Project Final Report

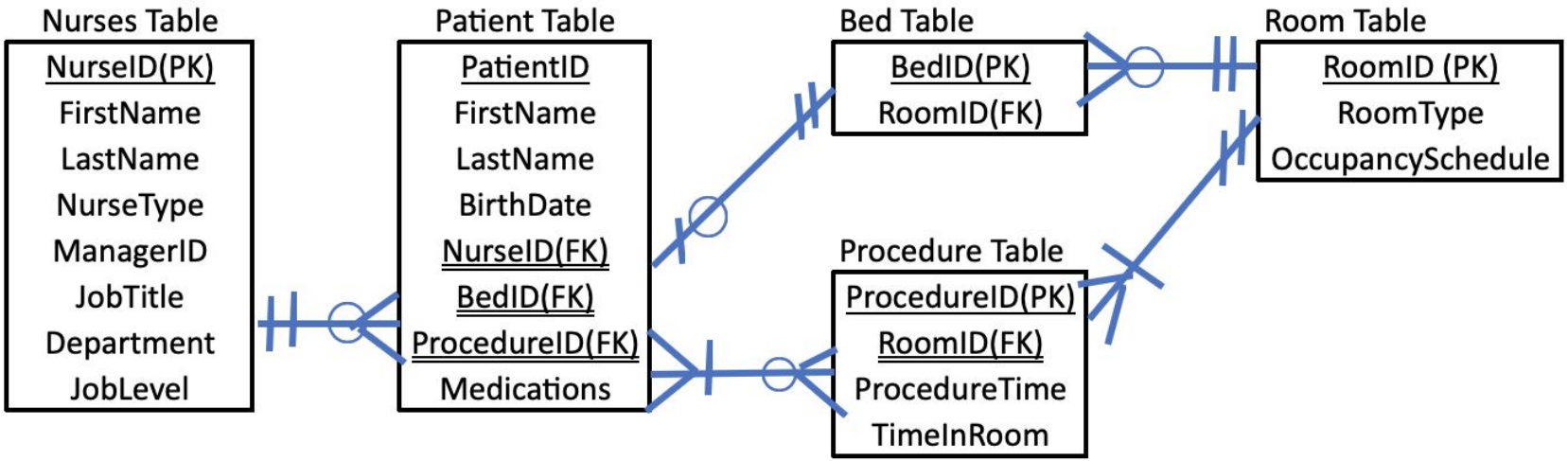
Background

The client industry we focused on is the healthcare industry, specifically all the data needed to manage patients. The reason for our choosing of the healthcare industry is because with the pandemic, it is very prevalent in recent news.

