



Healthcare United Patient Portal



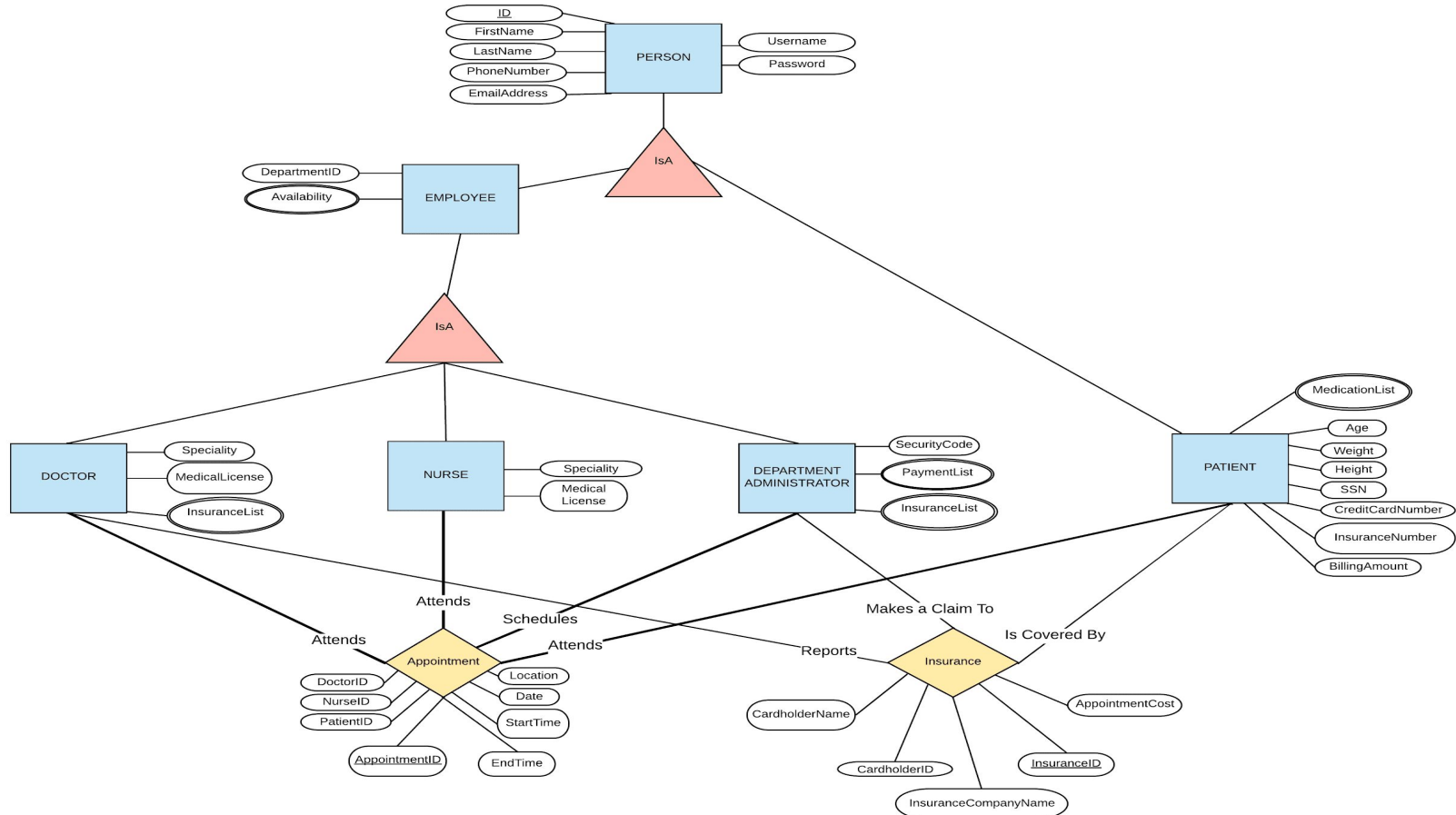
Developers:
Daeun Park,
Thomas Vetere,
Rebecca Hassett



What is the Healthcare United Patient Portal?

A database application that connects doctors, nurses, patients, and department administrators to ensure personalized patient care. It assists in creating appointments, viewing personnel information, and paying bills.

