Database Management System

Database Management Systems [CSE2007 - 142]

Marks: 50 **Duration: 90 mins.**

A

Answer all the questions.

1) List five major steps that you would take in setting up a database for a particular enterprise. (10)

2) Rohan's family owns and operates a 650-acre farm for several generations. Since the farm business is growing, Rohan is thinking to build a database that would make it easier to manage the activities in the farm. He is considering the following requirements for the database: (10)

a. For each livestock classification group (for example, cow, horse etc.), Rohan keeps track of the following: identification number, classification, total number of livestock per classification group (for example, number of cows, number of horses etc.).Â
b. For each crop, the following information is recorded: Crop identification number and classification.
c. Rohan has recorded the yield of each crop classification group during the last ten years. The records consist of the year, yield, sales, price of the crop and the amount of money earned.Â
d. Rohan has recorded the yield of each livestock classification group during the last ten years. The records consist of the following historical data: the year, (historical) selling price per head, number of livestock in the end of the year, number of livestock sold during one-year period, and the total amount of money earned.Â Â Â Â
Draw an E-R diagram for this application. Specify the key attribute of each entity type.

3) a) Let R be a relation with an attribute set (a_1, a_2, a_3, ..., a_n) where the attribute pairs (a_1, a_2), (a_3, a_4), and (a_4, a_5) are identified as candidate keys. Given the details, calculate the maximum number of super keys possible for R. (6)

b) If a weak entity set A has 10 tuples, and is existence dependent on the strong entity set B that has 20 tuples, then what will be the number of tuples in the relationship set R that relates A with B? (4)

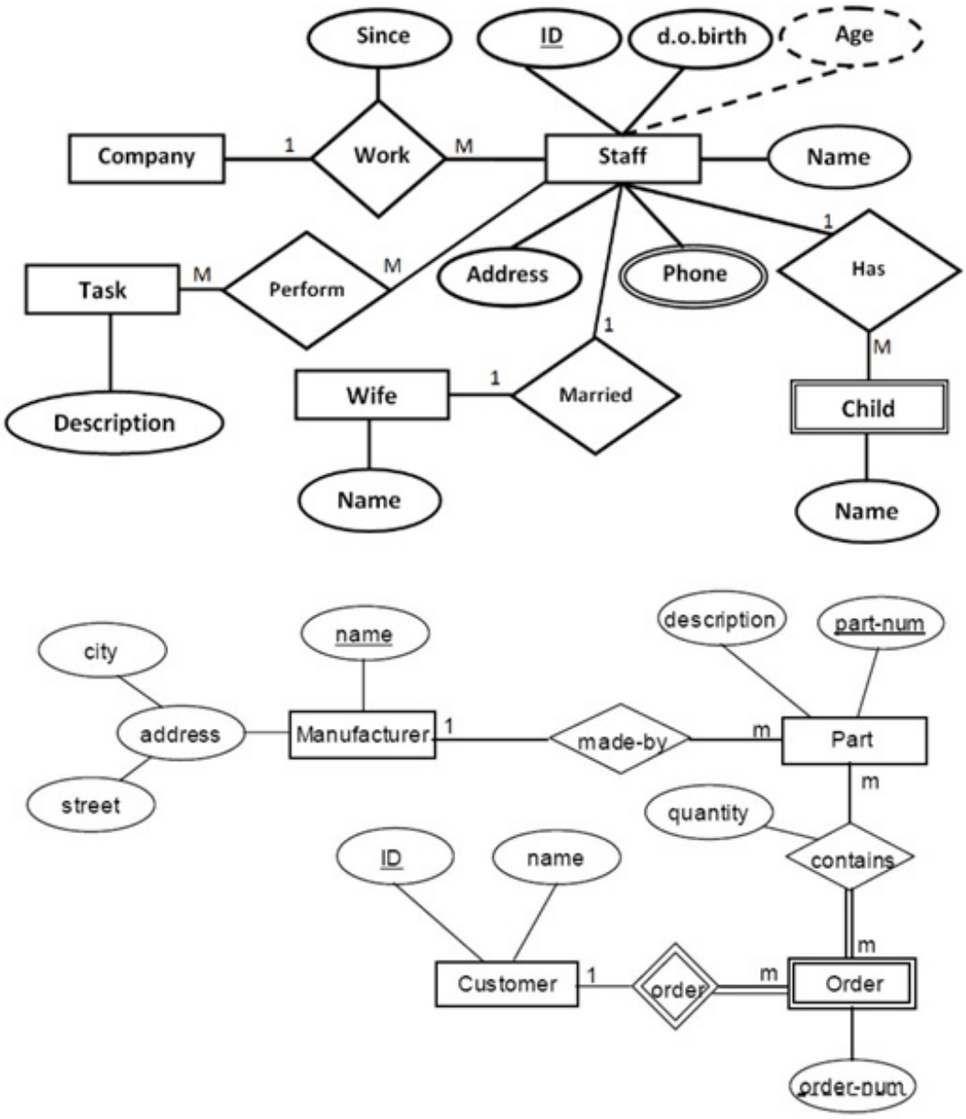
4) a) Consider the following relational schemas: (3)
employee(person-name, street, city)
works(person-name, company-name, salary)
company(company-name, city)
manages(person-name, manager-name)
Write down the relational algebra (RA) for the following queries.
Find the names of all employees who live in the same city and on the same street as do their managers.

b) Find the names of all employees in this database who do not work for State Bank of India. Assume that there may be information in the database about people who do not work for any company right now. (3)

c) Assume the companies may be located in several cities, and the attribute 'city' is a multi-valued attribute in the 'company' relation. Find all (4)

companies located in every city where HDFC Bank is located.

5) Specify the set of schemas inferred from the following E-R models.Â (10)



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