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Design a database for a messenger system, The system contains many users that can send messages to each other, and each user has his own profile that contains information about him. This system has many services, and the users can use these services when they buy them, each user can buy more than one service.

1- Draw the ER diagram or Schema diagram for the previous scenario.
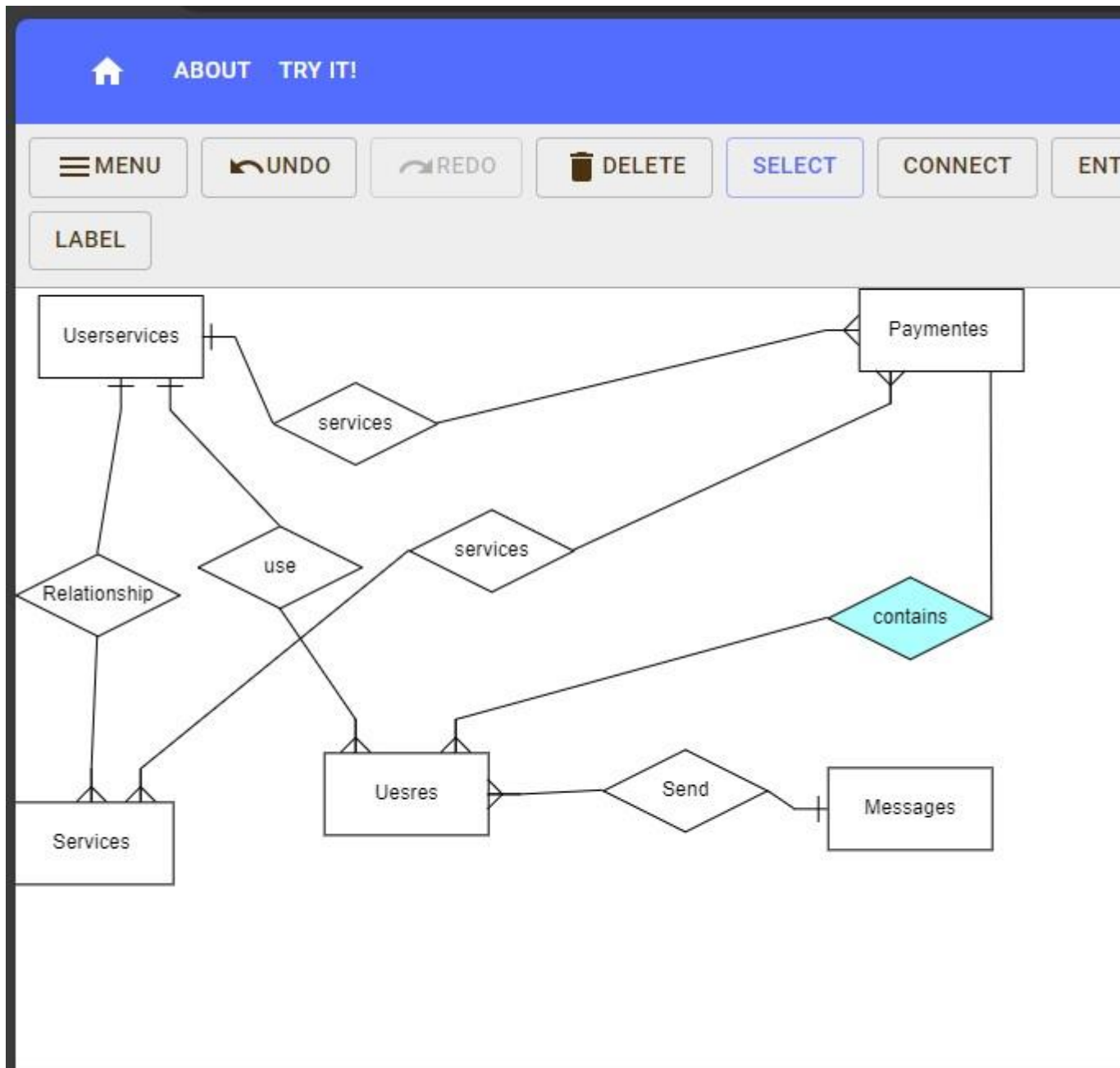
2-

