty           SMALLINT(1)    NOT NULL,
    PRIMARY KEY (Item_No, Patient_MRN),
    FOREIGN KEY (Item_no)
        REFERENCES Item(Item_no)
        ON DELETE RESTRICT
        ON UPDATE CASCADE,
    FOREIGN KEY (Patient_MRN)
        REFERENCES Patient(Patient_MRN)
        ON DELETE RESTRICT
        ON UPDATE CASCADE
);

```

```

CREATE TABLE IF NOT EXISTS Employs (
  CC_id SMALLINT(1)      NOT NULL,
  EMP_No SMALLINT(1)     NOT NULL,
  Hours TINYINT(1)      NOT NULL,
  PRIMARY KEY (CC_id, EMP_no),
  FOREIGN KEY (CC_id)
    REFERENCES Care_Center(CC_id)
    ON DELETE RESTRICT
    ON UPDATE CASCADE,
  FOREIGN KEY (EMP_No)
    REFERENCES Nurse(Nurse_No)
    ON DELETE RESTRICT
    ON UPDATE CASCADE
);

```

```

CREATE TABLE IF NOT EXISTS Assesses (
  Visit_ID  SMALLINT(1) NOT NULL,
  Date      DATETIME   NOT NULL,
  Weight    SMALLINT(1) NOT NULL,
  BP        VARCHAR(7) NOT NULL,
  EMP_No    SMALLINT(1) NOT NULL,
  Patient_MRN SMALLINT(1) NOT NULL,
  PRIMARY KEY (Visit_ID),
  FOREIGN KEY (EMP_No)
    REFERENCES Nurse(Nurse_No)
    ON DELETE RESTRICT
    ON UPDATE CASCADE,
  FOREIGN KEY (Patient_MRN)
    REFERENCES Patient(Patient_MRN)
    ON DELETE RESTRICT
    ON UPDATE CASCADE
);

```

```

CREATE TABLE IF NOT EXISTS Diagnoses (
  Patient_MRN  SMALLINT(1)      NOT NULL,
  Physician_ID SMALLINT(1)      NOT NULL,
  Diag_Date    DATETIME         NOT NULL,
  Diag_code    SMALLINT(1)      NOT NULL,
  Diag_Name    VARCHAR(30)      NOT NULL,
  PRIMARY KEY (Patient_MRN, Physician_ID),
  FOREIGN KEY (Patient_MRN)
    REFERENCES Patient(Patient_MRN)
    ON DELETE RESTRICT

```

```

        ON UPDATE CASCADE,
FOREIGN KEY (Physician_ID)
        REFERENCES Physician(Physician_ID)
        ON DELETE RESTRICT
        ON UPDATE CASCADE
);

```

```

CREATE TABLE IF NOT EXISTS Orders (
    Physician_ID SMALLINT(1) NOT NULL,
    Order_DayTime DATETIME NOT NULL,
    Patient_MRN SMALLINT(1) NOT NULL,
    Order_ID SMALLINT(1) NOT NULL,
    PRIMARY KEY (Order_ID),
    FOREIGN KEY (Patient_MRN)
        REFERENCES Patient(Patient_MRN)
        ON DELETE RESTRICT
        ON UPDATE CASCADE,
    FOREIGN KEY (Physician_ID)
        REFERENCES Physician(Physician_ID)
        ON DELETE RESTRICT
        ON UPDATE CASCADE
);

```

```

CREATE TABLE IF NOT EXISTS Consists_Of (
    Order_ID SMALLINT(1) NOT NULL,
    Treatment_Code SMALLINT(1) NOT NULL,
    Treatment_Date DATE NOT NULL,
    Treatment_Time TIME NOT NULL,
    Result VARCHAR(30) NOT NULL,
    PRIMARY KEY (Order_ID, Treatment_Code),
    FOREIGN KEY (Order_ID)
        REFERENCES Orders(Order_ID)
        ON DELETE RESTRICT
        ON UPDATE CASCADE,
    FOREIGN KEY (Treatment_Code)
        REFERENCES Treatment(Treatment_Code)
        ON DELETE RESTRICT
        ON UPDATE CASCADE
);

```

DQL Statements

1. The database should allow nurses to be able to view which patients are in which rooms.

```
SELECT Patient_name, Room_No
FROM Patient
WHERE Room_no IN (SELECT Room_no FROM Bed);
```

2. In case a doctor is needed for a specific case, nurses should be able to access the doctor's information (ID number 1000 is used as an example).

```
SELECT *
FROM Physician
WHERE Physician_ID=1000;
```

3. Allow physicians to see what treatments have been offered to patients by fellow physicians.

```
SELECT * FROM Treatment
INNER JOIN Consists_Of USING(Treatment_Code)
INNER JOIN Orders USING(Order_ID)
INNER JOIN Patient USING(Patient_MRN)
INNER JOIN Physician USING(Physician_ID)
;
```

4. Nurses and physicians need to access patient usage of items.

