1. Apply the simple BCNF procedure to define BCNF tables using the FD list Table 2. Show the result of each step in your analysis. For the final result, you should show the tables, columns, primary key of each table, foreign keys, and unique constraints. You do not need to provide CREATE TABLE statements.

Step 1: Arrange the FDs into groups by determinant

PatNo → PatAge, PatZip9

PatZip9 → PatCity

VisitNo → VisitDate, PatNo

ProvNo → ProvSpecialty, ProvEmail

VisitNo, ProvNo → Diagnosis

ProvEmail → ProvNo

Step 2: Define Tables. In the table list, the primary keys are underlined.

Patient (PatNo, PatAge, PatZip9)

FOREIGN KEY (PatZip9) REFERENCES Zip

Zip (PatZip9, PatCity)

Visit (VisitNo, VisitDate, PatNo)

FOREIGN KEY (PatNo) REFERENCES Patient

Provider (ProvNo, ProvSpecialty, ProvEmail)

Results (VisitNo, ProvNo, Diagnosis)

FOREIGN KEY (VisitNo) REFERENCES Visit

FOREIGN KEY (ProvNo) REFERENCES Provider

Step 3: Merge tables with the same columns. Patient and Zip tables can be merged as

nine-digit zip references only one city name (FK reference for PatZip9 also removed).

Patient (PatNo, PatAge, PatCity, PatZip9)

Visit (VisitNo, VisitDate, PatNo)

FOREIGN KEY (PatNo) REFERENCES Patient

Provider (ProvNo, ProvSpecialty, ProvEmail)

Results (VisitNo, ProvNo, Diagnosis)

FOREIGN KEY (VisitNo) REFERENCES Visit

FOREIGN KEY (ProvNo) REFERENCES Provider