2. Create all the required tables for the system.

```
Worksheet    Query Builder
 1  create table profiles(
 2  profiel_ID number primary key,
 3  user_id NUMBER UNIQUE,
 4  Fname varchar(20),
 5  Lname varchar(15),
 6  birth_date date,
 7  phone_number varchar2(10),
 8  location varchar2(255),
 9  FOREIGN KEY (user_id) REFERENCES users(user_id)
10  );
11
12
13  |
```

database.sql | TestDB1.sql | Welcome Page | database | PROFILES

Columns | Data | Model | Constraints | Grants | Statistics | Triggers | Flashback | Dependencies | Details | Partitions | Indexes | SQL

Actions...

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	PROFIEL_ID	NUMBER	No	(null)	1	(null)
2	USER_ID	NUMBER	Yes	(null)	2	(null)
3	FNAME	VARCHAR2(20 BYTE)	Yes	(null)	3	(null)
4	LNAME	VARCHAR2(15 BYTE)	Yes	(null)	4	(null)
5	BIRTH_DATE	DATE	Yes	(null)	5	(null)
6	PHONE_NUMBER	VARCHAR2(10 BYTE)	Yes	(null)	6	(null)
7	LOCATION	VARCHAR2(255 BYTE)	Yes	(null)	7	(null)

users table:

database.sql | TestDB1.sql | Welcome Page | database | USERS

olumns | Data | Model | Constraints | Grants | Statistics | Triggers | Flashback | Dependencies | Details | Partitions | Indexes | SQL

Actions...

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	USER_ID	NUMBER(12,0)	No	(null)	1	(null)
2	USER_NAME	VARCHAR2(20 BYTE)	Yes	(null)	2	(null)
3	FNAME	VARCHAR2(20 BYTE)	Yes	(null)	3	(null)
4	LNAME	VARCHAR2(20 BYTE)	Yes	(null)	4	(null)
5	EMAIL	VARCHAR2(100 BYTE)	Yes	(null)	5	(null)

messages Table:

```
1  create table message(
2  message_id number   primary key ,
3  Sender_id number,
4  receiver_id number,
5  message_text varchar2(1000),
6  FOREIGN KEY (sender_id)REFERENCES users(user_id),
7  FOREIGN key (receiver_id)REFERENCES users(user_id)
8  );
9  |
10
11
12
```

Script Output x | ▷ Query Result x

Task completed in 0.063 seconds

```
Table PROFILES created.


Table MESSAGE created.
```

Connections tree:
- DEPTID
- DEPTNAME
- LOCATION
- EMPLOYE
  - EMPID
  - EMPNAME
  - EMAIL
  - SALARY
  - DEPID
- PROFILES
- ROLE
  - ROLEID
  - NAME
- STUDENT
  - STUDENT_ID
  - STUDENT_NAME
  - GPA
  - REG_DATE
  - SEX
- USERS
- WORKES
  - WORKER_ID
  - WORKER_NAME
  - SALARY
  - EMAIL
  - MOBILE_NO
- Views
- Indexes
- Packages
- Procedures
- Functions
- Operators

database.sql | TestDB1.sql | Welcome Page | database | MESSAGE

Columns | Data | Model | Constraints | Grants | Statistics | Triggers | Flashback | Dependencies | Details | Partitions | Indexes | SQL

Actions...

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	MESSAGE_ID	NUMBER	No	(null)	1	(null)
2	SENDER_ID	NUMBER	Yes	(null)	2	(null)
3	RECEIVER_ID	NUMBER	Yes	(null)	3	(null)
4	MESSAGE_TEXT	VARCHAR2(1000 BYTE)	Yes	(null)	4	(null)

Service table:

```
 8  );
 9
10 □create table service (
11  service_id number primary key ,
12  service_name varchar2(150) not null,
13   product_description VARCHAR2(500),
14      product_price NUMBER(11, 3)
15  );
16
17
18  |
19  );
```

Script Output × Query Result ×

Task completed in 0.038 seconds

Table MESSAGE created.

