CIS 235 PROJECT MILESTONE (2): Mapped Tables Filled with data and SQL Query Statements

Project Group Number : 7   **Section Number**:   group 7

Project Title: telecommunications company management system

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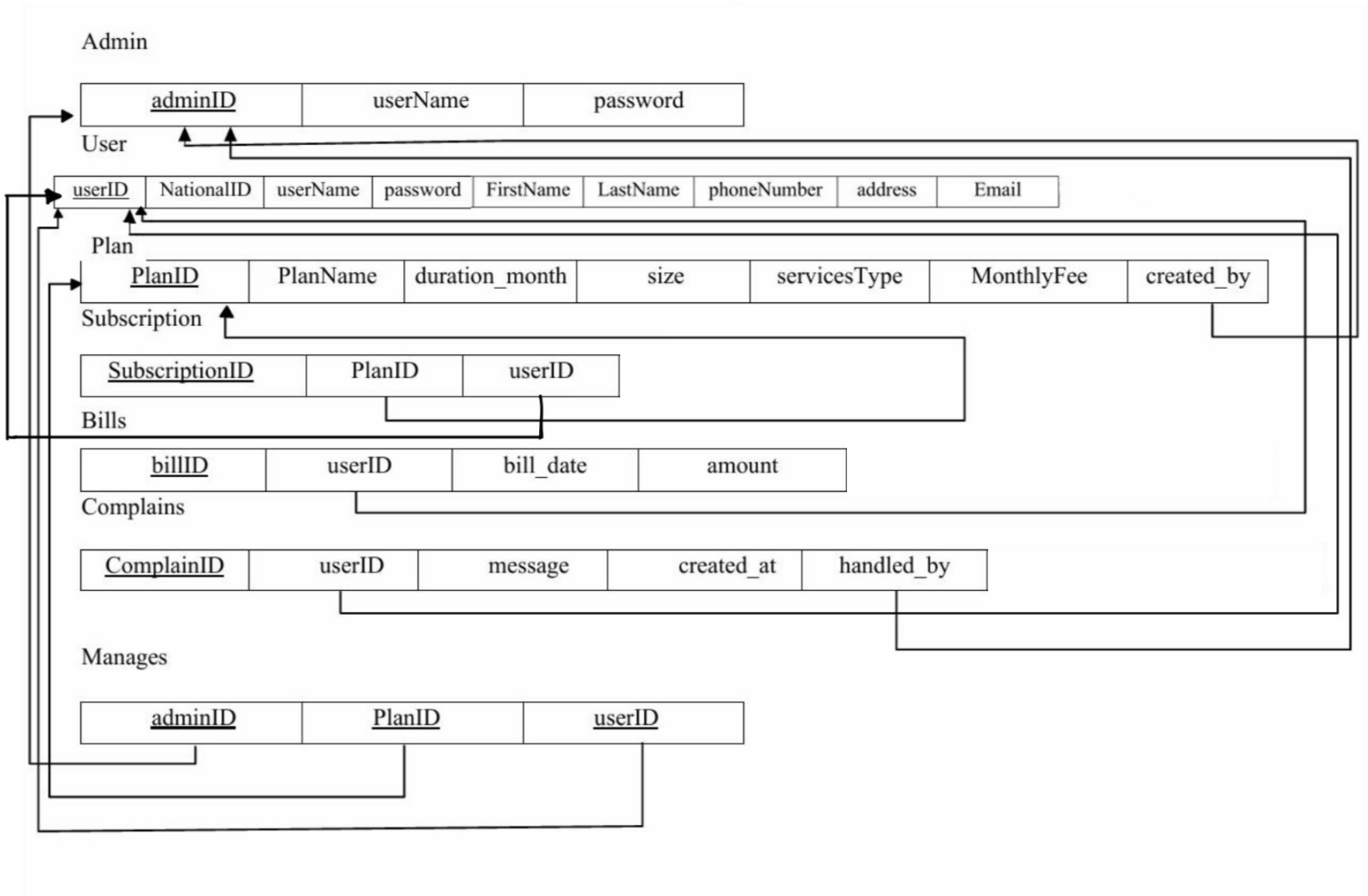
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Mapped Tables Filled with data (5 marks)

ER Diagram:

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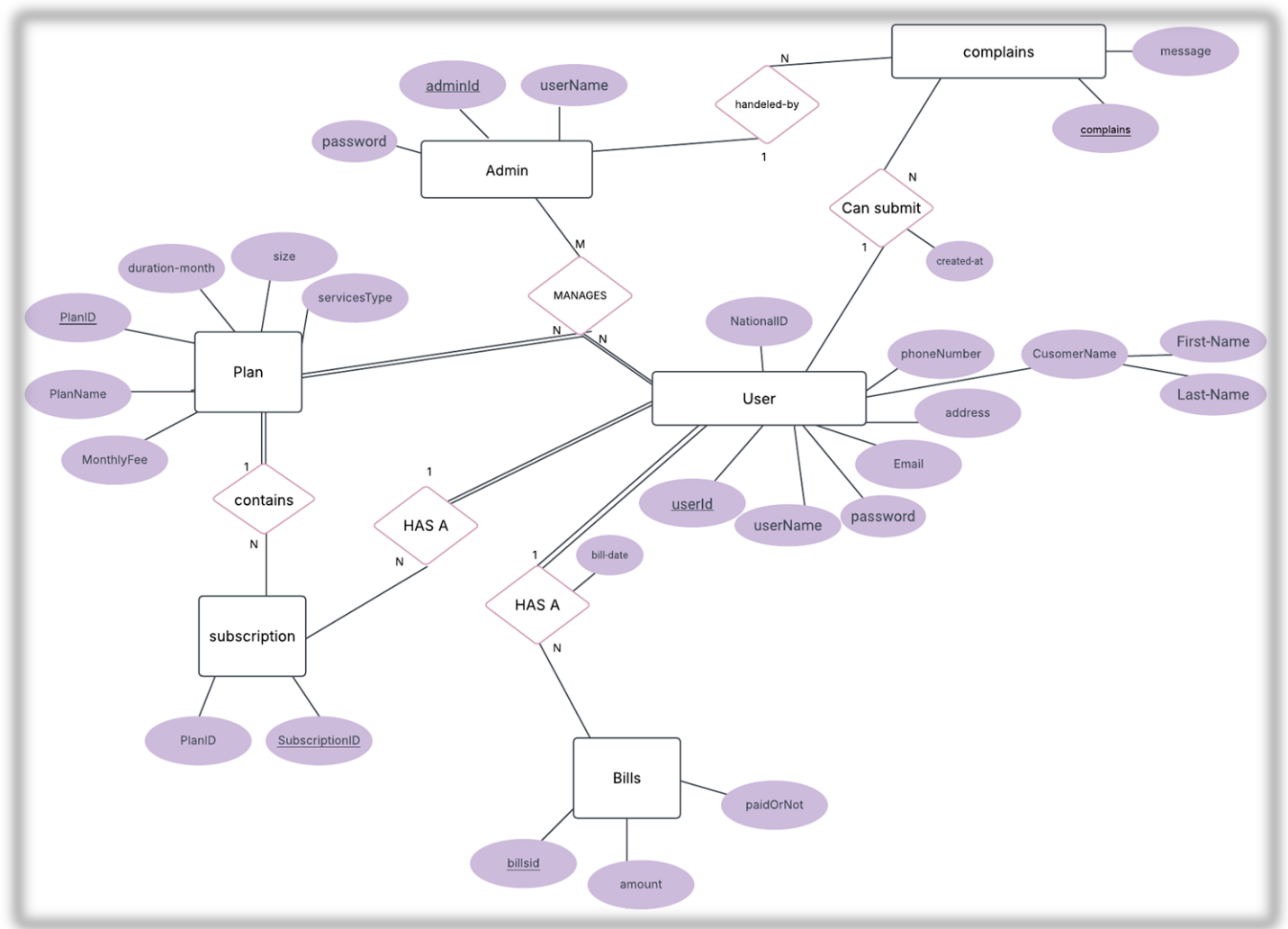
MAPPING of ER diagram into Database Schema:

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Tables with full specification of data types for all fields, constraint and Keys:

Table Name: bills — Schema: telecom_system

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
bill_id	INT	☑	☑	☐	☐	☐	☐	☑	☐	
user_id	INT	☐	☐	☐	☐	☐	☐	☐	☐	NULL
amount	DECIMAL(10,2)	☐	☐	☐	☐	☐	☐	☐	☐	NULL
paid	TINYINT(1)	☐	☐	☐	☐	☐	☐	☐	☐	'0'
bill_date	TIMESTAMP	☐	☐	☐	☐	☐	☐	☐	☐	CURRENT_TIMESTAMP

Table Name: admins — Schema: telecom_system

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
admin_id	INT	☑	☑	☐	☐	☐	☐	☐	☐	
username	VARCHAR(50)	☐	☑	☑	☐	☐	☐	☐	☐	
password	VARCHAR(100)	☐	☑	☐	☐	☐	☐	☐	☐	

Table Name: users — Schema: telecom_system

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
user_id	INT	☑	☑	☐	☐	☐	☐	☑	☐	
username	VARCHAR(50)	☐	☑	☑	☐	☐	☐	☐	☐	
password	VARCHAR(100)	☐	☑	☐	☐	☐	☐	☐	☐	
customer_id	VARCHAR(20)	☐	☐	☐	☐	☐	☐	☐	☐	NULL
customer_name	VARCHAR(100)	☐	☐	☐	☐	☐	☐	☐	☐	NULL
phone_number	BIGINT	☐	☐	☐	☐	☐	☐	☐	☐	NULL
address	VARCHAR(255)	☐	☐	☐	☐	☐	☐	☐	☐	NULL
email	VARCHAR(20)	☐	☑	☑	☐	☐	☐	☐	☐	

