PDPM IIITDM JABALPUR
CS203 DATABASE DESIGN AND MANAGEMENT
QUIZ 1
February 09, 2015

MaxMarks 30 **Time 1 hour**

Roll No: _____ **Name:** _____

1. [5] Fill in the blanks:
   (a) Every relation is a _____ but every _____ is not a relation.
   (b) _____ are declared with data types, and attributes are declared as specific uses of _____.
   (c) As per the levels of abstraction, the schema at the intermediate level is _____.
   (d) _____ means that data contained in database that is accurate and consistent.
   (e) Snapshot of the data in the database at a given instance of time is _____.
   (f) Manager salary details are hidden from the employee .This is _____ data hiding.
   (g) A table can have only one _____.
   (h) _____ means something is unknown.
   (i) Redundancy is _____ with database processing approach.
   (j) ODBC stands for _____.
2. (a). [1] How many distinct tuples are in a relation instance with cardinality 22 and degree 5? _____

   (b). [1] Acronym ACID stands for _____

   _____

   (c). [1] Physical data independence means _____

   _____

   _____

   _____

   (d). [1] Logical data independence means _____

   _____

   _____

   _____

3. [2] Find out and mention the domains required by the relation
   EMPLYEE (<u>id</u>, name, father_name, mother_name, birthdate, salary, manager_id)

   _____

   _____

4. [2+1] Consider a club entity (with name, phone and office). Each club also has faculty advisor (with name and department) who is assigned up through a particular academic quarter (for example, 2014-15 Sem II).

   (a) Give an ER diagram that represents advisor information using a 3-way relationship.

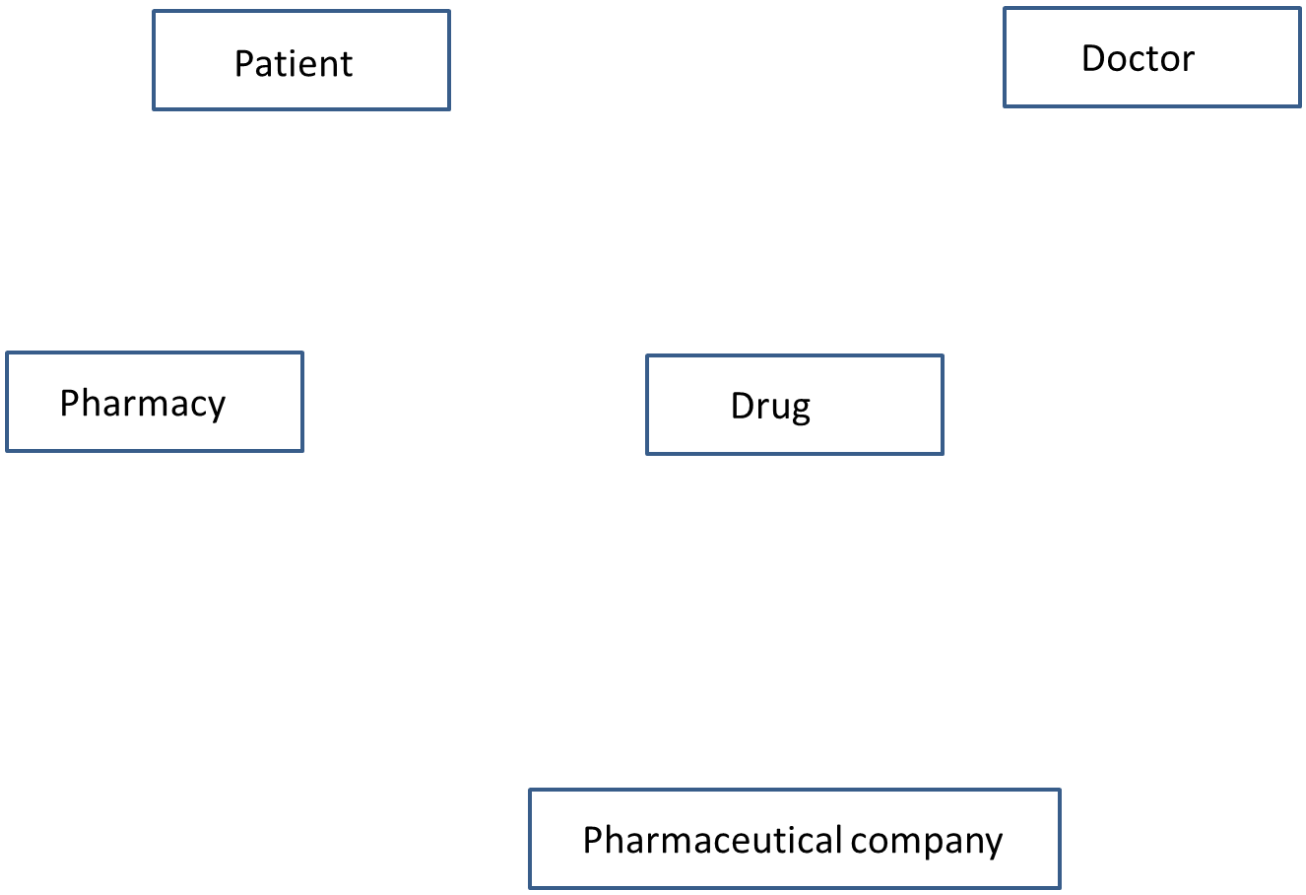
   (b) Suppose a club can have multiple advisors but a faculty can advise only one club. How would you represent this situation in ER diagram?