Table SERVICE created.

Columns | Data | Model | Constraints | Grants | Statistics | Triggers | Flashback | Dependencies | Details | Partitions | Indexes | SQL

Actions...

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	SERVICE_ID	NUMBER	No	(null)	1	(null)
2	SERVICE_NAME	VARCHAR2(150 BYTE)	No	(null)	2	(null)
3	PRODUCT_DESCRIPTION	VARCHAR2(500 BYTE)	Yes	(null)	3	(null)
4	PRODUCT_PRICE	NUMBER(11,3)	Yes	(null)	4	(null)

TABLE payments:

0.038 seconds

Worksheet | Query Builder
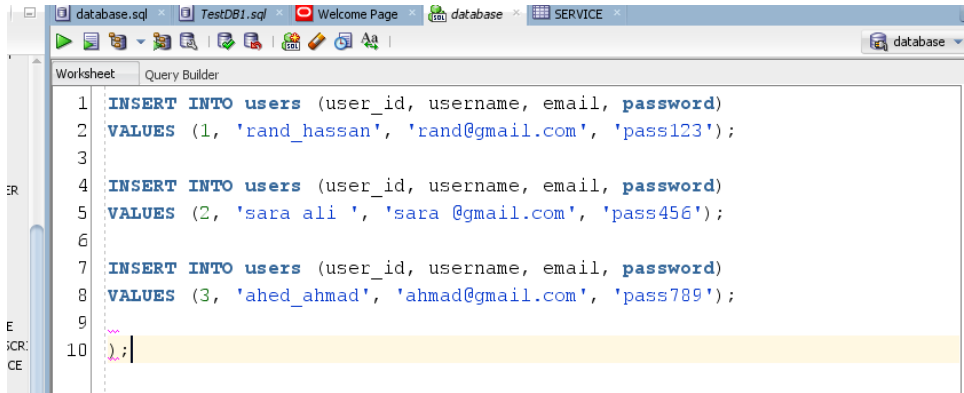
```
 1 □CREATE TABLE payments (
 2      payment_id NUMBER PRIMARY KEY,
 3      user_id NUMBER,
 4      service_id NUMBER,
 5      amount_paid NUMBER(12, 3),
 6      payment_date DATE DEFAULT SYSDATE,
 7      payment_method VARCHAR2(20),
 8      FOREIGN KEY (user_id) REFERENCES users(user_id),
 9      FOREIGN KEY (service_id) REFERENCES services(service_id)
10  );
11
```
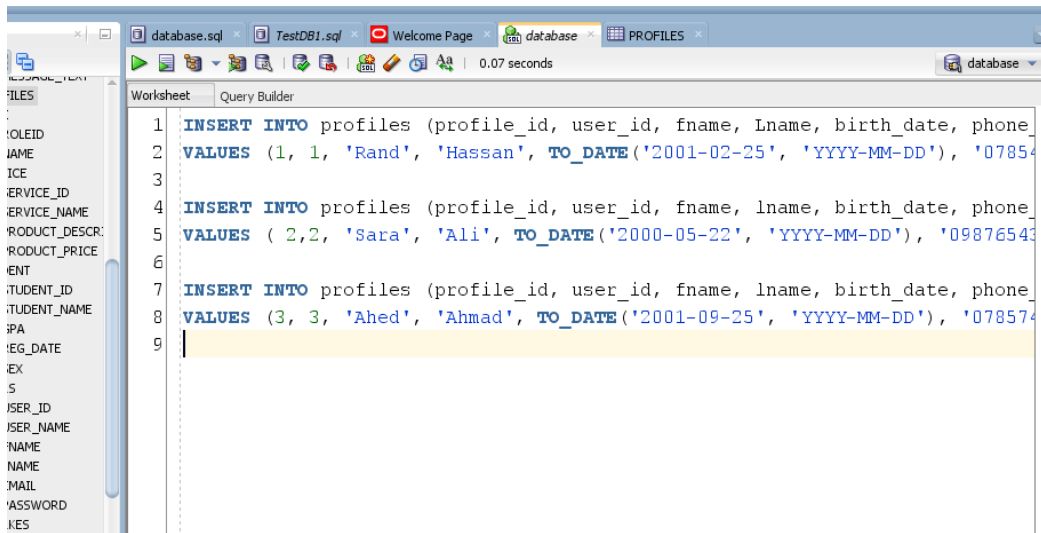
Columns | Data | Model | Constraints | Grants | Statistics | Triggers | Flashback | Dependencies | Details | Partitions | Indexes | SQL

