Assignment Normalization

1.

VisitNo	VisitDate	PatNo	PatAge	PatCity	PatZip	ProvNo	ProvSpecialty	Diagnosis
V10021	2/13/2018	P1	36	DENVER	80217	D1	INTERNIST	EAR INFECTIO
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

Comment[MM1]: Changed year to 2018

In the above table

When we want to insert new ProvSpeciality we have to know Patient who took that and when Patient visited and so on,which leads to *Insertion Anomaly*.

When we want to delete a Visit,we have to delete corresponding Diagnosis ,ProvSpeciality etc. Which leads to *Deletion Anomaly*.

When we have to update Patient age we have to update it everywhere in the table where there are patient visits which lead to Updation Anomaly

2.

PatNo → PatAge

PatZip9 → PatCity

VisitNo → VisitDate

PatNo → PatZip9

ProvNo → ProvSpecialty

VisitNo → PatNo

VisitNo, ProvNo → Diagnosis

ProvNo → ProvEmail

ProvEmail → ProvNo

Applying BCNF:-

Grouping

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

Merging:-

ProvNo -> ProvSpeciality,ProvEmail

Tables:

Patient(PatNo PrimaryKey,PatAge,PatZip9
ForeignKey(PatZip) references PatZip(PatZip))
PatZip(PatZip PrimaryKey,PatCity)
Prov(ProvNo PrimaryKey,ProvSpeciality,ProvEmail)
Visit(VisitNo PrimaryKey,VisitDate PrimaryKey,PatNo)
Diagnosis(VisitNo,ProvNo,Diagnosis
PrimaryKey(VisitNo,ProvNo),
ForeignKey(VisitNo) references Visit(VisitNo),
ForeignKey(ProvNo) references Prov(ProvNo))

3.

Student (StdNo, StdName, StdEmail, StdCity, StdState, StdZip)
Lender(LenderNo, LenderName)
Institution(InstNo, InstName, InstMascot)

After Normalization

Here Student table can be decomposed into

Student(Stdno,StdName,StdEmail)
StudentAddress(StdZip,StdCity,StdState)

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

Comment[MM2]: Changed year to 2018

Here OrdNo doesnot work as a key because
O1 has two different items I1 and I2 in rows 1 and 2.