



Daffodil International University  
Faculty of Science & Information Technology  
Mid Examination, Spring 2023

**Course Code: CSE311: Course Title: Database management System  
Sections & Teachers: All**

Level: 3

Term: 1

Batch: 58, 59

**Time: 1.5 Hrs**

**Marks: 25**

**Answer ALL Questions [Optional]**

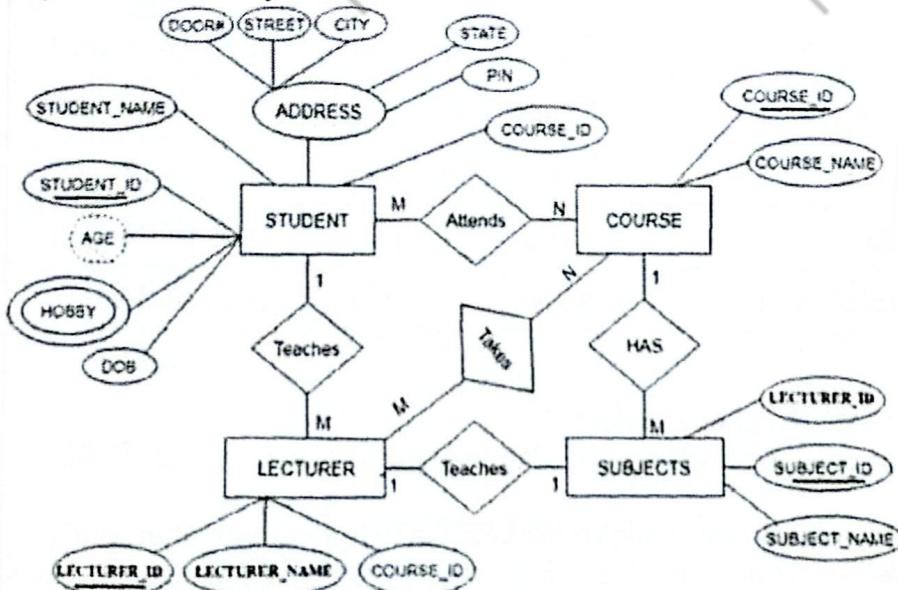
*[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]*

1. Bidyanondo Publishers has decided to store information about all their products and peers in a database. They usually publish around 20 books every year. Each book has a title, an ISBN number, author name and price. Also each book has a theme of their own, like "Novel" or "Poetry". There can be more than one authors of a single book. Information of book authors are also stored into the database. Each author has NID number, name, age, and commission amount for each book. One author can publish multiple books by the publisher. The books are sold in many libraries in all over the country. Listed libraries have their unique id, name, owner name, district and phone number. All libraries sell some books from Bidyanondo publisher, but all the books are not sold in every library. Bidyanondo publishers have their own distributors who distribute books to libraries. They are uniquely identified by their trade license number, and also their name, business area and phone numbers are listed in the database. One library takes books from only one distributor and one distributor covers all the libraries inside their business area.

CO1

- a) Now, design an ERD based on the above scenario. Be certain to indicate **primary keys** and **cardinality constraints**. 6

b)



Convert the ERD into a relational database schema. Be certain to indicate primary keys and foreign keys.

5

2. What are relational model constraints? Explain with example.

3 CO1

3. Carefully look at the following database instance and write down the SQL queries for the following questions.

<b>id</b>	<b>name</b>	<b>category</b>	<b>price</b>	<b>quantity</b>
1001	Realme Buds Air 3	Audio	4500	15
1002	Insta360 One X2 Action Camera	Camera	43000	4
1003	OnePlus 7 Pro	Mobile	45000	3
1004	Logitech z623 2.1 Home Theatre	Audio	16500	0
1005	Asus ROG G15 2022	Laptop	215000	2
1006	Apple iPhone 14 Max Pro	Mobile	150000	6
1007	Sony ZV-e10 Mirrorless Camera	Camera	85000	0
1008	Google Pixel 6A	Mobile	85000	2
1009	Xiaomi Haylou LS02 Smart Watch	Watch	5000	14

- a) Write an SQL query to view the information for the most expensive mobile phone. 2
- b) Write an SQL query for viewing products that are not available. 1
- c) Write an SQL Query for showing the average price of products in each category. 2
- d) Write an SQL query to view products that costs more than 1,00,000 BDT. 1