Table Name: plans — Schema: telecom_system

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
plan_id	VARCHAR(10)	☑	☑	☐	☐	☐	☐	☐	☐	
plan_name	VARCHAR(100)	☐	☑	☐	☐	☐	☐	☐	☐	
monthly_fee	DECIMAL(10,2)	☐	☑	☐	☐	☐	☐	☐	☐	
size	VARCHAR(50)	☐	☑	☐	☐	☐	☐	☐	☐	
duration_month	ENUM('1', '3', '6', '12')	☐	☑	☐	☐	☐	☐	☐	☐	
service_type	VARCHAR(100)	☐	☑	☐	☐	☐	☐	☐	☐	'General'
created_by	INT	☐	☐	☐	☐	☐	☐	☐	☐	NULL

Table Name: subscriptions2 — Schema: telecom_system

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
subscription_id	VARCHAR(20)	☑	☑	☐	☐	☐	☐	☐	☐	
user_id	INT	☐	☐	☐	☐	☐	☐	☐	☐	NULL
plan_id	VARCHAR(10)	☐	☐	☐	☐	☐	☐	☐	☐	NULL
paid	TINYINT(1)	☐	☐	☐	☐	☐	☐	☐	☐	'0'

Table Name: complaints — Schema: telecom_system

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
complaint_id	INT	☑	☑	☐	☐	☐	☐	☑	☐	
user_id	INT	☐	☐	☐	☐	☐	☐	☐	☐	NULL
message	TEXT	☐	☑	☐	☐	☐	☐	☐	☐	
created_at	TIMESTAMP	☐	☐	☐	☐	☐	☐	☐	☐	CURRENT_TIMESTAMP
handled_by	INT	☐	☐	☐	☐	☐	☐	☐	☐	NULL

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```sql
-- Table Creation - Users Table
CREATE TABLE IF NOT EXISTS users (
    user_id INT PRIMARY KEY AUTO_INCREMENT,
    username VARCHAR(50) UNIQUE NOT NULL,
    password VARCHAR(100) NOT NULL,
    customer_id VARCHAR(20),
    customer_name VARCHAR(100),
    phone_number BIGINT,
    address VARCHAR(255),
    email VARCHAR(100)
);
```

```sql
-- Table Creation - Admins Table
CREATE TABLE IF NOT EXISTS admins (
    admin_id INT PRIMARY KEY,
    username VARCHAR(50) UNIQUE NOT NULL,
    password VARCHAR(100) NOT NULL
);
```

```sql
13      -- Table Creation - Plans Table
14  CREATE TABLE IF NOT EXISTS plans (
15      plan_id VARCHAR(10) PRIMARY KEY,
16      plan_name VARCHAR(100) NOT NULL,
17      monthly_fee DECIMAL(10, 2) NOT NULL,
18      size VARCHAR(50) NOT NULL,
19      duration_month ENUM('1', '3', '6', '12') NOT NULL
20  );
21  ALTER TABLE plans
22  ADD COLUMN created_by INT,
23  ADD FOREIGN KEY (created_by) REFERENCES admins(admin_id);
24
```

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```sql
--  Table Creation - Bills Table
CREATE TABLE IF NOT EXISTS bills (
    bill_id INT AUTO_INCREMENT PRIMARY KEY,
    user_id INT,
    amount DECIMAL(10, 2),
    paid BOOLEAN DEFAULT FALSE,
    bill_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY (user_id) REFERENCES users(user_id) ON DELETE CASCADE
);
```

```sql
CREATE TABLE IF NOT EXISTS subscriptions (
    subscription_id VARCHAR(20) PRIMARY KEY,
    user_id INT,
    plan_id VARCHAR(10),
    paid TINYINT(1) DEFAULT 0,
    FOREIGN KEY (user_id) REFERENCES users(user_id) ON DELETE CASCADE,
    FOREIGN KEY (plan_id) REFERENCES plans(plan_id) ON DELETE CASCADE
);
```

```sql
65      -- Table Creation - Complaints Table
66    CREATE TABLE IF NOT EXISTS complaints (
67        complaint_id INT AUTO_INCREMENT PRIMARY KEY,
68        user_id INT,
69        message TEXT NOT NULL,
70        created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
71        FOREIGN KEY (user_id) REFERENCES users(user_id) ON DELETE SET NULL
72    );
73    ALTER TABLE complaints
74    ADD COLUMN handled_by INT,
75    ADD FOREIGN KEY (handled_by) REFERENCES admins(admin_id);
```

