**Problem 1:** You should identify insertion, update, and deletion anomalies in the sample rows of the big patient table shown in Table 1. You should identify one example of each type of anomaly. The combination of *VisitNo* and *ProvNo* is the only unique column(s) for the table.

Table 1: Sample Rows for the Big Patient Table

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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 |

**Solution:**

**Insertion Anomalies:**

It’s necessary to know VisitNo and ProvNo because primary key is the combination of these two.

**Update Anomalies:**

If we change ProvSpeciality where ProvNo is D2, two row have to be changed.

**Delete Anomalies:**

If we just delete the provider of D2, we’ll lose information of visit V10021.