```
SELECT Item_no, Qty, Patient_Name
FROM Consumes
INNER JOIN Patient USING(Patient_MRN)
;
```

5. Allows nurses and physicians to update which nurse is working in which care center.

```
SELECT CC_id, EMP_No
FROM Employs
GROUP BY CC_id;
```

DML Statement Updates

1. Change patient medical history if needed. Specifically, adding records of diagnosis.
 INSERT INTO Diagnoses VALUES (31755, 1000, '2023-12-06 9:45:24', 2456, 'Strep throat');

2. Updates physician and nurse hospital information.
 UPDATE Physician
 SET Physician_name = 'New Name'
 WHERE Physician_Id = 'desired_physician_Id';

 UPDATE Nurse
 SET Nurse_name = 'New Name'
 WHERE Nurse_no = 'desired_Nurse_no';

3. Update beds available in each care center.
 UPDATE Bed
 SET CC_id = 'new_CC_Id_or_null'
 WHERE (Room_No, Bed_No) = ('which_room','which_bed');

4. Updates patient room information in case of transfers or referrals.
 UPDATE Bed
 SET CC_id = 'new_CC_id'
 WHERE Room_no = (
 SELECT Room_no
 FROM Patient
 WHERE Patient_MRN = 'desired_patient_mrn'
)
 ;

5. Allows physicians to edit which and how many patients they are taking care of.
 UPDATE Assesses
 SET EMP_No = 5802
 WHERE Patient_MRN = 19864;

DML Statements for Populating the Tables

-- Physician Table --

```
INSERT INTO Physician VALUES (1000, 'Tom Foolery');
INSERT INTO Physician VALUES (2807, 'Giuseppe Panini');
INSERT INTO Physician VALUES (2678, 'Anita Break');
INSERT INTO Physician VALUES (5780, 'Grace Less');
INSERT INTO Physician VALUES (3209, 'Gwendolina Moth');
```

-- Item Table --

```
INSERT INTO Item VALUES (9863, 'Penicillin, 10 day dose', 10.99);
INSERT INTO Item VALUES (2549, 'Tetanus vaccine', 57.95);
INSERT INTO Item VALUES (8767, 'Rabies vaccine', 62.95);
INSERT INTO Item VALUES (3247, 'Absorbable sutures', 102.78);
INSERT INTO Item VALUES (2878, 'Bandage', 5.20);
INSERT INTO Item VALUES (4567, 'Saline IV', 67.78);
INSERT INTO Item VALUES (2578, 'Epidural', 1026.16);
INSERT INTO Item VALUES (6377, 'Cast', 1018.36);
```

-- Treatment Table --

```
INSERT INTO Treatment VALUES (6899, 'Stitches');
INSERT INTO Treatment VALUES (7298, 'Blood transfusion');
INSERT INTO Treatment VALUES (2890, 'Antibiotics');
INSERT INTO Treatment VALUES (3688, 'Appendectomy');
INSERT INTO Treatment VALUES (4639, 'Chemotherapy');
```

-- Nurse Table --

```
INSERT INTO Nurse VALUES (1436, 'Ella Smiley');
INSERT INTO Nurse VALUES (5802, 'Gary Da Snail');
INSERT INTO Nurse VALUES (2046, 'Laura Rogue');
INSERT INTO Nurse VALUES (9072, 'Perry Perkins');
INSERT INTO Nurse VALUES (9679, 'Grissila Bean');
INSERT INTO Nurse VALUES (7535, 'Jerry Greene');
INSERT INTO Nurse VALUES (8862, 'Melinda Barks');
INSERT INTO Nurse VALUES (5642, 'Emilia Brown');
```

-- Care Center Table --

```
INSERT INTO Care_Center VALUES (7580, 'Oncology', 1436);
INSERT INTO Care_Center VALUES (1462, 'Labor and Delivery', 9679);
INSERT INTO Care_Center VALUES (2672, 'Intensive Care Unit', 2046);
INSERT INTO Care_Center VALUES (8786, 'Cardiology', 8862);
INSERT INTO Care_Center VALUES (3674, 'Pediatrics', 5642);
```

-- Bed Table --

```
INSERT INTO Bed VALUES (0220, 0118, 7580);
INSERT INTO Bed VALUES (0220, 0119, 7580);
INSERT INTO Bed VALUES (0221, 0120, 7580);
INSERT INTO Bed VALUES (0221, 0121, 7580);
```

```
INSERT INTO Bed VALUES (0261, 0128, 1462);
INSERT INTO Bed VALUES (0262, 0129, 1462);
INSERT INTO Bed VALUES (0269, 0130, 1462);
INSERT INTO Bed VALUES (0270, 0140, 1462);
```

```
INSERT INTO Bed VALUES (0322, 0146, 2672);
INSERT INTO Bed VALUES (0323, 0147, 2672);
INSERT INTO Bed VALUES (0323, 0148, 2672);
INSERT INTO Bed VALUES (0324, 0149, 2672);
```

