**Problem:**

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.

|  |
| --- |
| PatNo → PatAge |
| PatZip9 → PatCity |
| VisitNo → VisitDate  PatNo → PatZip9  ProvNo → ProvSpecialty |
| VisitNo → PatNo |
| VisitNo, ProvNo → Diagnosis  ProvNo → ProvEmail  ProvEmail → ProvNo |

**Solution:**

***Step 1****: Arrange the remaining FDs into groups by determinant*

PatNoPatAge,PatZip9

PatZip9 PatCity

VisitNo  VisitDate, PatNo

ProvNo  Prov Specialty,ProvEmail

ProvEmail  ProvNo

VisitNo, ProvNo  Diagnosis

***Step 2****: For each FD group, make a table with the determinant as the primary key. In the table list, the primary keys are underlined.*

Patient (PatNo, PatAge, PatZip9)

FOREIGN KEY (PatZip9) REFERENCES Patient

PatientZip (PatZip9, PatCity)

Visitor (VisitNo, VisitDate, PatNo)

FOREIGN KEY (PatNo) REFERENCES Patient

Provision (ProvNo, ProvSpecialty, ProvEmail)

ProvisionEmail (ProvEmail, ProvNo)

FOREIGN KEY (ProvNo) REFERENCES Provision

Visit (VisitNo, ProvNo, Diagnosis)

FOREIGN KEY (VisitNo) REFERENCES Visitor

FOREIGN KEY (ProvNo) REFERENCES Provision

***Step 3****: Merge tables with same columns. UNIQUE constraints are added for VisitNo and ProvNo.*

Patient (PatNo, PatAge, PatZip9, PatCity)

FOREIGN KEY (PatZip9) REFERENCES PatientZip

Provision (ProvNo, ProvSpecialty, ProvEmail)

FOREIGN KEY (ProvEmail) REFERENCES ProvisionEmail

Visit (VisitNo, ProvNo,VisitDate,PatNo, Diagnosis)

FOREIGN KEY (PatNo) REFERENCES Patient