5. [4] It is assumed that
   (i) A professor (id: Pfcode) can work in more than one dept.
   (ii) The time he spends in each dept is given.
   (iii) Each dept (id: dept) has only one head.
   How would you store this information in relational model?

6. [4] Consider the following relational schema:
   Emp (eid, ename, age, salary)
   Works (eid, did, time)
   Dept (did, dname, budget, managerid)
   Give an example of a foreign key constraint that involves the Dept relation. What are the options for enforcing this constraint when a user attempts to delete a Dept tuple?

7. [8] Medical-plus pharmacies (i.e., a chain of drug stores) has offered to give you a free lifetime supply of medicine if you design its database. Given the rising cost of health care, you agree. Here's the information that you gather:
    1. Patients are identified by an ID, and their names, addresses, and ages must be recorded.
    2. Doctors are identified by an ID. For each doctor, the name, specialty, and years of experience must be recorded.
    3. Each pharmaceutical company (i.e., drug manufacturer) is identified by name and has a phone number.
    4. For each drug, the trade name and formula must be recorded. Each drug is sold by a given pharmaceutical company and the trade name identifies a drug uniquely from among the products of that company. If a pharmaceutical company is deleted, you need not keep track of its products any longer.
    5. Each pharmacy has a name, address, and phone number.
    6. Every patient has a primary physician. Every doctor has at least one patient.
    7. Each pharmacy sells several drugs and has a price for each. A drug could be sold at several pharmacies, and the price could vary from one pharmacy to another.
    8. Doctors prescribe drugs for patients. A doctor could prescribe one or more drugs for several patients, and a patient could obtain prescriptions from several doctors.
    9. Each prescription has a date and a quantity associated with it. You can assume that, if a doctor prescribes the same drug for the same patient more than once, only the last such prescription needs to be stored.
    10. Pharmaceutical companies have long-term contracts with pharmacies. A pharmaceutical company can contract with several pharmacies, and a pharmacy can contract with several pharmaceutical companies. For each contract, you have to store a start date, an end date, and the text of the contract. Pharmacies appoint a supervisor for each contract. There must always be a supervisor for each contract, but the contract supervisor can change over the lifetime of the contract.

(a). Complete the following ER diagram that captures the preceding information.



(b). How would your design change if each drug must be sold at a fixed price by all pharmacies?

Rough Work