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Fill Tables with 10 records:

user_id	username	password	customer_id	customer_name	phone_number	address	email
11	USER1	Joud123	1127533030	Joud Salman	5528829460	Dammam,Alshulaah	joud@gmail.com
12	USER2	lama123	1127533031	Lama Ali	5528829468	Dammam,Alfaysaliah	Lama@gmail.com
13	USER3	Rania123	1127533035	Rania Hasan	5528829469	Alkhobar,alaziziah	Rania@gmail.com
17	USER4	Jori123	1127533034	Jori Alghamdi	5528829467	riyadh,hitten	Jori@gmail.com
19	USER5	leena123	11275330300	Leena alasmri	776532678	DAMMAM	leena@gmai.n
20	USER7	yaqq123	112753303	yaqeen mossa	5528829465	Jeddah	Yaqeen@gmail.com
21	USER9	yaqq123	112753305	Zahraa Altaweel	5528829464	Jeddah	Zahraa@gmail.com
22	USER8	ragh123	112753306	Raghedah mossa	55288294626	Jeddah	raghedah@gmail.com
30	test	test123	1	gtf8	55432267777	dammam	test@gmail.com
33	user15	userpass	NULL	Maha	NULL	456 Elm St	mimi@gmail.com
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

complaint_id	user_id	message	created_at
4	NULL	I had a technical problem in updating my acc info !	2025-04-20 21:08:48
5	NULL	I have technical issue in your program ! please I...	2025-04-20 21:33:43
6	NULL	nothing to menstion	2025-04-20 21:38:01
7	30	xxxxx	2025-04-22 08:35:02
8	19	AN ERROR HAPPEND	2025-04-22 09:09:55
9	19	error	2025-04-22 09:49:53
10	13	error	2025-04-22 10:41:27
11	33	Welcome to Telecom System! If you need help, ...	2025-04-22 21:26:50
12	35	Welcome to Telecom System! If you need help, ...	2025-04-22 21:29:29
13	36	Welcome to Telecom System! If you need help, ...	2025-04-22 21:35:46
NULL	NULL	NULL	NULL

admin_id	username	password
1	admin1	adminpass
2	admin2	adminpass
3	admin3	adminpass
4	admin4	adminpass
5	admin5	adminpass
6	admin6	adminpass
7	admin7	adminpass
8	admin8	adminpass
9	admin9	adminpass
10	admin10	adminpass
NULL	NULL	NULL

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plan_id	plan_name	monthly_fee	size	duration_month	service_type	created_by
P001	Basic Plan	100.00	5GB	1	General	NULL
P0010	superPremium plan	50.00	40GB	6	General	NULL
P002	Premium Plan	49.99	10GB	6	General	admin1
P003	Super Plan	79.99	20GB	6	General	admin2
P004	Lite Plan	19.99	29G	3	Mobile	admin2
P005	pluse Plan	28.99	20GB	1	General	admin2
P006	PrePluse Plan	49.99	30GB	6	General	admin4
P007	SuperPluse Plan	79.99	60GB	6	General	admin4
P008	high Plan	20.99	20GB	3	General	admin4
P009	SuperLite Plan	80.99	52GB	6	General	admin6

bill_id	user_id	amount	paid	bill_date
10	17	19.99	0	2025-04-21 16:51:46
11	17	79.99	0	2025-04-21 16:51:52
12	30	19.99	0	2025-04-22 08:32:59
13	30	49.99	0	2025-04-22 08:33:06
14	30	79.99	0	2025-04-22 08:35:34
15	19	100.00	0	2025-04-22 09:09:08
16	19	19.99	0	2025-04-22 09:09:14
17	19	100.00	0	2025-04-22 09:48:32
18	19	100.00	0	2025-04-22 09:49:06
19	13	100.00	0	2025-04-22 10:44:33
NULL	NULL	NULL	NULL	NULL

subscription_id	user_id	plan_id	paid
S001	11	P001	1
S002	13	P001	0
S003	12	P002	1
SUB1745580445061	30	P001	0
SUB1745580507698	17	P001	0
SUB1745580519816	17	P0010	0
SUB1745580559148	19	P001	0
SUB1745580564871	19	P0010	0
SUB1745580631299	12	P001	0
SUB1745580666050	13	P001	0
SUB1745583445531	11	P006	0
SUB1745583457596	11	P003	0
SUB1745583472304	11	P003	0

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SQL Query Statements (5 marks)

