Mahindra University Hyderabad

École Centrale School of Engineering

Minor–I

Program: B. ech/M.Tech Branch: CSE/AI/ECE/CM/AI&DS Year: III / I Semester: I

Subject: Database Management Systems (CS/AI 3103 / AI 5101)

Date: 15/09/2023 **Start Time: 2.00 PM**

Time Duration: 1.5 Hours **Max. Marks: 60 Marks**

Instructions:

1) All parts of a question should be answered consecutively.

2) Mobile phones and computers of any kind should not be brought inside the exam hall.

3) Use of any unfair means will result in severe disciplinary action.

Q1. ER Diagrams **[2*10=20M]**

1.1.

In an organization several projects are undertaken. Each project can employ one or more employees. Each employee can work on one or more projects. Each project is undertaken on the requirement of client. A client can request for several projects. Each project has only one client. A project can use a number of items and an item may be used by several projects. Draw an E-R diagram and convert it to a relational schema.

1.2.

The Prescriptions-R-X chain of pharmacies has offered to give you a free life-time supply of medicines if you design its database. Given the rising cost of health care, you agree. Here is the information that you gather.

Specifications

i. Patients are identified by SSN, and their names, addresses, and also ages.

ii. Doctors are identified by an SSN, for each doctor, the name, specialty and years of experience must be recorded.

iii. Each pharmaceutical company is identified by name and has a phone number.

iv. 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.

v. Each pharmacy has a name, address, and phone number.

vi. Every patient has a primary physician. Every doctor has at least one patient.

vii. 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.

viii. 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. 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.
ix. Pharmaceutical companies have long-term contracts with pharmacies. A pharmaceutical company can contract with several pharmaceutical companies. For each contract, you have to store a start date, and end date, and the text of the contract.
x. Pharmacies appoint a supervisor for each contract. There must always a supervisor for each contract.

Tasks:

a. Draw a ER diagram that captures the above information. Identify the constraints that are not captured by your ER-diagram.

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

Q2. SQL Queries **[5*4=20M]**

2.1. The file EMPL.DBF stores the information of the employees of ABC company.

EMPL.DBF

field	type	width	contents
id	numeric	5	employee id number
name	character	10	name
Gender	character	1	sex: M / F
salary	numeric	6	monthly salary
dcode	character	3	department code
district	character	20	residential district

Using SQL statements to perform the following tasks:

(a) Print a list of employees in the finance department, (The dept code is FIN).

(b) List the names of the female staff whose salary is at least $15,000 but not more than $20,000.

(c) Make a list of employees whose monthly salary is less than $10,000.

(d) Give all employees of ABC a 10 percent raise.

(e) Make a list to show the number of employees living in each district.

Q3. Answer the following. Write only the option in the answer sheet. Note for every wrong answer **negative marking of 0.5 mark** will be deducted. **[10*2=20M]**

3.1. SET concept is used in:

(A) Network Model (B) Hierarchical Model (C) Relational Model (D) None of these

3.2. Conceptual design

(A) Is a documentation technique.

(B) Needs data volume and processing frequencies to determine the size of the database.

(C)Involves modeling independent of the DBMS.

(D) Is designing the relational model.

3.3. Related fields in a database are grouped to form a
(A) Data file. (B) Data record. (C) Menu. (D) Bank.

3.4. The language that requires a user to specify the data to be retrieved without specifying exactly how to get it is
(A) Procedural DML. (B) Non-Procedural DML. (C) Procedural DDL. (D) Non-Procedural DDL.

3.5. Manager salary details are hidden from the employee. This is
(A) Conceptual level data hiding. (B) External level data hiding. (C) Physical level data hiding.
(D) None of these.

3.6. A list consists of last names, first names, addresses and pin codes. If all people in the list have the same last name and same pin code a useful key would be
(A) the pin code (B) the last name (C) the compound key first name & last name (D) None
3.7. In case of entity integrity, the primary key may be
(A) not Null (B) Null (C) both Null & not Null. (D) any value.

3.8. Which of the following is correct:
(A) a SQL query automatically eliminates duplicates.
(B) SQL permits attribute names to be repeated in the same relation.
(C) a SQL query will not work if there are no indexes on the relations
(D) None of these

3.9. The metadata is created by the
(A) DML compiler (B) DML pre-processor (C) DDL interpreter (D) Query interpreter

3.10. The database environment has all of the following components except:
(A) users. (B) separate files. (C) database. (D) database administrator.

******ALL THE BEST******