```
INSERT INTO Bed VALUES (0369, 0150, 8786);
INSERT INTO Bed VALUES (0369, 0151, 8786);
```

```
INSERT INTO Bed VALUES (0423, 0152, 3674);
INSERT INTO Bed VALUES (0424, 0153, 3674);
```

-- Patient Table --

```
INSERT INTO Patient VALUES (12753, 'Alivia Stein', 0261, 0128);
INSERT INTO Patient VALUES (27846, 'Amaranta Grady', 0220, 0118);
INSERT INTO Patient VALUES (30086, 'Roberta Randal', 0262, 0129);
INSERT INTO Patient VALUES (19864, 'Conleth Ainslie', 0220, 0119);
INSERT INTO Patient VALUES (31755, 'Samanta Lauchlan', 0323, 0147);
INSERT INTO Patient VALUES (30467, 'Marvyn Ansley', 0323, 0148);
INSERT INTO Patient VALUES (09487, 'Everett Mara', 0324, 0149);
INSERT INTO Patient VALUES (25667, 'Grace Lee', 0369, 0150);
INSERT INTO Patient VALUES (16845, 'Mark Smith', 0424, 0153);
```

-- Consumes Table --

```
INSERT INTO Consumes VALUES (2578, 12753, '2023-10-31 12:34:46', 1);
INSERT INTO Consumes VALUES (2578, 30086, '2023-09-24 22:16:14', 1);
INSERT INTO Consumes VALUES (3247, 09487, '2023-11-19 9:26:34', 1);
INSERT INTO Consumes VALUES (2878, 31755, '2023-12-01 8:10:04', 4);
INSERT INTO Consumes VALUES (8767, 30467, '2023-11-22 13:01:12', 1);
INSERT INTO Consumes VALUES (6377, 09487, '2023-12-3 15:52:58', 2);
```


-- Employs Table --

```
INSERT INTO Employs VALUES (7580, 1436, 40);
INSERT INTO Employs VALUES (1462, 5802, 26);
INSERT INTO Employs VALUES (7580, 9072, 35);
INSERT INTO Employs VALUES (2672, 7535, 21);
INSERT INTO Employs VALUES (1462, 9679, 40);
INSERT INTO Employs VALUES (2672, 2046, 40);
INSERT INTO Employs VALUES (8786, 8862, 40);
```

-- Assesses Table --

```
INSERT INTO Assesses VALUES (9369, '2023-10-31 9:25:57', 184, '120/79', 5802, 12753);
INSERT INTO Assesses VALUES (2567, '2023-10-14 13:34:51', 146, '118/80', 1436, 27846);
INSERT INTO Assesses VALUES (9952, '2023-09-24 19:24:28', 197, '120/80', 9679, 30086);
INSERT INTO Assesses VALUES (2160, '2023-11-24 11:11:11', 202, '117/75', 9072, 19864);
INSERT INTO Assesses VALUES (2578, '2023-11-30 14:59:24', 113, '114/67', 2046, 31755);
INSERT INTO Assesses VALUES (9654, '2023-11-22 12:13:44', 189, '125/84', 7535, 30467);
INSERT INTO Assesses VALUES (6798, '2023-12-2 16:36:28', 196, '111/74', 2046, 09487);
```

-- Diagnoses --

```
INSERT INTO Diagnoses VALUES (27846, 1000, '2023-10-31 7:46:42', 9289, 'Lymphoma');
INSERT INTO Diagnoses VALUES (19864, 1000, '2023-12-03 9:14:19', 5285, 'Sarcoma');
INSERT INTO Diagnoses VALUES (31755, 2807, '2023-11-30 14:59:24', 9379, 'Traumatic brain injury');
INSERT INTO Diagnoses VALUES (30467, 5780, '2023-11-22 12:13:44', 2637, 'Animal bite');
INSERT INTO Diagnoses VALUES (09487, 2678, '2023-12-03 14:45:22', 3436, 'Broken leg and arm');
```

-- Orders --

```
INSERT INTO Orders VALUES (1000, '2023-10-31 8:07:17', 27846, 2674);
INSERT INTO Orders VALUES (1000, '2023-12-03 9:24:39', 19864, 1849);
INSERT INTO Orders VALUES (2678, '2023-12-06 15:32:39', 25667, 9368);
INSERT INTO Orders VALUES (5780, '2023-12-07 16:33:36', 16845, 2683);
INSERT INTO Orders VALUES (2807, '2023-12-13 23:59:59', 09487, 8690);
```

-- Consists_Of --

INSERT INTO Consists_Of VALUES (2674, 4639, '2023-11-09', '9:15:48', 'Decrease in tumor size');

INSERT INTO Consists_Of VALUES (1849, 4639, '2023-12-05', '10:37:30', 'Decrease in tumor size');

INSERT INTO Consists_Of VALUES (9368, 6899, '2023-12-06', '16:25:42', 'Closed wound, bleeding stopped');

INSERT INTO Consists_Of VALUES (2683, 3688, '2023-12-07', '19:24:40', 'Appendix removed');

INSERT INTO Consists_Of VALUES (8690, 2890, '2023-12-14', '11:52:30', '10 day prescription');