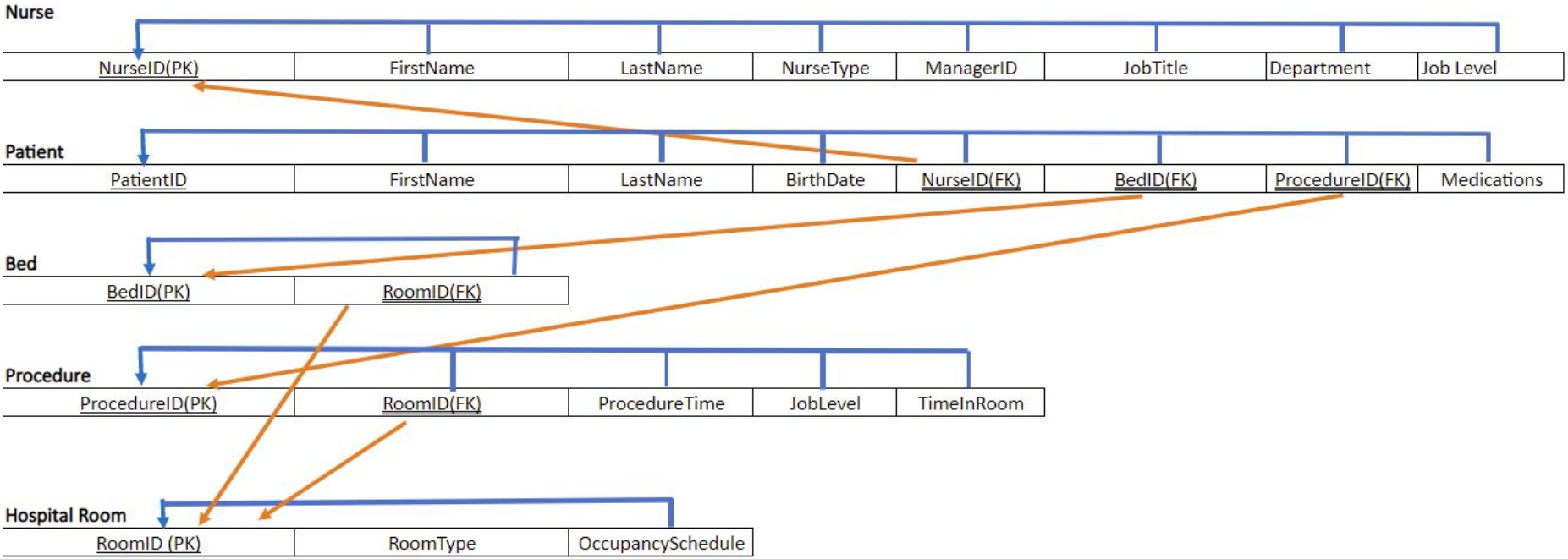
The status of this project is complete. We have five tables in this database, with each table having 20 or more rows of data. The tables we created are:

- Patient Table
- Nurse Table
- Procedure Table
- Bed Table
- Hospital Room Table

ERD Diagram


Nurses Table
NurseID(PK)
FirstName
LastName
NurseType
ManagerID
JobTitle
Department
JobLevel
Patient Table
PatientID
FirstName
LastName
BirthDate
NurseID(FK)
BedID(FK)
ProcedureID(FK)
Medications
Bed Table
BedID(PK)
RoomID(FK)
Room Table
RoomID (PK)
RoomType
OccupancySchedule
Procedure Table
ProcedureID(PK)
RoomID(FK)
ProcedureTime
TimeInRoom