❖ **Database Diagram:**

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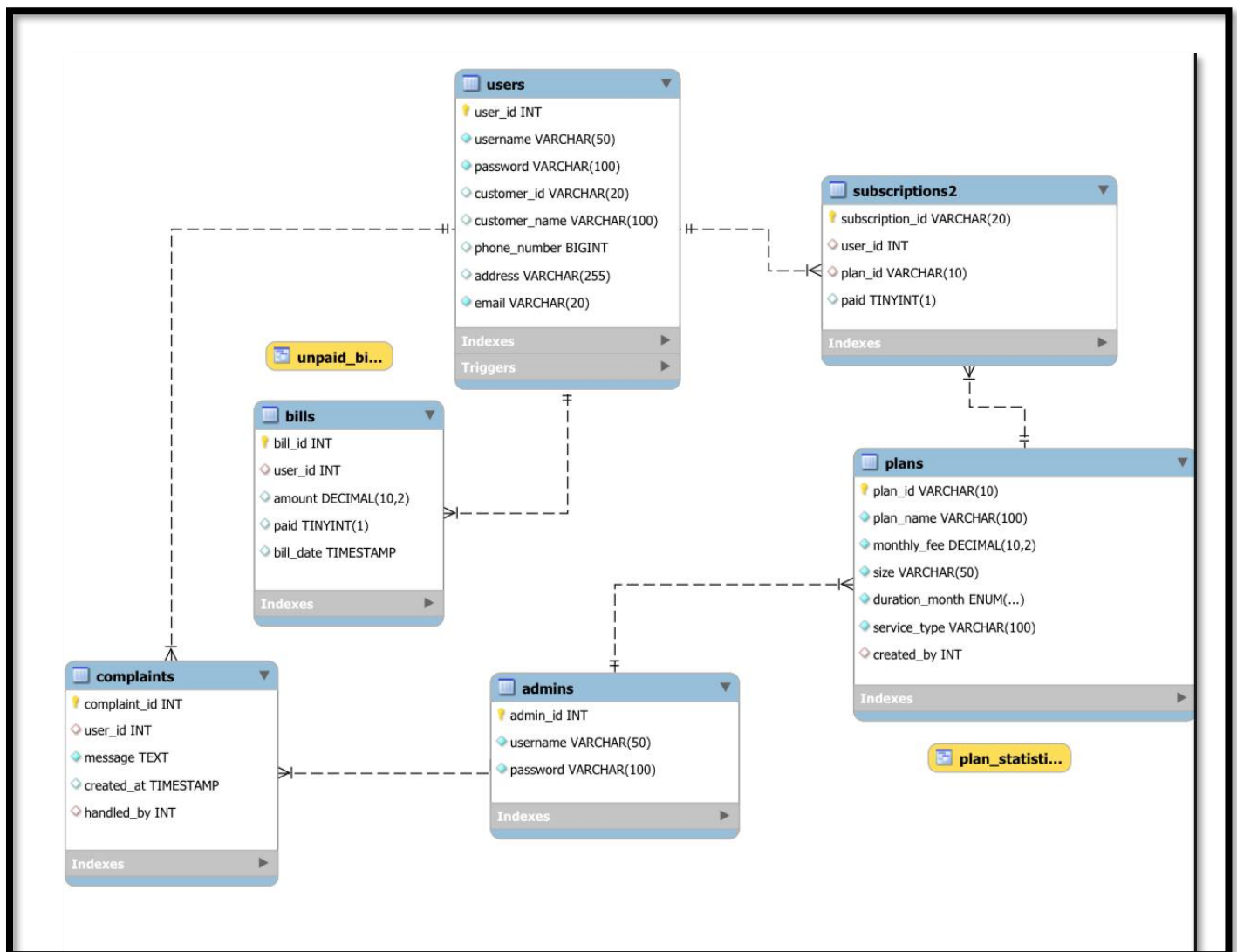
❖ **Write all SQL Queries required in your system to achieve all requirements (screenshot the result for each query).**

-- This query adds a new users named "Maha, Sara and Maha" with the same email into the system, then modify them by updating their emails to make [email] as a unique column.

```
INSERT INTO users (username, password, customer_id,
customer_name, phone_number, address, email)
VALUES
('user15', 'userpass', NULL, 'Maha', NULL, '123Dammam',
'maha@gmail.com'),
('user34', 'userpass', 123457, 'Sara', NULL, '123Dammam',
'maha@gmail.com'),
('user16', 'userpass', NULL, 'Maha', NULL, '123Dammam',
'maha@gmail.com'),
UPDATE users SET email = 'sara@gmail.com' WHERE username =
'user34'; -- to modify email as unique we need to update emails
UPDATE users SET email = 'mimi@gmail.com' WHERE username
= 'user15';
```

17	USER4	Jori123	1127533034	Jori Alghamdi	5528829467	riyadh,hitten	Jori@gmail.com
19	USER5	leena123	11275330300	Leena alasmri	776532678	DAMMAM	leena@gmai.n
20	USER7	yaqq123	112753303	yaqeen mossa	5528829465	Jeddah	Yaqeen@gmail.com
21	USER9	yaqq123	112753305	Zahraa Altaweel	5528829464	Jeddah	Zahraa@gmail.com
22	USER8	ragh123	112753306	Raghedah mossa	55288294626	Jeddah	raghedah@gmail.com
30	test	test123	1	gtf8	55432267777	dammam	test@gmail.com
33	user15	userpass	NULL	Maha	NULL	456 Elm St	mimi@gmail.com
35	user16	userpass	NULL	Maha	9876543210	123Dammam	maha@gmail.com
36	user34	userpass	123457	Sara	NULL	123Dammam	sara@gmail.com