Hospital Web Portal



Mapping ER to SQL Tables:

```
CREATE TABLE hospital.Person (  
    ID INT UNSIGNED NOT NULL,  
    FirstName VARCHAR(20) NOT NULL,  
    LastName VARCHAR(20) NOT NULL,  
    PhoneNumber CHAR(10) NOT NULL,  
    EmailAddress VARCHAR(30),  
    Username VARCHAR(20) NOT NULL,  
    UserPassword VARCHAR(20) NOT NULL,  
    PRIMARY KEY(ID),  
    UNIQUE(ID, Username)  
)  
  
CREATE TABLE hospital.Employee (  
    EmployeeID INT UNSIGNED NOT NULL,  
    DepartmentID TINYINT UNSIGNED NOT NULL,  
    PRIMARY KEY(EmployeeID),  
    FOREIGN KEY(EmployeeID) REFERENCES Person(ID)  
)
```

```
CREATE TABLE Doctor (  
    DoctorID INT UNSIGNED NOT NULL,  
    Specialty VARCHAR(20),  
    MedicalLicense VARCHAR(20) NOT NULL,  
    FOREIGN KEY(DoctorID) REFERENCES  
Employee(EmployeeID)  
)
```

```
CREATE TABLE Nurse (  
    NurseID INT UNSIGNED NOT NULL,  
    Specialty VARCHAR(20),  
    MedicalLicense VARCHAR(20) NOT NULL,  
    FOREIGN KEY (NurseID) REFERENCES  
Employee(EmployeeID)  
)
```

```
CREATE TABLE DepartmentAdmin (  
    SecurityCode INT UNSIGNED NOT NULL,  
    DepartmentAdminID INT UNSIGNED NOT NULL,  
    FOREIGN KEY (DepartmentAdminID) REFERENCES  
Employee(EmployeeID)  
)
```

```
CREATE TABLE Patient (  
    PatientID INT UNSIGNED NOT NULL,  
    Age INT UNSIGNED NOT NULL,  
    Weight FLOAT(4, 1) UNSIGNED NOT NULL,  
    Height FLOAT(3, 1) UNSIGNED NOT NULL,  
    SSN CHAR(9),  
    CreditCardNumber VARCHAR(20) NOT NULL,  
    BillingAmount FLOAT(10,2) UNSIGNED,  
    InsuranceNumber INT UNSIGNED NOT NULL,  
    MedicationList VARCHAR(20),  
    FOREIGN KEY(PatientID) REFERENCES Person(ID),  
    CHECK(Weight > 0),  
    CHECK(Height > 0)  
)
```

```
CREATE TABLE Insurance(  
    InsuranceID INT UNSIGNED NOT NULL,  
    InsuranceCompanyName VARCHAR(20) NOT NULL,  
    CardholderID INT UNSIGNED NOT NULL,  
    CardholderName VARCHAR(20) NOT NULL,  
    AppointmentCost FLOAT(10,2) UNSIGNED NOT NULL,  
    DepartmentAdminID INT UNSIGNED NOT NULL,  
    Primary Key(InsuranceID),  
    FOREIGN KEY(CardHolderID) REFERENCES Patient(PatientID),  
    FOREIGN KEY(DepartmentAdminID) REFERENCES  
DepartmentAdmin(DepartmentAdminID),  
    UNIQUE (InsuranceID)
```

```
CREATE TABLE AccessCodes (  
    AccessCodes INT UNSIGNED NOT NULL  
)
```

```
CREATE TABLE Appointment (  
    AppointmentID INT UNSIGNED NOT NULL,  
    DoctorID INT UNSIGNED NOT NULL,  
    NurseID INT UNSIGNED NOT NULL,  
    PatientID INT UNSIGNED NOT NULL,  
    DepartmentAdminID INT UNSIGNED NOT NULL,  
    Location VARCHAR(20),  
    Date DATE,  
    StartTime TIME,  
    EndTime TIME,  
    PRIMARY KEY(AppointmentID),  
    FOREIGN KEY(DoctorID) REFERENCES Doctor(DoctorID),  
    FOREIGN KEY(NurseID) REFERENCES Nurse(NurseID),  
    FOREIGN KEY(PatientID) REFERENCES Patient(PatientID),  
    FOREIGN KEY(DepartmentAdminID) REFERENCES DepartmentAdmin(DepartmentAdminID),  
    UNIQUE(AppointmentID)  
)
```

Patient:

- Sign up
- Updating Personal Information
- Viewing Appointments
- Scheduling Appointments
- Cancelling Appointments
- Paying Bills

Transaction: Schedule Appointment

Before:

```
mysql> SELECT * FROM Appointment WHERE PatientID = 111;
```

| AppointmentID | DoctorID | NurseID | PatientID | DepartmentAdminID | Location | Date | StartTime | EndTime |
|---------------|----------|---------|-----------|-------------------|----------|------------|-----------|----------|
| 16 | 222 | 333 | 111 | 444 | SBU3 | 1998-06-06 | 11:12:12 | 43:21:56 |
| 33 | 222 | 333 | 111 | 444 | SBU2 | 2018-11-28 | 23:35:15 | 23:51:55 |

2 rows in set (0.01 sec)

After:

```
mysql> SELECT * FROM Appointment WHERE PatientID = 111;
```

| AppointmentID | DoctorID | NurseID | PatientID | DepartmentAdminID | Location | Date | StartTime | EndTime |
|---------------|----------|---------|-----------|-------------------|----------|------------|-----------|----------|
| 16 | 222 | 333 | 111 | 444 | SBU3 | 1998-06-06 | 11:12:12 | 43:21:56 |
| 33 | 222 | 333 | 111 | 444 | SBU2 | 2018-11-28 | 23:35:15 | 23:51:55 |
| 43 | 222 | 333 | 111 | 444 | SBU2 | 2018-11-30 | 01:18:58 | 01:48:58 |