Relational Data Model: Relational Schema



Database Implementation

```
# Procedure Table
CREATE TABLE ProcedureTable (
      ProcedureID                  VARCHAR(5)       PRIMARY KEY,
      RoomID                       VARCHAR(5),
      ProcedureTime          VARCHAR(5),
      JobLevel                     VARCHAR(5),
      TimeinRoom             VARCHAR(5),
      FOREIGN KEY      (RoomID) REFERENCES
HospitalRoomTable(RoomID)
);

# Bed Table
CREATE TABLE BedTable (
      BedID             VARCHAR(5)       PRIMARY KEY,
      RoomID                 VARCHAR(5),
      FOREIGN KEY      (RoomID) REFERENCES
HospitalRoomTable(RoomID)
);

CREATE TABLE PatientTable (
      PatientID         VARCHAR(10)           PRIMARY KEY,
      FName             VARCHAR(30),
      LName             VARCHAR(30),
      BirthDate         DATE,
      NurseID                VARCHAR(10),
      BedID             VARCHAR(5),
      ProcedureID            VARCHAR(5),
      Medications            VARCHAR(50),
      FOREIGN KEY (NurseID) REFERENCES NurseTable(NurseID),
      FOREIGN KEY      (BedID) REFERENCES BedTable(BedID),
    FOREIGN KEY (ProcedureID) REFERENCES
ProcedureTable(ProcedureID)
    );
```

```
# Insert Nurse Table's Data
INSERT INTO NurseTable(NurseID, FName, LName, NurseType,
ManagerID, JobTitle, Department, JobLevel) VALUES ('5820',
'Addison', 'Hudson', 'Labor & Delivery', '5314', 'Registered
Nurse', 'Surgery', '10');
INSERT INTO NurseTable(NurseID, FName, LName, NurseType,
ManagerID, JobTitle, Department, JobLevel) VALUES ('3650',
'Ryan','Reynolds','Operating Room', '5314', 'Registered Nurse',
'Anesthesiology', '9');
INSERT INTO NurseTable(NurseID, FName, LName, NurseType,
ManagerID, JobTitle, Department, JobLevel) VALUES ('1234',
'Blake', 'Lively', 'Emeregency Room', '5820', 'Nurse
Practitioner', 'Geriatric', '7');
INSERT INTO NurseTable(NurseID, FName, LName, NurseType,
ManagerID, JobTitle, Department, JobLevel) VALUES ('6586', 'Tom',
'Holland', 'ICU', '5820', 'Certified Nursing Assistant',
'Geriatric', '9');
INSERT INTO NurseTable(NurseID, FName, LName, NurseType,
ManagerID, JobTitle, Department, JobLevel) VALUES ('2390',
'Kate', 'Sharma', 'Labor & Delivery', '5820', 'Nurse
Practitioner', 'Critical Care', '8');
INSERT INTO NurseTable(NurseID, FName, LName, NurseType,
ManagerID, JobTitle, Department, JobLevel) VALUES ('2876',
'Stacey', 'Jones' ,'Oncology', '5314', 'Registered Nurse',
'Geriatric', '7');
INSERT INTO NurseTable(NurseID, FName, LName, NurseType,
ManagerID, JobTitle, Department, JobLevel) VALUES ('5347',
'Regina', 'Ritchie', 'Operating Room', '3541', 'Registered
Nurse', 'Surgery', '10');
```

Queries with SQL

1. We have an emergency patient who needs a surgery that requires a level 10 employee, the highest level or a nurse who works in the Emergency Room. What nurses are able to assist on this procedure?

```
SELECT NurseTable.NurseID, NurseTable.FName, NurseTable.LName, NurseTable.NurseType, NurseTable.JobLevel
FROM NurseTable
WHERE NurseTable.JobLevel = 10 OR NurseTable.NurseType = "Emergency Room"
```

2. The hospital is about to have an influx of patients that will all require beds. What beds are not being used and are available to the patients coming in?

```
SELECT BedTable.BedID, BedTable.RoomID
FROM BedTable
LEFT JOIN PatientTable ON BedTable.BedID = PatientTable.BedID
WHERE PatientTable.BedID IS NULL
```

Queries with SQL

3. The hospital is considering building a new surgery room, but does not know if there is a demand for more surgeries. To help the administrators make the decision, create a list of all Patients and their scheduled procedures. Order from least amount of time for a procedure to most.

```
SELECT ProcedureTable.ProcedureTime, PatientTable.PatientID, PatientTable.FName, PatientTable.LName
FROM ProcedureTable, PatientTable
WHERE ProcedureTable.ProcedureID = PatientTable.ProcedureID
ORDER BY ProcedureTable.ProcedureTime
```

4. The hospital has a policy that every nurse needs to have at least one patient but not more than 2 at a time. The hospital has asked to create a list of nurses and the number of patients assigned to each nurse to check their compliance with this policy.

```
SELECT PatientTable.NurseID, NurseTable.FName, NurseTable.LName, count(PatientTable.NurseID) AS NumPatients
FROM PatientTable
LEFT JOIN NurseTable ON NurseTable.NurseID = PatientTable.NurseID
GROUP BY PatientTable.NurseID
```

Queries with SQL

5. New Regulations came out stating that patients born before 01-01-1999 or patients who take medication #505 must take a new medication. To comply with this new regulation, the hospital has asked to create a list of these patients.

```
SELECT PatientTable.PatientID, PatientTable.FName, PatientTable.LName
FROM PatientTable
WHERE PatientTable.BirthDate < '1999-01-01' OR PatientTable.Medications = 505
```