4. Carefully look at the following database instance and write the output of the queries followed by them.

<b>id</b>	<b>order</b>	<b>customer</b>	<b>price</b>	<b>date</b>
1001	Chillox Burgers	Rahat	450	2023-02-23
1002	Chillox Masala Chicken	Ashik	150	2023-02-15
1003	Chillox Burgers	Fahim	500	2023-01-25
1004	Chillox Burgers	Ashik	1000	2023-01-19
1005	Chillox Pizza	Ashik	1300	2023-01-16
1006	Chillox Spicy Noodles	Rahat	150	2023-01-14

- a) SELECT name, MAX(price) from order ; 1
- b) SELECT \* FROM order WHERE date BETWEEN '2023-01-15' AND '2023-02-15'; 1
- c) SELECT \* FROM order WHERE price > (SELECT AVG(price) FROM order); 2
- d) SELECT DISTINCT(customer) FROM order; 1



Daffodil International University  
Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Midterm Examination, Fall 2022  
Course Code: CSE311 (Day), Course Title: Database Management System  
Level: 3      Term: 1      Batch: 57

Time: 01:30 Hrs

Marks: 25

---

**Answer ALL Questions**

*[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]*

1. Consider the following scenario: 7+5 CLO1

Eagle Music Bangladesh has decided to store information about artists who perform on its albums (as well as other company data) in a database. Each artist that records at Eagle has an SSN, a name, an address, and a phone number. Poorly paid artists often share the same address, and no address has more than one phone. Each instrument that is used in songs recorded at Eagle has a name (e.g., guitar, synthesizer, flute) and a musical key (e.g., C, B-flat, E-flat). Each album that is recorded on the Eagle label has a title, a copyright date, a format (e.g., CD or MC), and an album identifier. Each song recorded at Eagle has a title and an author. Each artist may play several instruments, and several artists may play a given instrument. Each album has a number of songs on it, but no song may appear on more than one album. Each song is performed by one or more artists and an artist may perform a number of songs. Each album has exactly one artist who acts as its producer. An artist may produce several albums.

- a) From the scenario, show an Entity Relationship diagram that captures all the information. Be certain to indicate primary keys, relationships, participation constraints and cardinality constraints. CLO1
- b) Translate the ER diagram (you have already proposed in Q1-a) into a relational database schema. CLO1
2. Suppose that you have developed Student Management System. Tell about logical level and physical level of data abstraction for this software. 2 CLO1
3. Consider the following relation schemas: 3 CLO2
- Suppliers(sID, sName, address)
- Parts(pID, pName, colour)
- Catalog(sID, pID, price)
- Answer the following questions using relational algebra query:
- a) Choose all prices for parts that are yellow or green
- b) Choose the names of all suppliers who supply a part that is white or sky

4. Consider the following tables:

WorkerInfo (WorkerId, Name, ManagerId, DateOfjoining, City)

WorkerSalary (WorkerId, Project, Salary, Bonus)

Answer the following questions using SQL query:

- Select all the workers who either live in Washington or work under a manager with ManagerId – 254
- Select the workers whose name begins with any two characters, followed by a text “sd” and ending with any other characters

5. From the following two tables:

5 CLO2

a) Identify the SQL statements for left join and inner join.

b) Show the output for left join.

(From Salesman table take salesman id and name columns, from Customer table take customer id and city columns for all types of joining )

Table 1 – Salesman

salesman_id	name	city	commission
5001	James	New York	0.15
5002	Nail	Paris	0.13
5005	Alex	London	0.11
5006	Lyon	Paris	0.14
5007	Paul	Rome	0.13
5003	Lauson	San Jose	0.12

Table 2 – Customer

customer_id	cust_name	city	gender	salesman_id
3002	Nick	New York	M	5001
3007	Davis	New York	M	<u>5002</u>
3005	Graham	California	M	<u>5002</u>
3008	Julian	London	F	5003



## Daffodil International University

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Midterm Examination, Fall 2022

Course Code: CSE311 (Eve), Course Title: Database Management System

Level: 3 Term: 1 Section: All

Instructor: ALL

Time: 01:30 Hrs

Marks: 25

---

### Answer ALL Questions

*[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]*

1. Consider the following scenario:

6+5 CLO1

A manufacturing company produces products. The following product information is stored: product name, product ID and quantity on hand. These products are made up of many components. Each component can be supplied by one or more suppliers. The following component information is kept: component ID, name, description, suppliers who supply them, and products in which they are used. The following supplier information is kept: supplier id, supplier name.

- From the above scenario, show an Entity Relationship diagram that captures all the information. Be certain to indicate primary keys, relationships, participation constraints and cardinality constraints.
- Translate the ER diagram (you have already proposed in Q1-a) into a relational database schema.

