Database Management Systems [CSE2007 - 138]

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

Part-A

Answer all the questions.

1) (10)

1. Discuss the functionality of the following components:

a. i) Data Dictionary ii). Precompiler iii).Query Compiler iv).Query Optimizer v).Runtime database processor

b. As a software engineer you were asked to recommend a DBMS system. Discuss the characteristics that you will consider before recommending a particular DBMS to your Project Manager?

2) (10)

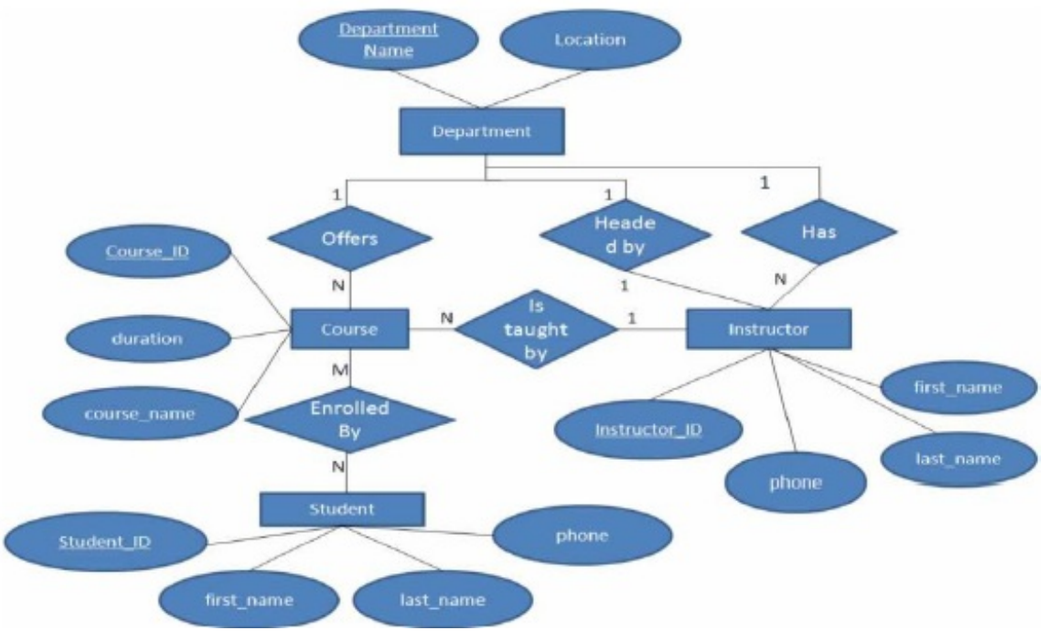
2. Consider the following scenario.

- There are televisions series, which have names, networks and production companies, and are identified by the name and network.
- A television series has one or more episodes, identified by episode number.
- Episodes also have a title and a length. No episode can exist without a corresponding television series.
- There are also movies. A movie is identified by its name and the year it was released. It also has a studio.
- An actor is identified by name and birth date, and also has a nationality.
- A writer is also identified by name and birth data, and also has a literary agency that represents him or her.
- An actor can appear as a "regular" on a television series, a guest star on an episode, and a performer in a movie.
- An episode has a writer, and a movie has a writer.

Draw an ER diagram that represents this scenario.

3) (10)

3. Convert the following ER diagram to Relational Schema :



4) (10)

4. a. A key is a superkey but not vice versa.Discuss with an example(5M)

b. The following table has two attributes A and C where A is the primary key and C is the foreign key referencing A with on-delete cascade. Mention the constraint violation that occurs when tuple(2,4) is deleted and what necessary action to be taken to preserve referential integrity.(5 M)

A	C
2	4
3	4
4	3
5	2
7	2
9	5
6	4

5) (10)

5. Consider the following MAILORDER relational schema describing the data for a mail order company.

PARTS(Pno, Pname, Qoh, Price, Olevel)
CUSTOMERS(Cno, Cname, Street, Zip, Phone)
EMPLOYEES(Eno, Ename, Zip, Hdate)
ZIP_CODES(Zip, City)
ORDERS(Ono, Cno, Eno, Received, Shipped)
ODETAILS(Ono, Pno, Qty)

Qoh stands for *quantity on hand.The names of other attributes are self explanatory.*
Specify and execute the following queries using the Relational Algebra on the MAILORDER database schema.

a. Retrieve the names of parts that cost less than $20.00.(2.5M)
b. Retrieve the names and cities of employees who have taken orders for parts costing more than $50.00. (2.5M)
c. Retrieve the names of customers who have not placed an order. (2.5M)
d. Retrieve the names of customers who have placed exactly two orders. (2.5M)

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