Actions...

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	SERVICE_ID	NUMBER	No	(null)	1	(null)
2	SERVICE_NAME	VARCHAR2(150 BYTE)	No	(null)	2	(null)
3	PRODUCT_DESCRIPTION	VARCHAR2(500 BYTE)	Yes	(null)	3	(null)
4	PRODUCT_PRICE	NUMBER(11,3)	Yes	(null)	4	(null)

3- Add 3 records for each table using DML commands
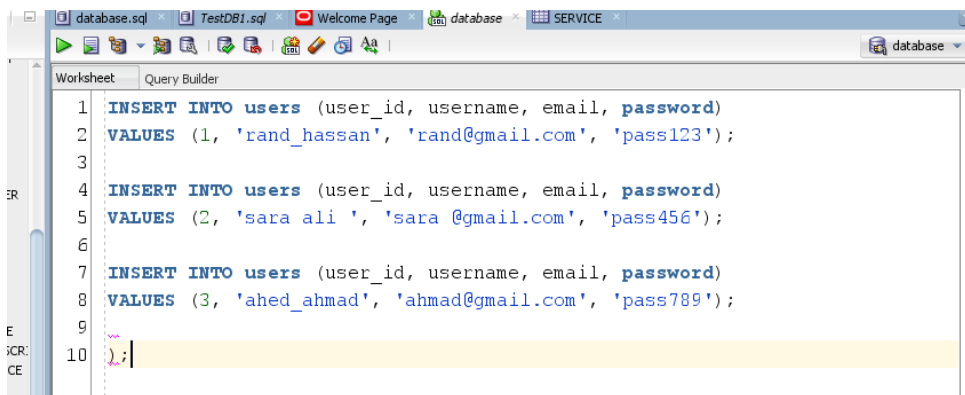

```sql
INSERT INTO users (user_id, username, email, password)
VALUES (1, 'rand_hassan', 'rand@gmail.com', 'pass123');

INSERT INTO users (user_id, username, email, password)
VALUES (2, 'sara ali ', 'sara @gmail.com', 'pass456');

INSERT INTO users (user_id, username, email, password)
VALUES (3, 'ahed_ahmad', 'ahmad@gmail.com', 'pass789');
);
```



```sql
INSERT INTO profiles (profile_id, user_id, fname, Lname, birth_date, phone_
VALUES (1, 1, 'Rand', 'Hassan', TO_DATE('2001-02-25', 'YYYY-MM-DD'), '07854

INSERT INTO profiles (profile_id, user_id, fname, lname, birth_date, phone_
VALUES ( 2,2, 'Sara', 'Ali', TO_DATE('2000-05-22', 'YYYY-MM-DD'), '09876543

INSERT INTO profiles (profile_id, user_id, fname, lname, birth_date, phone_
VALUES (3, 3, 'Ahed', 'Ahmad', TO_DATE('2001-09-25', 'YYYY-MM-DD'), '078574
```



```sql
INSERT INTO users (user_id, username, email, password)
VALUES (1, 'rand_hassan', 'rand@gmail.com', 'pass123');

INSERT INTO users (user_id, username, email, password)
VALUES (2, 'sara ali ', 'sara @gmail.com', 'pass456');

INSERT INTO users (user_id, username, email, password)
VALUES (3, 'ahed_ahmad', 'ahmad@gmail.com', 'pass789');
);
```

```
1  INSERT INTO messages (MESSAGE_ID, sender_id, receiver_id, message_text)
2  VALUES (1, 1, 2, 'HI SARA');
3
4  INSERT INTO messages (message_id, sender_id, receiver_id, message_text)
5  VALUES (2, 2, 1, 'Hi Rand!');
6
7  INSERT INTO messages (message_id, sender_id, receiver_id, message_text)
8  VALUES (3, 1, 3, 'HI AHED!' );
9
```

