Consider the un-normalized data presented in the below table having the following entity:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Patient** | | | | | | |
| **patientId** | **patientName** | **age** | **gender** | **phoneNumber** | **Email** | **password** |
| 123 | David Antony | 35 | Male | 9867463901  9067584738 | davide12@gmail.com | dgd123 |
| 134 | Preetha s | 25 | Female | 6985741236 | qwert@gmail.com | hjj211 |
| 123 | David Antony | 35 | Male | 9867463901 | gjej@gmail.com | dkjg123 |

**Problem Statement 1:** Inspect the above un-normalized Patient table, what do we notice about the attributes and the data values?

In the table the name column consists of both first name and last name. So we need to break the above both columns into firstName, lastName

**Problem Statement 2:** Identify the Non-Repeating group (Group in which there is only one row in the given scenario)

patientId,password,email,age

**Problem Statement 3:** Identify the Repeating group (Group in which there are more than one row in the given scenario)

### patientName,phoneNumber

### **Problem Statement 4: Create the tables in First Normal Form 1NF by removing the repeating groups**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Patient** | | | | | | | |
| **PatientID** | **patientFirstName** | **patientLastName** | **phoneNumber** | **age** | **Gender** | **patientEmail** | **password** |
| 123 | David | Antony | 867463901 | 35 | Male | de12@gmail.com | dgd123 |
| 134 | Preetha | s | 6985741236 | 25 | Female | qwert@gmail.com | hjj21 |
| 123 | David | Antony | 9867463901 | 35 | Male | gjej@gmail.com | dkjg123 |
| 123 | David | Antony | 9067584738 | 35 | Male | de12@gmail.com | dgd123 |

This table is in 1NF.

### **Problem Statement 5: Create the tables in Second Normal Form 2NF and remove the partial dependency**

the table is not in 2NF, since there exist partial dependency between non primary key attributes.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Test Report** | | | | | | |
| **testReportId** | **patientid** | **technicianId** | **testId** | **testName** | **Result** | **billingPrice** |
| 01 | 123 | 4567 | THR | Throat Swab | Normal | 200 |
| 08 | 345 | 3456 | HIV | ELISA | Positive | 500 |
| 09 | 456 | 4567 | HBSg | Hepatitis | Border | 250 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Test** | | | |
| **testId** | **TestNAme** | **Result** | **billingPrice** |
| THR | Throat Swab | Normal | 200 |
| HIV | ELISA | Positive | 500 |

### **Problem Statement 6: Create the tables in Third Normal Form 3NF and remove the transitive dependency**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Appointment** | | | | | | |
| **appointmentId** | **patientid** | **doctorId** | **testId** | **testName** | **timeSlot** | **billingPrice** |
| 01 | 123 | 4567 | THR | Throat Swab | 10-11 | 200 |
| 08 | 345 | 3456 | HIV | ELISA | 9.30-10.30 | 500 |
| 09 | 456 | 4567 | HBSg | Hepatitis | 1-4 | 250 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Appointment** | | | | |
| **appointmentId** | **patientid** | **doctorId** | **testId** | **timeSlot** |
| 01 | 123 | 4567 | THR | 10-11 |
| 08 | 345 | 3456 | HIV | 9.30-10.30 |
| 09 | 456 | 4567 | HBSg | 1-4 |

|  |  |  |
| --- | --- | --- |
| **Test** | | |
| **testId** | **TestNAme** | **billingPrice** |
| THR | Throat Swab | 200 |
| HIV | ELISA | 500 |

### 

So the tables are in the 3NF, Since there exist no transitive dependency between non primary key attributes.