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Department: BS (CS)

Semester: 8th

Course: Database System

**Q1: Perform Normalization upto 3rd Normal Form on the following table.
(13marks)**

1st Normal Form

- Each cell to be single valued.
- Entries in a column are same are the same type.
- Rows uniquely identified, Unique ID, or Add more columns to make unique

Student_id	Student Name	Student Address	Course_ID	Course_Name	Grade
01	Fawad	Karachi	SE-01	AI	A
01	Fawad	Karachi	SE-05	SQE	B
02	Waleed	Lahore	SE-02	DIP	C
03	Saira	Peshawar	SE-03	DB	A
03	Saira	Peshawar	SE-04	SRE	B
04	Aiman	Karachi	SE-03	AI	C
05	Daniyal	Lahore	SE-01	AI	A
06	Emaan	Peshawar	SE-01	AI	B

2nd Normal Form

- All attributes (Non-key columns) dependent on the key

Student_id	Student Name	Student Address
01	Fawad	Karachi
01	Fawad	Karachi
02	Waleed	Lahore
03	Saira	Peshawar
03	Saira	Peshawar
04	Aiman	Karachi
05	Daniyal	Lahore
06	Emaan	Peshawar

Course_ID	Course_Name	Grade
SE-01	AI	A
SE-05	SQE	B
SE-02	DIP	C
SE-03	DB	A
SE-04	SRE	B
SE-03	AI	C
SE-01	AI	A
SE-01	AI	B

3rd Normal Form

- All Fields (columns can be determined only by the key in the table and no other column.

Student Table

Student_id	Student Name	Student Address
01	Fawad	Karachi
02	Waleed	Lahore
03	Saira	Peshawar
04	Aiman	Karachi
05	Daniyal	Lahore
06	Emaan	Peshawar

Course Table

Course_ID	Course_Name
SE-01	AI
SE-02	DIP
SE-03	DB
SE-04	SRE
SE-05	SQE

StudentMarks Table

ID	Student_id	Course_ID	Grade
01	01	SE-01	A
02	01	SE-05	B
03	02	SE-02	C
04	03	SE-03	A
05	03	SE-04	B
06	04	SE-03	C
07	05	SE-01	A
08	06	SE-01	B

Q2: Write SQL queries for the following DDL Statements

1. Create a Database by the name Gallery

```
CREATE DATABASE Gallery;
```

2. Write a query to create a table by the name Movies which should have the following columns and restrictions:

```
CREATE TABLE MOVIES(  
ID INT  
PRIMARY KEY Movie_Name varchar(50) NOT NULL,  
Genre varchar(20)  
Year INT,  
Rating INT,  
CHECK(year<=2020),  
CHECK(rating<=5));
```

Question no 3

Part 1 : Write 2 SQL DML Queries to insert your data and your friend's data in this Table.

```
INSERT INTO University_table (Student_id, Student_name, age, cgpa)  
VALUES ('12984', 'waseem', '24' '2.9');
```

```
INSERT INTO University_table (Student_id, Student_name, age, cgpa)  
VALUES ('12985', 'aftab', '25' '3.0');
```

2. Write SQL DML Query to delete all students' record whose CGPA is greater 3

```
DELETE FROM University_table  
WHERE CGPA>3;
```

Question no 4

Consider you have the following 2 tables.

1. Write SQL Query for finding/displaying product names and ids of products whose unit price is less than 50 Rs.

```
SELECT [Product_id], [Product_name], [Category], [Mfg_date], [Exp_date], [Unit Price],  
[Order_id], [product_id], [Quantity].
```

```
FROM [Cateen_table]. [Order details]
```

```
WHERE pro_price < 50
```

```
ORDER BY pro_price DESC, pro_name;
```

2. Write SQL Query for displaying sorted names of product names with Alias name as Product_List_Sorted.

```
SELECT [Product_id], [Product_name],
```

```
[Category], [Mfg_date], [Exp_date],
```

```
[Unit Price], [Order_id],
```

```
[product_id], [Quantity].
```

```
FROM [Cateen_table]. [Order details]
```

```
ORDER BY Product_name DESC
```

3. Write output of the following query (5 Marks)

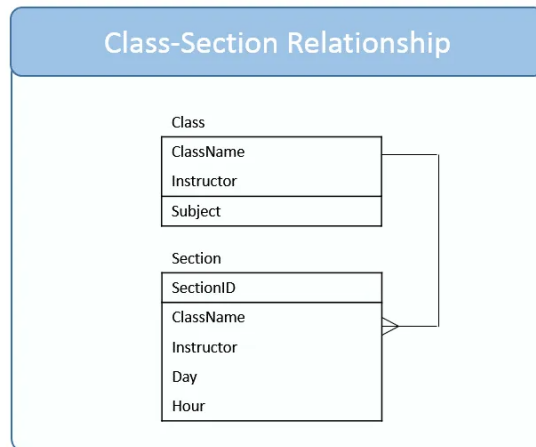
```
SELECT Category, COUNT(Category)
FROM Canteen_Table
GROUP BY Category
HAVING COUNT(Category) > 1;
```

Answer:

Category	Count
junk	4
Not junk	2

4. Write SQL INNER JOIN query and its output on the given two tables.

SQL INNER JOIN on two or more fields. This happens when a table's primary key consists of two or more columns. Use the AND operator to link join conditions. By using AND you're "saying" both columns must match in order for the join to proceed...



Consider an example where we want to know all the days and times each instructor teaches a class. In our example the primary key for the Class table is two fields: ClassName and Instructor. To construct the schedule we need to join Class to Section by matching both ClassName and Instructor.

```
SELECT C.Instructor,
C.ClassName,
```

S.Day,

S.Hour

FROM Class AS C

INNER JOIN

Section AS S

ON C.ClassName = S.ClassName

AND C.Instructor = S.Instructor

ORDER BY C.Instructor, S.Day, S.Hour