-- This query Remove a customer by user ID [RIGHT is before executing DELETE, LEFT is after]

```
-- Delete
DELETE FROM users WHERE user_id = 32;
```

user_id	username	password	customer_id	customer_name	phone_number	address	email
22	USER8	ragh123	112753306	Raghedah mossa	55288294626	Jeddah	raghedah@gmail.com
30	test	test123	1	gtf8	55432267777	dammam	test@gmail.com
33	user15	userpass	NULL	Maha	NULL	456 Elm St	mimi@gmail.com
35	user16	userpass	NULL	Maha	9876543210	123Dammam	maha@gmail.com
36	user34	userpass	123457	Sara	NULL	123Dammam	sara@gmail.com

users 8 ✕

user_id	username	password	customer_id	customer_name	phone_number	address	email
20	USER7	yaqq123	112753303	yaqeen mossa	5528829465	Jeddah	Yaqeen@gmail.com
21	USER9	yaqq123	112753305	Zahraa Altaweel	5528829464	Jeddah	Zahraa@gmail.com
22	USER8	ragh123	112753306	Raghedah mossa	55288294626	Jeddah	raghedah@gmail.com
33	user15	userpass	NULL	Maha	NULL	456 Elm St	mimi@gmail.com
35	user16	userpass	NULL	Maha	9876543210	123Dammam	maha@gmail.com

-- This query updates a customer phone number [RIGHT is before executing DELETE , LEFT is after]

```
-- update
UPDATE users SET phone_number = 055555555 WHERE username = 'user34';
```

user_id	username	password	customer_id	customer_name	phone_number	address	email
22	USER8	ragh123	112753306	Raghedah mossa	55288294626	Jeddah	raghedah@gmail.com
33	user15	userpass	NULL	Maha	NULL	456 Elm St	mimi@gmail.com
35	user16	userpass	NULL	Maha	9876543210	123Dammam	maha@gmail.com
36	user34	userpass	123457	Sara	NULL	123Dammam	sara@gmail.com
37	admin1	testpass	NULL	Test Admin User	NULL	AdminHQ	admin1@test.com

user_id	username	password	customer_id	customer_name	phone_number	address	email
33	user15	userpass	NULL	Maha	NULL	456 Elm St	mimi@gmail.com
35	user16	userpass	NULL	Maha	9876543210	123Dammam	maha@gmail.com
36	user34	userpass	123457	Sara	55555555	123Dammam	sara@gmail.com
37	admin1	testpass	NULL	Test Admin User	NULL	AdminHQ	admin1@test.com
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

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-- This query Retrieves users with names beginning with "Maha" and any names starts with "J", useful for partial name searches.

```
-- LIKE

SELECT * FROM users WHERE
customer_name LIKE 'Maha%';
SELECT * FROM users WHERE
customer_name LIKE 'J%';
```


-- This query Lists all plans costing between 30 and 50 SAR/month, helping in pricing comparisons.

```
--BETWEEN
SELECT * FROM plans WHERE
monthly_fee BETWEEN 30 AND 50;
```


-- This query selects all plan_id values where the plan was created by either 'admin1' or 'admin2'.
It uses IN and OR to match the admin usernames inside the admins table.

```
--IN
SELECT DISTINCT plan_id
FROM plans
WHERE created_by IN (
    SELECT admin_id
    FROM admins
    WHERE username = 'admin1')
OR created_by IN (
    SELECT admin_id
    FROM admins
    WHERE username = 'admin2');
```

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-- This query *Displays all users sorted alphabetically, useful in admin dashboard listings.*

```
--ORDER BY
SELECT * FROM users ORDER BY
customer_name ASC;
```

user_id	username	password	customer_id	customer_name	phone_number	address	email
17	USER4	Jori123	1127533034	Jori Alghamdi	5528829467	riyadh,hitten	Jori@gmail.com
11	USER1	Joud123	1127533030	Joud Salman	5528829460	Dammam,Alshulaah	joud@gmail.com
12	USER2	lama123	1127533031	Lama Ali	5528829468	Dammam,Alfaysaliah	Lama@gmail.com
19	USER5	leena123	11275330300	Leena alasmri	776532678	DAMMAM	leena@gmai.n
33	user15	userpass	NULL	Maha		456 Elm St	mimi@gmail.com
35	user16	userpass	NULL	Maha	9876543210	123Dammam	maha@gmail.com
22	USER8	ragh123	112753306	Raghedah mossa	5528829626	Jeddah	raghedah@gmail.com
13	USER3	Rania123	1127533035	Rania Hasan	5528829469	Alkhobar,alaziziah	Rania@gmail.com
36	user34	userpass	123457	Sara	55555555	123Dammam	sara@gmail.com
37	admin1	testpass	NULL	Test Admin User	NULL	AdminHQ	admin1@test.com

