

# Homework One: Schema Design for Biomedical Data Warehouse Presentation

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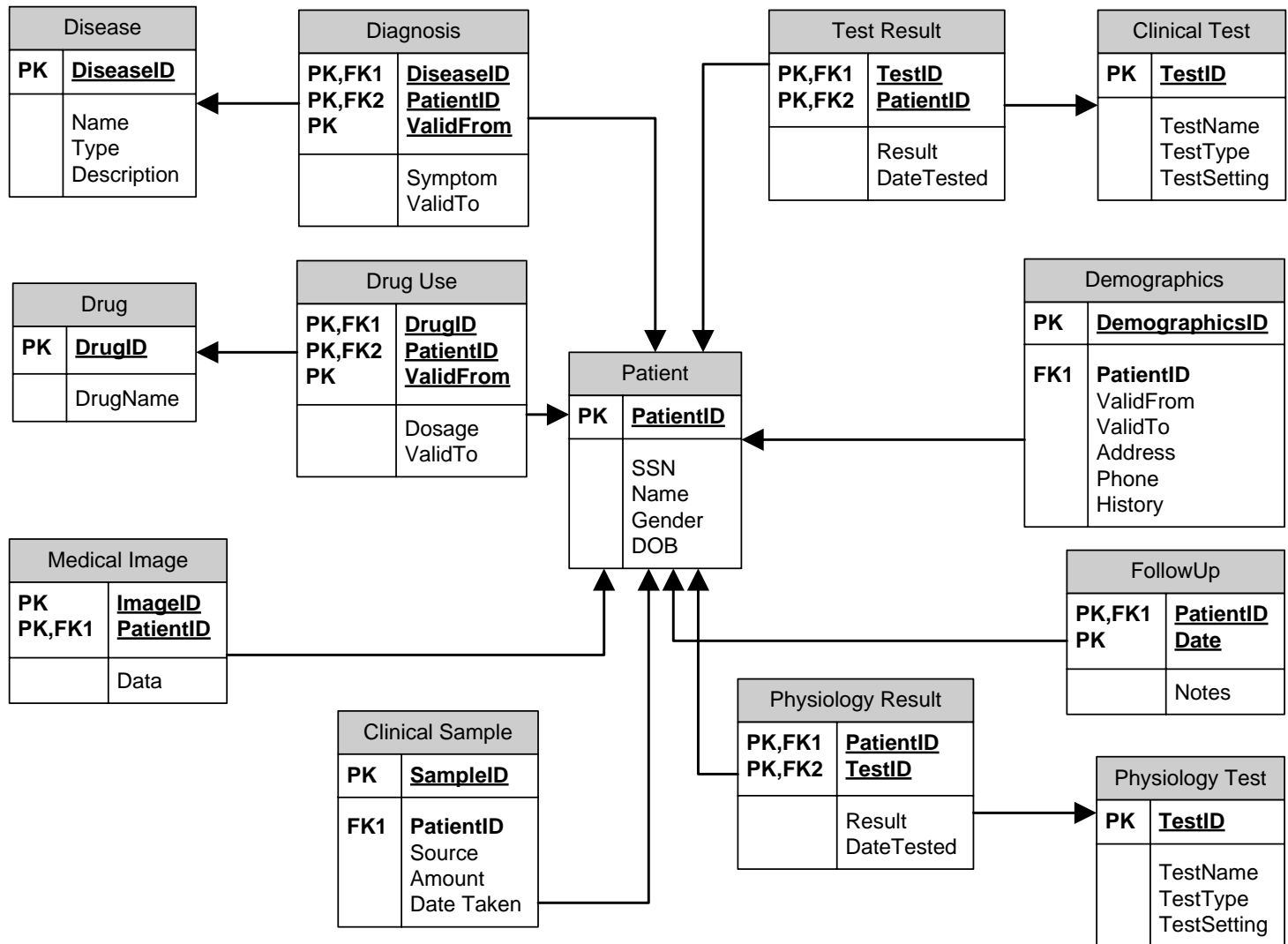
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# Given Problem

- to design a logical data model for the biomedical data in the given paper
- We have two solutions
- The first design concentrates on elimination of any possible duplicate information.
- This causes some unnecessary problems.