3 rows in set (0.00 sec)

Transaction: Cancel Appointments

Before:

```
mysql> SELECT * FROM Appointment WHERE PatientID = 111;
```

| AppointmentID | DoctorID | NurseID | PatientID | DepartmentAdminID | Location | Date | StartTime | EndTime |
|---------------|----------|---------|-----------|-------------------|----------|------------|-----------|----------|
| 16 | 222 | 333 | 111 | 444 | SBU3 | 1998-06-06 | 11:12:12 | 43:21:56 |
| 33 | 222 | 333 | 111 | 444 | SBU2 | 2018-11-28 | 23:35:15 | 23:51:55 |
| 43 | 222 | 333 | 111 | 444 | SBU2 | 2018-11-30 | 01:18:58 | 01:48:58 |

After:

```
mysql> SELECT * FROM Appointment WHERE PatientID = 111;
```

| AppointmentID | DoctorID | NurseID | PatientID | DepartmentAdminID | Location | Date | StartTime | EndTime |
|---------------|----------|---------|-----------|-------------------|----------|------------|-----------|----------|
| 16 | 222 | 333 | 111 | 444 | SBU3 | 1998-06-06 | 11:12:12 | 43:21:56 |
| 43 | 222 | 333 | 111 | 444 | SBU2 | 2018-11-30 | 01:18:58 | 01:48:58 |

```
2 rows in set (0.00 sec)
```

| | | | | | | | | | |
|---|---------|---------|--------|-----|------------------|------------------|-----------------|----------------|---|
| -----+-----+-----+ | | | | | | | | | |
| PatientID | Age | Weight | Height | SSN | CreditCardNumber | BillingAmount | InsuranceNumber | MedicationList | |
| DoctorID | NurseID | AdminID | | | | | | | |
| +-----+-----+-----+-----+-----+-----+-----+-----+-----+ | | | | | | | | | |
| -----+-----+-----+ | | | | | | | | | |
| | 111 | 255 | 999.9 | 5.0 | 123456789 | 1111222233334444 | 200.00 | 0 | R |
| | 222 | 333 | 444 | | | | | | |

```

-----+-----+
| PatientID | Age | Weight | Height | SSN      | CreditCardNumber | BillingAmount | InsuranceNumber | MedicationList |
DoctorID | NurseID | AdminID |
-----+-----+-----+-----+-----+-----+-----+-----+-----+
-----+-----+
|      111 | 255 | 999.9 | 5.0 | 123456789 | 1111222233334444 | 100.00 | 0 | R |
|    222 |   333 |   444 |

```

Doctor/Nurse:

- Sign up
- Update Personal Information
- View Appointments



Transaction: Create New User [Doctor]

Before:

After:

```
mysql> SELECT * FROM DOCTOR;
```

| DoctorID | Specialty | MedicalLicense |
|----------|-----------|----------------|
| 222 | SPE2 | THISISLICENSE2 |
| 54321 | rr | rr |

```
2 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM DOCTOR;
```

| DoctorID | Specialty | MedicalLicense |
|----------|-----------|----------------|
| 222 | SPE2 | THISISLICENSE2 |
| 54321 | rr | rr |
| 104 | Oncology | MD |

```
3 rows in set (0.00 sec)
```

Department Administrator:

- Update Personal Information
 - Add Access Codes to System for New Patients, Doctors, and Nurses to Sign Up
 - View Appointments in Department
-

Transaction: Admin Adds Access Code

Before:

| AccessCodes |
|-------------|
| 54321 |
| 103 |
| 104 |
| 105 |
| 106 |
| 5554 |
| 5432 |
| 2221 |
| 9865 |

9 rows in set (0.01 sec)

After:

| AccessCodes |
|-------------|
| 54321 |
| 103 |
| 104 |
| 105 |
| 106 |
| 5554 |
| 5432 |
| 2221 |
| 9865 |
| 11112 |

10 rows in set (0.01 sec)

Database System Assumptions:

- Patients can schedule maximum of four appointments
- Employees cannot be patients themselves
- There exists at least one doctor, patient, nurse, and administrator
- Every patient carries insurance
- Every appointment costs \$200

Development Technologies:

For designing ER Diagram:

- LucidCharts

Database Query Language:

- MariaDB SQL

Application Language:

- Python 3

Application Framework:

- PyQt: Library for Developing Graphical User Interfaces

Contributions:

- Each group member contributed equally to designing and implementing the front end and back end of the project
- Focus:
 - Daeun: Designing Front End
 - Tom: Implementing Front End
 - Rebecca: Implementing Back End