# Module 11

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **VisitNo** | **VisitDate** | **PatNo** | **PatAge** | **PatCity** | **PatZip** | **ProvNo** | **ProvSpecialty** | **Diagnosis** |
| V10021 | 2/13/2018 | P1 | 36 | Denver | 80217 | D1 | internist | Ear Infection |
| V10021 | 2/13/2018 | P1 | 36 | Denver | 80217 | D2 | NURSE PractiTIoner | INFLUENZA |
| V93030 | 2/20/2018 | P3 | 17 | Englewood | 80113 | D2 | NURSE PRACTITIONER | pregnancy |
| V82110 | 2/18/2018 | P2 | 60 | Boulder | 85932 | D3 | cardiologist | murmur |

1.

**Insertion anomaly** : Need to know details of visitor and provider to add a record because VisitNo and ProvNo are the composite primary keys.

**Updation anomaly** : To make a change to the Provider – Nurse Practitioner in one row, we must change all rows that have recurrence of this same provider.

**Deletion anomaly** : If we want to delete a Provider’s details, we also lose information about the corresponding Visitor and Patient.

2.

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

**Functional Dependencies :**

PatNo → PatAge, PatZip

PatZip → PatCity

VisitNo → PatNo, VisitDate

ProvNo→ ProvSpecialty, ProvEmail

ProvNo, VisitNo → Diagnosis

**BCNF** :

PatTable1 (​PatNo​, PatAge, PatZip)

FOREIGN KEY (PatZip) REFERENCES PatTable1­1

PatTable1­1​(PatZip​, PatCity)

PatTable2(​VisitNo​, PatNo,VisitDate)

FOREIGN KEY (PatNo) REFERENCES PatTable1

PatTable3 (​ProvNo​, ProvEmail, ProvSpecialty)

UNIQUE(ProvEmail)

PatTable4 (​ProvNo​, ​VisitNo,​​Diagnosis)

FOREIGN KEY (ProvNo​) REFERENCES PatTable3

FOREIGN KEY (VisitNo)​REFERENCES PatTable2

3.

**Student table:**

The dependencies between StdNo​and StdEmail ​violate BCNF.

Both StdNo​ and StdEmail​ are determinants

Student​(StdNo​, StdName, StdEmail, StdAddress, StdCity, StdState, StdZip )

UNIQUE(StdEmail)

**The Institution table:**

The dependencies between InstNo ​and InstName ​violate BCNF

Institution ​(InstNo​, InstName, InstMascot)

UNIQUE(InstName)

**The lender table:**

Lender ​(LenderNo​, LenderName)

UNIQUE(LenderName)

4.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **OrdNo** | **ItemNo** | **QtyOrd** | **CustNo** | **CustBal** | **CustDisc** | **ItemPrice** | **OrdDate** |
| O1 | I1 | 10 | C1 | 100 | 0.10 | 10 | 1/15/2018 |
| O1 | I2 | 10 | C1 | 100 | 0.10 | 20 | 1/15/2018 |
| O2 | I3 | 5 | C2 | 200 | 0.05 | 30 | 1/16/2018 |
| O2 | I4 | 10 | C2 | 200 | 0.05 | 40 | 1/16/2018 |
| o3 | I1 | 10 | C1 | 100 | 0.10 | 10 | 1/17/2018 |

OrdNo → ItemNo (1,2), (3,4)

OrdNo → QtyOrd (3,4)

OrdNo → CustNo None

OrdNo → CustBal None

OrdNo → CustDisc None

OrdNo → ItemPrice (1,2), (3,4)

OrdNo → OrdDate None