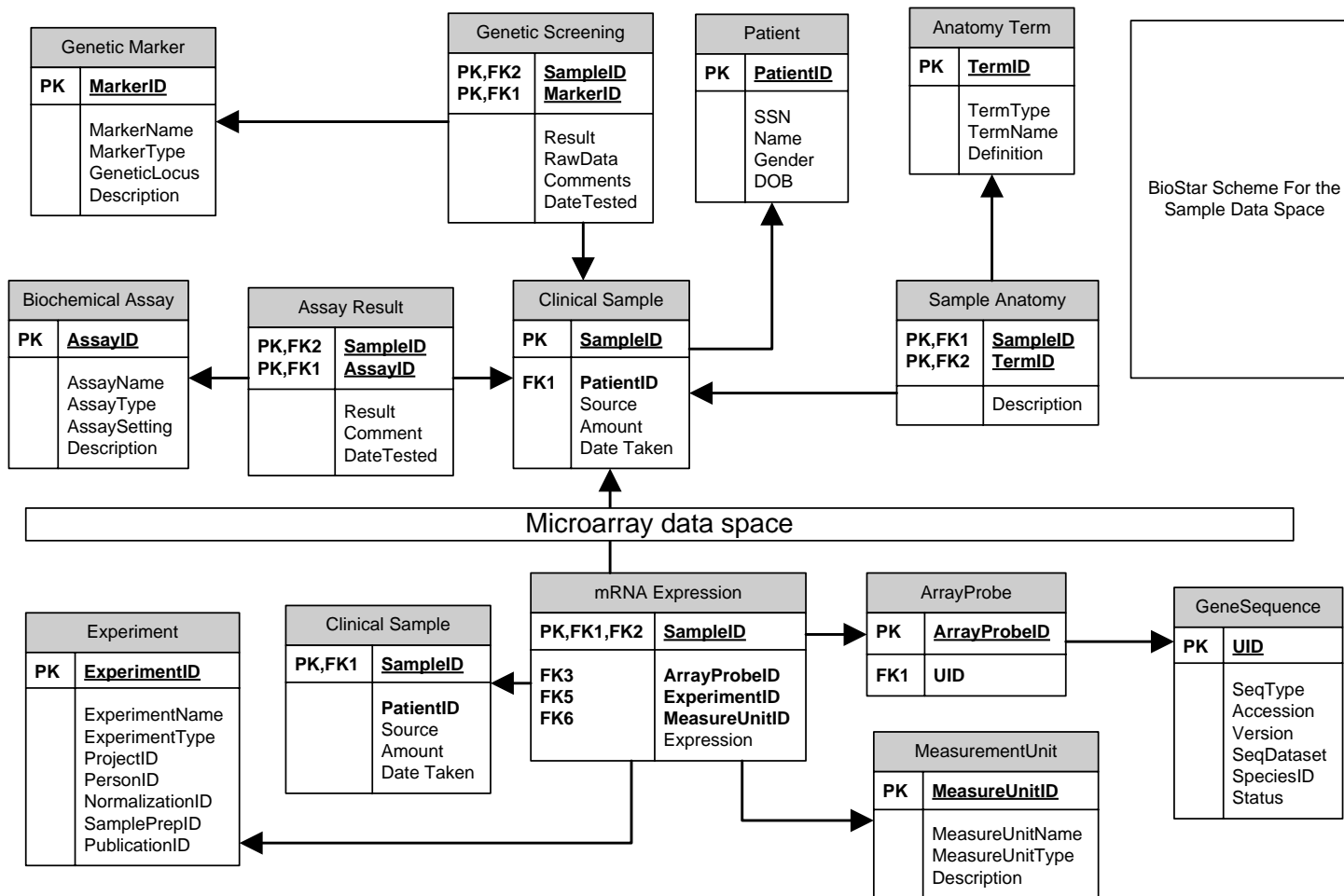
# Design one

- Problems found in the given BioStar schema for the clinical data space(Figure 7 in the paper):
  1. Diagnosis table will not allow a patient to be diagnosed with the same disease twice.
  2. There also should be some relation between Drug and Disease. Otherwise, don't know what drugs are for a particular disease.