database.sql | TestDB1.sql | Welcome Page | database | PROFILES

database

Worksheet | Query Builder

```
1  INSERT INTO services (service_id, service_name, service_description, servic
2  VALUES (1, 'CALL', 'Enjoy professional video calls', 9.99);
3
4  INSERT INTO services (service_id, service_name, service_description, servic
5  VALUES (2, 'CHAT', 'Ability to share files with other users', 4.99);
6
7  INSERT INTO services (service_id, service_name, service_description, servic
8  VALUES (3, 'VIDEO_CALL', 'High-quality video calls', 14.99);
9
```

database

Worksheet | Query Builder

```
1  INSERT INTO payments (payment_id, user_id, service_id, amount_paid, payment
2  VALUES (4, 1, 2, 3.50, SYSDATE, 'Debit Card');
3
4  INSERT INTO payments (payment_id, user_id, service_id, amount_paid, payment
5  VALUES (5, 2, 1, 10.99, SYSDATE, 'رسمش');
6
7  INSERT INTO payments (payment_id, user_id, service_id, amount_paid, payment
8  VALUES (6, 3, 2, 5.99, SYSDATE, 'Credit Card');
9
```

4- Update 1 record from each table using DML commands.

```
eet    Query Builder
UPDATE users
SET email = 'rand_hassan_updated@gmail.com'
WHERE user_id = 1;
UPDATE profiles
SET phone_number = '0785492688'
WHERE profile_id = 1;
UPDATE messages
SET message_text = 'welcome!'
WHERE message_id =3;
UPDATE services
SET service_price =5.5;
WHERE service_id = 2;
UPDATE user_services
SET service_id = 2
WHERE user_id = 1 AND service_id = 1;
UPDATE payments
SET amount_paid = 10.95
WHERE payment_id =2;
```
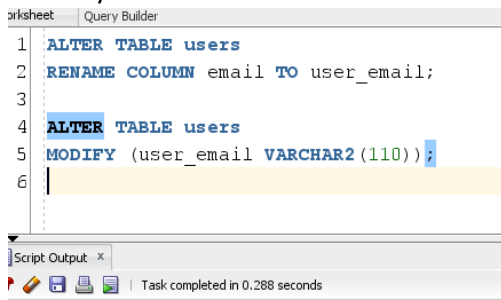
ript Output ✕   ▷ Query Result ✕

5. Delete 1 record from each table using DML commands.:

```
DELETE FROM users
WHERE user_id = 3;
DELETE FROM profiles
WHERE profile_id = 3;
DELETE FROM messages
WHERE message_id = 2;
DELETE FROM services
WHERE service_id = 3;
DELETE FROM payments
WHERE payment_id = 2;
```

6- Modify 1 of the table's names using DDL commands.

```
 database.sql    TestDB1.sql    Welcome Page    database    PROFILES

Worksheet    Query Builder

 1  --6- Modify 1 of the table's names using DDL commands.
 2  ALTER TABLE payments
 3  RENAME TO payments_1;
 4  ALTER TABLE profiles
 5  RENAME TO profiles_1;
 6  ALTER TABLE messages
 7  RENAME TO messages_ta;
 8  ALTER TABLE services
 9  RENAME TO service_1;
10  ALTER TABLE user_services
11  RENAME TO service_1;
12
```