-- This query *Helps identify incomplete user records (missing contact details)..*

```
--IS NULL
SELECT * FROM users WHERE
phone_number IS NULL;
```

user_id	username	password	customer_id	customer_name	phone_number	address	email
33	user15	userpass	NULL	Maha	NULL	456 Elm St	mimi@gmail.com
37	admin1	testpass	NULL	Test Admin User	NULL	AdminHQ	admin1@test.com
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

-- This query *Useful for cross-checking duplicate usernames or login conflicts.*

```
-- UNION Combine all usernames from both
users and admins without duplicates

SELECT username FROM users
UNION
SELECT username FROM admins;
```

Result Grid

username
USER1
user15
user16
USER2
USER3
user34
USER4
USER5
USER7
USER8
USER9
admin10
admin2
admin3
admin4

Result 23

-- This Trigger automatically sends a welcome message as a complaint entry for tracking support.

```
-- Trigger
DELIMITER $$
CREATE TRIGGER welcome_complaint
AFTER INSERT ON users
FOR EACH ROW
BEGIN
    INSERT INTO complaints(user_id, message)
    VALUES (NEW.user_id, 'Welcome to Telecom System! If
you need help reach out');
END$$
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Trigger	sql_mode	SQL Original Statement	character_	collation_connection	Database Collation	Created
welcome_complaint	ONLY_FULL_GROUP_...	CREATE DEFINER=...	utf8mb4	utf8mb4_0900_ai_ci	utf8mb4_0900_ai_ci	2025-04-22 ...

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-- This Procedure for reusing the user list query without rewriting it every time.

```
-- Procedure
DELIMITER $$
CREATE PROCEDURE GetAllUsers()
BEGIN
    SELECT * FROM users;
END $$
DELIMITER ;

CALL GetAllUsers();
```

user_id	username	password	customer_id	customer_name	phone_number	address	email
11	USER1	Joud123	1127533030	Joud Salman	5528829460	Dammam,Alshulaah	joud@gmail.com
12	USER2	lama123	1127533031	Lama Ali	5528829468	Dammam,Alfaysaliah	Lama@gmail.com
13	USER3	Rania123	1127533035	Rania Hasan	5528829469	Alkhobar,alaziziah	Rania@gmail.com
17	USER4	Jori123	1127533034	Jori Alghamdi	5528829467	riyadh,hitten	Jori@gmail.com
19	USER5	leena123	1127533000	Leena alasmri	776532678	DAMMAM	leena@gmai.n
20	USER7	yaqq123	112753303	yaqeen mossa	5528829465	Jeddah	Yaqeen@gmail.com
21	USER9	yaqq123	112753305	Zahraa Altaweel	5528829464	Jeddah	Zahraa@gmail.com
22	USER8	ragh123	112753306	Raghedah mossa	55288294626	Jeddah	raghedah@gmail.com
33	user 15	userpass	NULL	Maha		456 Elm St	mimi@gmail.com
35	user 16	userpass		Maha	9876543210	123Dammam	maha@gmail.com
36	user 34	userpass	123457	Sara	55555555	123Dammam	sara@gmail.com
37	admin1	testpass	NULL	Test Admin User	NULL	AdminHQ	admin1@test.com

-- This Custom function to retrieve a user's email address by ID, useful in automation.

```
-- function
DELIMITER $$
CREATE FUNCTION getUserEmail(uid int)
RETURNS VARCHAR(100)
READS SQL DATA
BEGIN
    DECLARE uemail VARCHAR(100);
    SELECT email INTO uemail FROM users WHERE user_id = uid;
    RETURN uemail;
END$$
DELIMITER ;
```

getUserEmail(11)
joud@gmail.com

-- This Helps quickly find the user who owns a specific subscription.

```
-- Nested Query
SELECT * FROM users
WHERE user_id = (SELECT user_id FROM
subscriptions2 WHERE subscription_id = 'S001');
```

user_id	username	password	customer_id	customer_name	phone_number	address	email
11	USER1	Joud123	1127533030	Joud Salman	5528829460	Dammam,Alshulaah	joud@gmail.com
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

-- This EXISTS Returns users who have at least one unpaid bill.

```
-- EXISTS
SELECT username FROM users u
WHERE EXISTS (
    SELECT 1 FROM bills b WHERE b.user_id =
u.user_id AND b.paid = false
);
```

username
USER4
USER5
USER3
USER9
USER2
USER1

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-- This Outer Join Useful for identifying unused or underused plans.