2. Consider the following relation schemas:

1.5\*2 =3 CLO2

passenger (pid, pname, pgender, pcity)

agency (aid, aname, acity)

flight (fid, fdate, time, src, dest)

booking (pid, aid, fid, fdate)

Answer the following questions using relational algebra query:

- Get the complete details of all flights to New Delhi.
- Find the passenger names for passengers who have bookings on at least one flight.

3. Consider the following database tables:

1.5\*3 =4.5 CLO2

Student (sID, surName, firstName, campus, email, cgpa)

Course (dept, eNum, name)

Offering (oID, dept, Num, semester, instructor)

Took (sID, oID, totalMarks, grade)

Answer the following questions using SQL query:

- a) List sID of all students of CSE Dept. who have taken CSE311 and earned a grade of "B" in it.
- b) Find all information about courses that offered by CSE department
- c) Find the student id of the student who got highest mark in CSE 311.

From the following two tables, identify the SQL statements and show the output for Right Join. (From Employee table take id and employee\_name, from Department table take department\_id and department\_name for Right Join )

4 CLO2

Table 1 – Employee

<b>id</b>	<b>employee_name</b>	<b>department_id</b>
1	Homer Simpson	4
2	Ned Flanders	1
3	Barney Gumble	5
4	Clancy Wiggum	3
5	Moe Szyslak	NULL

Table 2 – Department

<b>department_id</b>	<b>department_name</b>
1	Sales
2	Engineering
3	Human Resources
4	Customer Service
5	Research and Development

5. What is Database-Management System? Mention five major differences between file-processing system and DBMS.

2.5 CLO1



## Daffodil International University

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Midterm Examination, Spring 2022

Course Code: CSE311 (Day), Course Title: Database Management System

Level: 3 Term: 1 Section: All

Instructor: ALL

Time: 1hour 30mints

Full Marks: 25

**Q1** Consider the following scenario.

7+5

In a shop management system, a salesperson can be characterized by his ID, date of joining, contact number and NID. His name, DOB and address is assumed from NID. A salesperson may manage many other salespeople. A salesperson is managed by only one salespeople. A salesperson can help many customers to place order. A customer is managed by one salespeople at a time. A customer can place many orders. Customer's records are saved in the system as name, ID, address. Orders are characterized as order\_id, purchase amount, purchase date. An order can be placed by one customer. An order contains many inventory items. An inventory item may be listed on many different orders. An inventory item is assembled from many separated parts. A part may be assembled into many inventory items. Many employees assemble an inventory item from many parts. Employee and salespersons both works in the shop. But employee's date of joining is also recorded. A supplier supplies many parts. A part may be supplied by many suppliers. Suppliers are recorded by name, ID, Address, product\_type.

- Now, from the scenario, propose an Entity-Relationship diagram that captures all the information. Be certain to indicate primary keys, relationships, participation constraints, and cardinality constraints.
- Convert the ER diagram (you have already proposed in Q1-a) into a relational database schema.

**Q2** Suppose you want to develop an online bus ticket reservation website. Now which one is the best database architecture for this project? And mention the advantages and disadvantages (if any) of it. 2

**Q3** Consider the following: 3

AirlinedatabaseFlights (flightNo, from, to, distance, departs)

Aircraft (aircraftId, airName, range)

Certified (employeeId, aircraftId)

Employees (employeeId, empName, salary, age, aircraftId)

Write down the following queries with Relational Algebra expression:

- Find employee ids of pilots who are certified on aircraft named “Boeing”.
- Find the flights that are going from “Dhaka” to “Chittagong”.
- Find the aircraft name whose employee’s salary is greater than 100000 BDT.

**Q4** 1. Consider the following schema. The following relations keep track of Movie information. 3+5

Movie (title, year, length, incolor, studio\_name, producer)

Stars\_In ( movie\_title, movie\_year, star\_name)

Movie\_star (name, address, gender, birthdate)

MovieExec ( name, address, cert, networth)

Studio ( name, address, cert, net\_worth)

Now write down the following queries using SQL.

- Find all the stars name who appears either in a movie made in 1980 or a movie with “Good Deeds” in the title.
- Find the movie executives whose net worth is more than 15,00000BDT.
- Find the total number of movies of distinct studios by descending order.