#6 Procedures that last longer than 120 minutes require special accommodations from the anesthesiologist and he needs to further review each patient's chart. The anesthesiologist has asked for a list of patients with upcoming surgeries that have a procedure time longer than 120 minutes.

```
SELECT ProcedureTable.ProcedureTime, PatientTable.PatientID, PatientTable.FName, PatientTable.LName, PatientTable.Medications
FROM ProcedureTable, PatientTable
WHERE ProcedureTable.ProcedureID = PatientTable.ProcedureID AND ProcedureTable.ProcedureTime >= '120'
ORDER BY ProcedureTable.ProcedureTime;
```

Queries with SQL

#7. We have a group of nursing students focusing on geriatrics that want to shadow our nurse practitioners. The group of students have asked what nurse practitioners who focus on geriatrics are in the hospital so they can get them in contact with students for a possible mentorship opportunity.

```
SELECT NurseTable.FName, NurseTable.LName, NurseTable.JobTitle, NurseTable.Department
FROM NurseTable
WHERE JobTitle = "Nurse Practitioner" AND Department = "Geriatric";
```

#8 The hospital pharmacy just released a policy that patients who take certain classifications of medications will require extra monitoring from nurses. The hospital asked to classify all patients into different categories based on the medication they take.

```
#8. Grouping Patients into different catagories based on their medication
SELECT PatientTable.FName, PatientTable.LName, PatientTable.Medications, 'GSL Medication' AS MedicationType
FROM PatientTable
WHERE PatientTable.Medications <= 100
UNION
SELECT PatientTable.FName, PatientTable.LName, PatientTable.Medications, 'Pharmacy Medicines' AS MedicationType
FROM PatientTable
WHERE PatientTable.Medications <= 200
AND PatientTable.Medications > 100
UNION
SELECT PatientTable.FName, PatientTable.LName, PatientTable.Medications, 'Perscription Medication' AS MedicationType
FROM PatientTable
WHERE PatientTable.Medications <= 400
AND PatientTable.Medications > 200
UNION
SELECT PatientTable.FName, PatientTable.LName, PatientTable.Medications, 'Controlled Drug' AS MedicationType
FROM PatientTable
WHERE PatientTable.Medications <= 600
AND PatientTable.Medications > 400
```

Queries with SQL

9 The finance department wants to know what procedures are coming up that will bring in a large cash flow for the hospital. They have asked for a list of patients getting expensive procedures and labeling them as expensive under a new column, procedure cost.

```
SELECT PatientTable.FName, PatientTable.LName, ProcedureTable.ProcedureID, ProcedureTable.JobLevel, 'Expensive' AS ProcedureCost
FROM PatientTable
LEFT JOIN ProcedureTable ON PatientTable.ProcedureID = ProcedureTable.ProcedureID
WHERE ProcedureTable.JobLevel >= 8
ORDER BY ProcedureTable.ProcedureID;
```

10 a new policy from the payroll team came out noting that nurses will get summer bonuses based on their seniority level. The payroll team wants to create a new column that segments our nurses by seniority.

```
SELECT NurseTable.FName, NurseTable.LName, NurseTable.JobLevel, 'Entry Level Nurse' AS NurseSeniority
FROM NurseTable
WHERE NurseTable.JobLevel = 7
UNION
SELECT NurseTable.FName, NurseTable.LName, NurseTable.JobLevel, 'Mid-Level Nurse' AS NurseSeniority
FROM NurseTable
WHERE NurseTable.JobLevel = 8
UNION
SELECT NurseTable.FName, NurseTable.LName, NurseTable.JobLevel, 'Upper Level Nurse' AS NurseSeniority
FROM NurseTable
WHERE NurseTable.JobLevel = 9
UNION
SELECT NurseTable.FName, NurseTable.LName, NurseTable.JobLevel, 'Head Nurse' AS NurseSeniority
FROM NurseTable
WHERE NurseTable.JobLevel = 10
```