```
-- Outer Join
SELECT p.plan_id, p.plan_name,
s.subscription_id
FROM plans p
LEFT JOIN subscriptions2 s ON p.plan_id =
s.plan_id;
```

plan_id	plan_name	subscription_id
P001	Basic Plan	S001
P001	Basic Plan	S002
P001	Basic Plan	SUB1745580507698
P001	Basic Plan	SUB1745580559148
P001	Basic Plan	SUB1745580631299
P001	Basic Plan	SUB1745580666050
P0010	superPremium plan	SUB1745580519816
P0010	superPremium plan	SUB1745580564871
P002	Premium Plan	S003
P003	Super Plan	SUB1745583457596
P003	Super Plan	SUB1745583472304
P003	Super Plan	SUB1745583504791
P003	Super Plan	SUB1745583510013
P004	Lite Plan	NULL
P005	pluse Plan	NULL

-- This Join Useful Showing each user and their active plan subscriptions.

```
-- Join
SELECT *
FROM users u
JOIN subscriptions2 s ON u.user_id = s.user_id;
```

user_id	username	password	customer_id	customer_name	phone_number	address	email	subscription_id	user_id	plan_id	paid
11	USER1	Joud123	1127533030	Joud Salman	5528829460	Dammam,Alshulaah	joud@gmail.com	S001	11	P001	1
13	USER3	Rania123	1127533035	Rania Hasan	5528829469	Alkhobar,alazziah	Rania@gmail.com	S002	13	P001	0
12	USER2	lama123	1127533031	Lama Ali	5528829468	Dammam,Alfaysaliah	Lama@gmail.com	S003	12	P002	1
17	USER4	Jori123	1127533034	Jori Alghamdi	5528829467	riyadh,hitten	Jori@gmail.com	SUB1745580507698	17	P001	0
17	USER4	Jori123	1127533034	Jori Alghamdi	5528829467	riyadh,hitten	Jori@gmail.com	SUB1745580519816	17	P0010	0
19	USER5	leena123	1127533000	Leena alasmri	776532678	DAMMAM	leena@gmai.n	SUB1745580559148	19	P001	0
19	USER5	leena123	1127533000	Leena alasmri	776532678	DAMMAM	leena@gmai.n	SUB1745580564871	19	P0010	0
12	USER2	lama123	1127533031	Lama Ali	5528829468	Dammam,Alfaysaliah	Lama@gmail.com	SUB1745580631299	12	P001	0
13	USER3	Rania123	1127533035	Rania Hasan	5528829469	Alkhobar,alazziah	Rania@gmail.com	SUB1745580666050	13	P001	0
11	USER1	Joud123	1127533030	Joud Salman	5528829460	Dammam,Alshulaah	joud@gmail.com	SUB1745583445531	11	P006	0
11	USER1	Joud123	1127533030	Joud Salman	5528829460	Dammam,Alshulaah	joud@gmail.com	SUB1745583457596	11	P003	0
11	USER1	Joud123	1127533030	Joud Salman	5528829460	Dammam,Alshulaah	joud@gmail.com	SUB1745583472304	11	P003	0
12	USER2	lama123	1127533031	Lama Ali	5528829468	Dammam,Alfaysaliah	Lama@gmail.com	SUB1745583504791	12	P003	0
12	USER2	lama123	1127533031	Lama Ali	5528829468	Dammam,Alfaysaliah	Lama@gmail.com	SUB1745583510013	12	P003	0

-- This "view + Aggregate + Group By " helps detect popular plans that have more than users, aiding in performance tracking.

```
-- View + Aggregate + Group By + Having

CREATE VIEW plan_statistics AS
SELECT p.plan_name, COUNT(s.subscription_id) AS
total_users
FROM plans p
LEFT JOIN subscriptions2 s ON p.plan_id = s.plan_id
GROUP BY p.plan_name;
SELECT * FROM plan_statistics;
```

plan_name	total_users
Basic Plan	6
superPremium plan	2
Premium Plan	1
Super Plan	4
Lite Plan	0
pluse Plan	0
PrePluse Plan	1
SuperPluse Plan	0
high Plan	0
SuperLite Plan	0

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-- This Aggregate functions + Group By + Having – Show statistics for each plan with more than 3 users

```
--Aggregate functions + Group By + Having
SELECT s.plan_id, p.plan_name, COUNT(*)
AS user_count
FROM subscriptions2 s
JOIN plans p ON s.plan_id = p.plan_id
GROUP BY s.plan_id, p.plan_name
HAVING COUNT(*) > 3;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

plan_id	plan_name	user_count
P001	Basic Plan	6
P003	Super Plan	4

-- This INTERSECT Find usernames that exist in both users and admins tables This is useful for identifying accounts that might have both user and admin roles, or for finding conflicting data in the system.

```
-- INTERSECT
admins tables
SELECT username FROM users
INTERSECT
SELECT username FROM admins;
```

Result Grid | Filte

username
admin 1

-- This Simulated EXCEPT query Find usernames in the users table that are not in the admins table

```
-- EXCEPT using NOT IN
SELECT username FROM users
WHERE username NOT IN (SELECT username
FROM admins);
```

username
USER 1
user 15
user 16
USER 2
USER 3
user 34
USER 4
USER 5
USER 7
USER 8
USER 9

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