2. From these below two tables, write down the SQL statements and show the output for inner join and right join. (From Customers table take ID , Name and Address column, from Orders table take OID, Date and Amount column for both joining )

Table 1 – Customers

ID	NAME	AGE	ADDRESS	SALARY
1	Ramesh	32	Ahmedabad	2000.00
2	Khilan	25	Delhi	1500.00
3	kaushik	23	Kota	2000.00
4	Chaitali	25	Mumbai	6500.00
5	Hardik	27	Bhopal	8500.00
6	Komal	22	MP	4500.00
7	Muffy	24	Indore	10000.00

Table 2 – Orders

OID	DATE	CUSTOMER_ID	AMOUNT
102	2009-10-08	3	3000
100	2009-10-08	3	1500
101	2009-11-20	2	1560
103	2008-05-20	4	2060



**Daffodil International University**  
**Department of Computer Science and Engineering**  
**Faculty of Science & Information Technology**

**Midterm Exam Examination, Summer 2021 @ DIU Blended Learning Center**

**Course Code: CSE333 (Day), Course Title: Database management System**

**Level: 3      Term: 1      Section:**

**Instructor: ABC      Modality: Open Book Exam**

**Date: 7<sup>th</sup> July, 2020      Time: 09:00am-11:30am**

**Two and half hours (2:30), Marks: 25**

---

**Question No.1**

**[8+7]**

**Consider the following Scenario for part of a BANK database.**

Each bank can have multiple branches. Every bank's unique code, name, Address needs to be stored. And for every branch, its address and branch number needs to be stored.

Each branch can have multiple accounts and cannot have more than 500 loans. Every account has its unique account number and balance, the same as a loan has its unique number and loan amount.

A customer is an important object in this scenario. The database needs to store some basic information about every single customer. Every customer will be identified with their NID number. And their phone number, address, and gender need to be stored in the database. Other information of a customer will be retrieved by the NID of each person. Like: Name, father name, mother name, date of birth, and blood group.

Every customer must have at least one account but is restricted to at most two loans. The account can be a savings or checking account. For checking accounts its type and overdraft amount need to be stored. And for a saving account the year limit, interest rate, deposit amount need to be stored.

Every bank has an online help center that works 24/7 for customer service. For better customer service a help center may have multiple phone numbers and different help centers can be identified with their number. Customers can raise any issue at any time in the help center. And they can rate the center for their service also.

- a. Now Draw an Entity relationship(ER) diagram for the above scenario. Mention the primary key, participation constraint and cardinalities in the diagram.
- b. Convert the ER Diagram into a Relational schema.

**Question No 2****[6]**

Consider the following table.

Table: Salesman

salesman_id	name	city	commission
5001	James Hoog	New York	0.15
5002	Nail Knite	Paris	0.13
5003	Pit Alex	London	0.11
5004	Mc Lyon	Paris	0.14
5005	Paul Adam	Rome	0.13
5006	Lauson Hen	San Jose	0.25
5007	Thomas Jonhs	London	0.30
5008	Thomas Gray	Paris	0.15
5009	Robin Paul	Rome	0.20
50010	Alex Drick	San Jose	0.18

Now write down the SQL queries and outputs of the following questions.

- (i) Find out the names of the customers who give commission more than 15%.
- (ii) Find out the salesman name & id whose city is London or San jose.
- (iii) Find out the salesman's all information who gives the maximum commission.
- (iv) Find out the number of salesmen from different cities.
- (v) Find out the salesman's all information whose name is Alex.
- (vi)Find out the distinct city names from the given data and give the relation a name..

**Question No 3****[4]**

Consider the following:

*AirlinedatabaseFlights (flightNo, from, to, distance, departs)*  
*Aircraft (aircraftId, airName, range)*  
*Certified (employeeId, aircraftId)*  
*Employees (employeeId, empName, salary, age, aircraftId)*

Write down the following queries with Relational Algebra expression:

- a) Find employee ids of pilots who are certified on aircraft named “Boeing”.
- b) Find the flights that are going from “Dhaka” to “Chittagong”.
- c) Find the average, minimum and maximum salary Employees of each aircraft.
- d) Find the aircraft name whose employee’s salary is greater than 100000 BDT.

