Project Paper

In this project paper I’ll mention design of the project, what difficulties I am faced and my solutions to them.

In design phase, first I made a reading books and watching videos about translation of ER diagram to relational model and thought that how should I present relational model on the paper. While reading Database Management Systems text book, mentioned in course references, I learned how to interpret and translate stroke and arrowed lines. At the end of my research, I interpreted the ER diagram prepared by teaching assistant of the course and wrote it on a word processor for submitting.

Secondly, I reviewed all normalization forms that we learned and found functional dependencies as I shown blow;

* HasPhone=(pID,name,pNo)
  + pID ->pNo
  + name->pNo, pID

This is not in 3nf. Thus I broke this table into two 2 entity set. Phones(pID,pNo) and HasPhone(name,pID)

* HealthCenter=(name, adr)
  + name->adr

This is in 3nf.

* EmpWorksIn(empID,name,empName,sex,bday,salary)
  + name->empID
  + empID->empName,sex,bday,salary

This is not in 3nf. Thus I broke this table into 2 entity set. WorksInHC(empID,name) and Employee(empID ,empName,sex,bday,salary)

* EmpHasAddress(empID, adrID,adr)
  + empID->adrID,adr
  + adrID->adr

This is not in 3nf. Thus I broke this table into 2 entity set. EmpHasAddress(empID, adrID) and Address(adrID,adr)

* EmpHasPhone(empID, pID, pNo)
  + empID->pID,pNo
  + pID->pNo

This is not in 3nf. Thus I broke this table into 2 entity set. EmpHas Phone(empID, pID) and instead of create second table I used existing Phones(pID,pNo) table for it.

* Nurse(empID,speciality)
  + empID->speciality

This is in 3nf.

* Doctor(empID,speciality)
  + empID->speciality

This is in 3nf.

* Patients(patientID,name,sex,bday)
  + patientID-> name,sex,bday

This is in 3nf.

* DocsLooksPatients(patientID,empID)
  + patientID, empID -> patientID ,empID

This is in 3nf.

* PatientHasAddress(patientID, adrID, adr)
  + patientID->adrID,adr
  + adrID->adr

This is not in 3nf. Thus I broke this table into 2 entity set. PatientHasAddress(patientID, adrID) and instead of create second table I used existing Address(adrID,adr) table for it.

* PatientHasPhone(patientID, pID, pNo)
  + patientID ->pID,pNo
  + pID->pNo

This is not in 3nf. Thus I broke this table into 2 entity set. PatientHasPhone(patientID, pID) and instead of create second table I used existing Phones(pID,pNo) table for it.

* PatientHasMedicalRecord(patientID,recordNo,type,date)
  + patientID -> recordNo, type,date
  + recordNo ->type,date

This is not in 3nf. Thus I broke this table into 2 entity set. PatientHasMedicalRec(patientID,recordNo) and MedicalRecords(recordNo,type,date)

* Inpatient(patientID)
  + patientID->patientID

This is in 3nf.

* Outpatient(patientID)
  + patientID->patientID

This is in 3nf.

* VisitorsVisiting(patientID,name,relationship,bday)
  + patientID->name,relationship,bday
  + name->relationship,bday

This is not in 3nf. Thus I broke this table into 2 entity set. VisitorsVisiting(patientID,name) and Visitors(name,relationship,bday)

At the end of this normalization I redesign the relational model. It was efficient to use Phones and Address entity sets for multiple purposes.

Lastly, I implemented the interpreted relation schemas by using MySQL application. After interpreted and redesigned with normalizations, there was almost no obstacle. However, I have learned SQL in recent times. Thus, I had some problematic issues. I’ll mention this issues and write the solution I found to blow of each problems:

* Some entity sets could not be created.
  + It was because of dependencies and I created depended entity sets first and created depending entity later.
* Some of attribute size was not enough for insertion.
  + I recreate table with increased size of related attributes.
* I had difficulties with finding different data to insert database.
  + I found web sites that gives sample data.
* I had errors while adding foreign constraints.
  + First error was because of MySQL syntax, I corrected it.
  + Second error was because I forgot to make referred attribute to a primary key in referred table.
* I needed to insert at least 10 data for each entity set but some entity sets should be more than 10 record because of treatment of system.
  + I inserted more record for that entity sets. For example, Employee table depended by Nurses and Docs tables so I had to insert 20 record for Employee table.