### Design 1 for Clinical Data Space

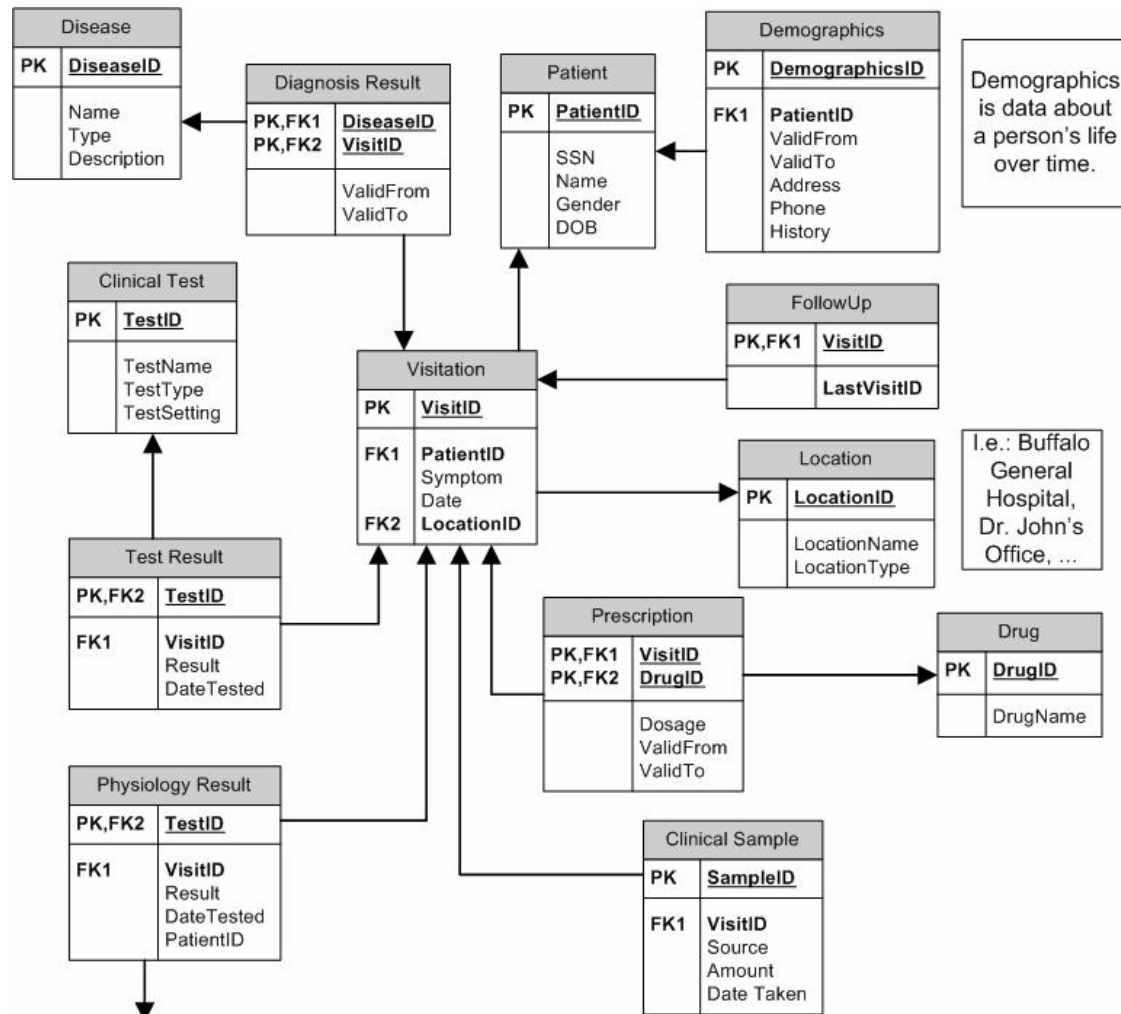
This design solves the problem of a patient only being able to have a disease once, by adding ValidFrom as a key. Also the n to n problem with the Physiological data is also solved. E.g.: Electro Cardiogram, Polygraph, Fitness



These two models have not been modified.

# Design one

- Constructed a BioStar logical data model as described in the paper
- add ValidFrom to PatientID and DiseaseID as the key of Diagnosis.
- combine PatientID, DrugID and ValidFrom together as the key. However, we still have no solution for the second problem if there is no relation between Drug and Disease in the conceptual model.



Demographics is data about a person's life over time.

I.e.: Buffalo General Hospital, Dr. John's Office, ...

**Design 2 for Clinical Data Space**

This design solves the problem of n to n relationship problem involving the patient table. To do this another entity, namely Visitation is added to the model. This also solves the problem of relating a prescription drug to a particular time when a patient had a disease. Also the patient can be tested and samples can be collected but there doesn't have to be a disease. Maybe it was just a regular checkup. The data can be thought of as control data.

# Design two

- solves the above problems.
- add a table called visitation. relate a diagnosis, test, sample, medical image, follow-up, or a prescription with a visitation.
- all other data spaces stay the same except for the Clinical Sample

# Design two

- we know what diseases a patient had when he/she was tested or donated a sample through the visitation and follow-up tables and their relationship.
- Know how many diseases a patient had during a time period, how many times they visited, what they were prescribed, and so on
- It solves all the problems in design one