Good Luck ☺



# Daffodil International University

## Department of Computer Science and Engineering

Faculty of Science and Information Technology (FSIT)

Mid Term Examination, Semester: Summer-2019

Course Code: CSE311 Course Title: Database Management System

Section: All

Course Teachers: All

Time: 1.30 hours

Answer all questions

Total Marks: 25

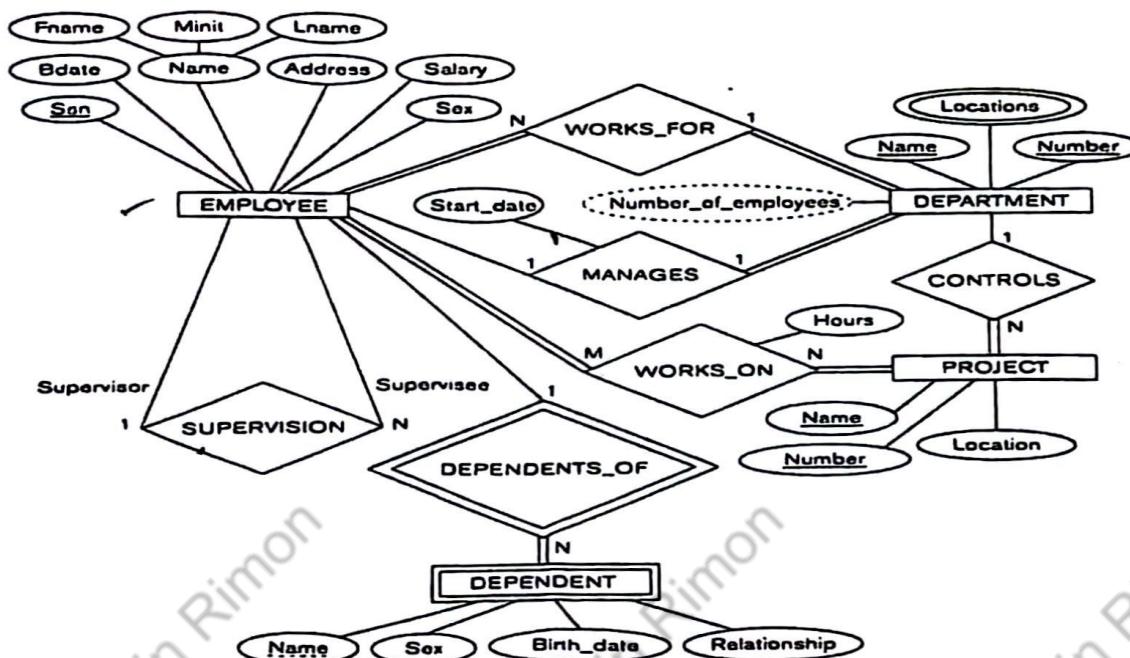
**Q1:** Propose an Entity Relationship diagram that captures the information about a Blood Bank System. Be certain to indicate primary keys and cardinality constraints. 8

Blood bank is a critical entity in providing required type of blood to the patients at critical time. Their database keeps track of the inventory of the blood, together with relevant information like blood group, date received, location, date of expiry, donor, etc. The database keeps information such as name, address and telephone number of other blood banks in the area. The reason for doing so is to get blood of a particular from other bank in case of emergency.

Information about donors is recorded as well. Donors are classified into occasional and regular donors. For the regular donors, the database keeps information such as identification number, blood type and history of their donation.

A list of health care providers in the area along with information such as address, telephone number, etc. is kept. The healthcare providers are the customer of the blood bank. They keep track of the blood transactions performed. These transactions are classified into: normal transactions and unexpected transections (for example the motor accidents during the holiday season). The reason for keeping track of the unexpected transactions is to use this information in estimating the extra amount of blood to keep in the inventory for each age group during the coming holiday season.

**Q2:** Write down a relational schema from the following E-R diagram. Be certain to indicate primary keys and foreign keys. 4



**Q3:** Define the term DML and DDL with proper example.

3

**Q4:** Consider the following tables for ICC world cup database where the primary keys are given. Give an expression in SQL for each of the queries.

10

**HostCountry**

Year	OfficialHost
2023	IND
2019	ENG
2019	Wales
2015	AUS
2015	NZ
2011	IND
2011	SL
2011	BAN
2007	WI
2003	SA
1999	ENG
1999	Wales
1996	PAK
1996	IND
1996	SL

**ICCworldCup**

Year	FinalVenue	Winners	Runners-up
2023	Mumbai		
2019	London		
2015	Melbourne	AUS	NZ
2011	Mumbai	IND	SL
2007	Bridgetown	AUS	SL
2003	Johannesburg	AUS	IND
1996	Lahore	SL	AUS

**PointTable**

Team	Match	Won	Lost	NRR	Points
NZ	6	6	0	2.564	12
AUS	6	4	1	2.257	9
SL	6	4	2	0.371	8
BAN	6	3	2	0.136	7
ENG	6	2	4	-0.753	4

- Write SQL to rearrange HostCountry table according to the alphabetical descending order of OfficialHost country.
- Write SQL to find how many times host country became the winner.
- Write SQL to find team and their points after adding 10% bonus points to each team.
- Write SQL to find how many times ICC world cup is hosted by England so far.
- Write SQL to find those venues whose name starts with the letter 'L'.



