# **Programming Assignment Unit 5**

Computer Science, University of the People

CS 2203-01 Databases 1 - AY2024-T3

Instructor, Irfan Rashid Thoker

March 5, 2024

## Building our hospital system database

For this assignment, we are tasked with continuing our work on the hospital data structure, this time focusing on building our database based on our work so far and E-R designs.

First lets build the actual commands to build our tables, relationships and keys.

CREATE TABLE Doctor (

  Doctor\_ID INT AUTO\_INCREMENT PRIMARY KEY,

  Name VARCHAR(255) NOT NULL,

  Phone VARCHAR(20),

  Specialty\_Number INT,

  FOREIGN KEY (Specialty\_Number) REFERENCES Specialty(Specialty\_Number)

);

CREATE TABLE Patient (

  Patient\_ID INT AUTO\_INCREMENT PRIMARY KEY,

  Name VARCHAR(255) NOT NULL,

  Phone VARCHAR(20),

  Email VARCHAR(255),

  Address VARCHAR(255),

  Date\_Added DATE NOT NULL

);

CREATE TABLE Appointment (

  Appointment\_ID INT AUTO\_INCREMENT PRIMARY KEY,

  Appointment\_Date DATE NOT NULL,

  Doctor\_ID INT NOT NULL,

  Patient\_ID INT NOT NULL,

  Blood\_Pressure VARCHAR(10),

  Pulse INT,

  Treatment\_Notes TEXT,

  FOREIGN KEY (Doctor\_ID) REFERENCES Doctor(Doctor\_ID),

  FOREIGN KEY (Patient\_ID) REFERENCES Patient(Patient\_ID)

);

CREATE TABLE Specialty (

  Specialty\_Number INT AUTO\_INCREMENT PRIMARY KEY,

  Specialty\_Name VARCHAR(255) NOT NULL

);

CREATE TABLE Medicine (

  Medicine\_ID INT AUTO\_INCREMENT PRIMARY KEY,

  Name VARCHAR(255) NOT NULL,

  Description TEXT,

  Cost DECIMAL(10, 2)

);

CREATE TABLE PatientMedicine (

  Patient\_ID INT,

  Medicine\_ID INT,

  FOREIGN KEY (Patient\_ID) REFERENCES Patient(Patient\_ID),

  FOREIGN KEY (Medicine\_ID) REFERENCES Medicine(Medicine\_ID),

  PRIMARY KEY (Patient\_ID, Medicine\_ID)

);

CREATE TABLE Allergy (

  Allergy\_ID INT AUTO\_INCREMENT PRIMARY KEY,

  Allergen VARCHAR(255) NOT NULL,

  Description TEXT

);

CREATE TABLE PatientAllergy (

  Patient\_ID INT,

  Allergy\_ID INT,

  FOREIGN KEY (Patient\_ID) REFERENCES Patient(Patient\_ID),

  FOREIGN KEY (Allergy\_ID) REFERENCES Allergy(Allergy\_ID),

  PRIMARY KEY (Patient\_ID, Allergy\_ID)

);

Points of interest:

* Doctor: The Doctor table includes an AUTO\_INCREMENT primary key and a foreign key that references the Specialty table. The phone number is allowed to be null if it is not provided.
* The Patient table has an AUTO\_INCREMENT primary key, and the Date\_Added field is marked as NOT NULL to ensure that it is mandatory.
* All appointments must be associated with a doctor and a patient, meaning that Doctor\_ID and Patient\_ID are NOT NULL and serve as foreign keys.
* Specialty, Contains unique specialties that a doctor can have, with an AUTO\_INCREMENT primary key.
* Medicine, A standalone table listing medicines which can be linked to patients through the PatientMedicine table.
* PatientMedicine, A go between table to allow the many-to-many relationship between Patient and Medicine. Both Patient\_ID and Medicine\_ID are part of a composite primary key.
* Allergy, This table lists different allergies that can be connected to a patient.
* PatientAllergy, Another go between table for the many-to-many relationship between Patient and Allergy, using a composite primary key of Patient\_ID and Allergy\_ID.

The following are screen shots of the generated tables:

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

## References

* Programming Assignment Unit 1-4
* Learning Guide Unit 1-5
* Sharma, N., Perniu, L., Chong, R. F., Iyer, A., Nandan, C., Mitea, A. C., Nonvinkere, M. & Danubianu, M. (2010). Database fundamentals. IBM Canada.  
  <https://my.uopeople.edu/pluginfile.php/1827130/mod_book/chapter/484065/Database_Fundamentals.pdf>
* Watt, A., & Eng, N. (2014). Database design,  2nd ed. BCcampus, BC Open Textbook Project.   
  <https://opentextbc.ca/dbdesign01/>  
  <https://my.uopeople.edu/pluginfile.php/1827130/mod_book/chapter/484065/Database-Design-2nd-Edition-1560272109.pdf>