# Daffodil International University

## Department of Computer Science and Engineering

Faculty of Science and Information Technology (FSIT)

Mid Term Examination, Semester: Spring - 2018

Course Code: CSE311 (Day) Course Title: Database Management System

Section: All

Course Teacher: All

---

Time: 90 minutes

Total Marks: 25

Answer all questions

Consider the following scenario to answer Q1:

8

Draw an ER diagram for the following scenario. Be certain to indicate necessary constraints.

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.

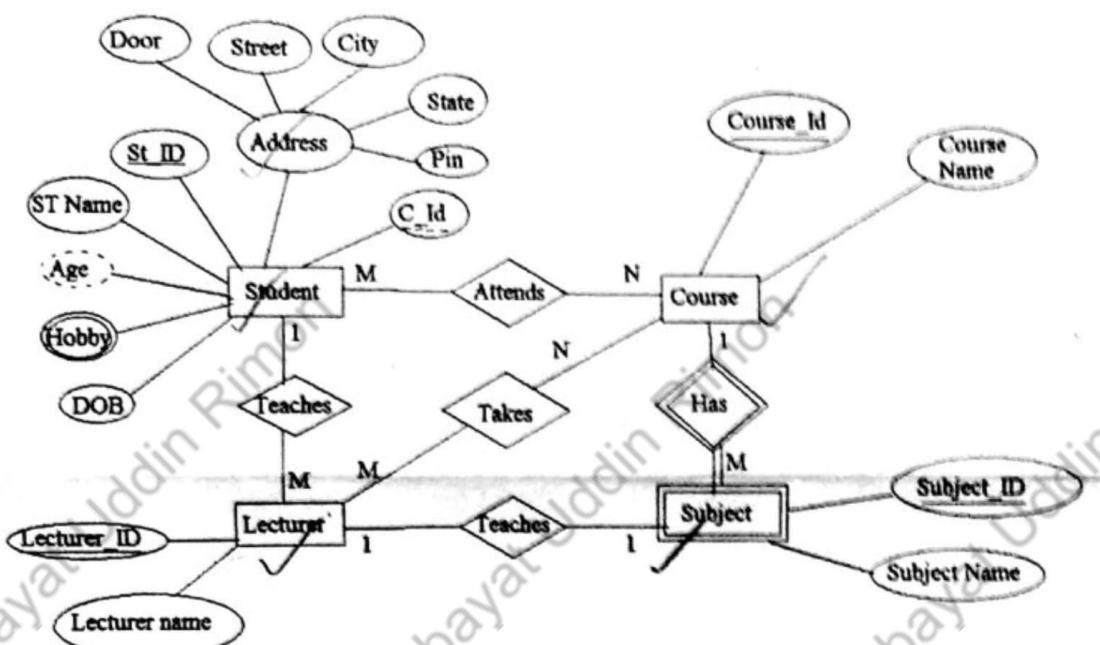
1. Patients are identified by SSN, and their names, addresses, and also ages.
2. Doctors are identified by an SSN, for each doctor, the name, specialty and years of experience must be recorded.
3. Each pharmaceutical company is identified by name and has a phone number.
4. For each drug, the trade name 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. 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.

9. Pharmaceutical company 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.

10. Pharmacies appoint a supervisor for each contract. There must always a supervisor for each contract.

**Consider the following ER Diagram to answer Q2:**

4



**Q2:** Convert the ER diagram into a relational database schema. Be certain to indicate primary keys and foreign keys.

**Consider the following schema to answer Q3:**

8

**Student** (sID, surName, firstName, campus, email, cgpa), **Course**(dept, cNum, name), **Offering**(oID, dept, cNum, semester, instructor), **Took**(sID,oID, totalMarks, grade).

Write the following queries using SQL:

- List sID of all students of CSE Dept. who have taken CSE311 and earned a grade of "A+" in it.
- Find all information about courses that offered by CSE department.
- Find semester when "Object Oriented Programming" course was not offered.
- Find the student id of the student who got highest mark in CSE 311.

**Q4:** What is Database-Management System? Mention five major differences between file-processing system and DBMS.

5x1=5