7- Modify 2 columns' names with their datatypes using DDL commands.

```
orksheet    Query Builder
 1  ALTER TABLE users
 2  RENAME COLUMN email TO user_email;
 3
 4  ALTER TABLE users
 5  MODIFY (user_email VARCHAR2(110));
 6  |
```

```
Script Output  ×
▶ ✔ 🖫 🖨 🖻 | Task completed in 0.288 seconds
```
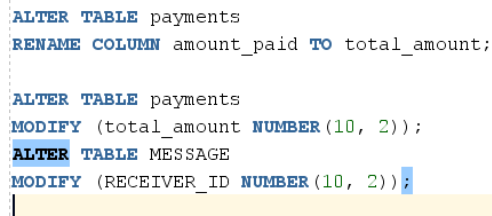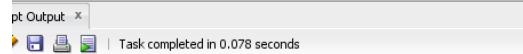
able USERS altered.

able USERS altered.

```
ALTER TABLE payments
RENAME COLUMN amount_paid TO total_amount;

ALTER TABLE payments
MODIFY (total_amount NUMBER(10, 2));
ALTER TABLE MESSAGE
MODIFY (RECEIVER_ID NUMBER(10, 2));
|
```
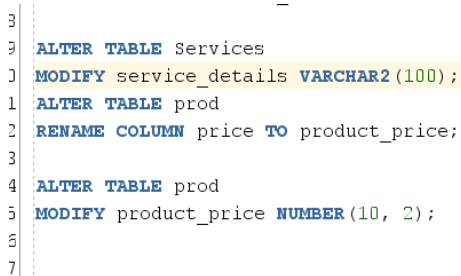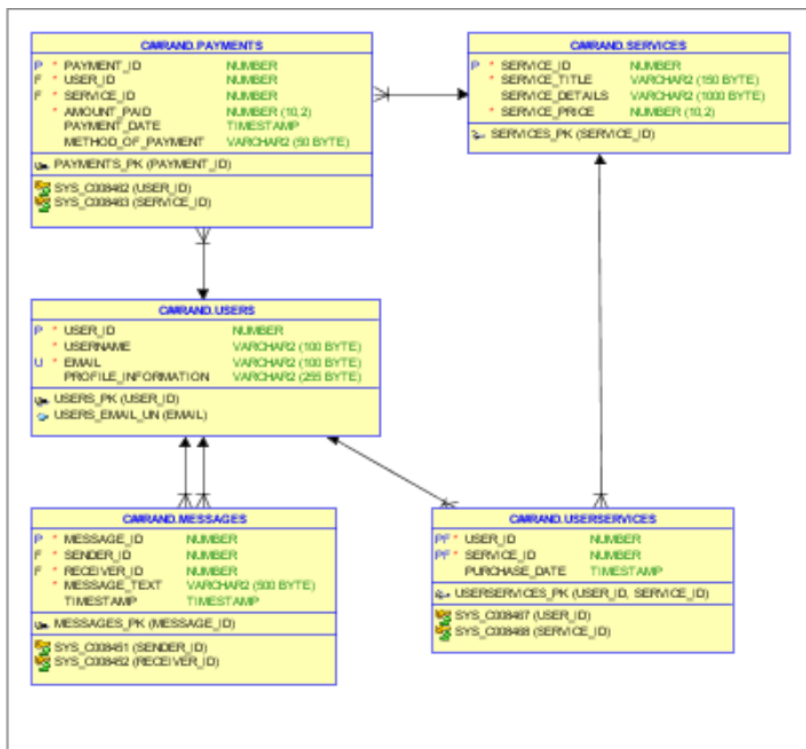
```
pt Output  ×
▶ 🖫 🖨 🖻 | Task completed in 0.078 seconds
```

le MESSAGE altered.

```
 3
 9  ALTER TABLE Services
 ]  MODIFY service_details VARCHAR2(100);
 1  ALTER TABLE prod
 2  RENAME COLUMN price TO product_price;
 3
 4  ALTER TABLE prod
 5  MODIFY product_price NUMBER(10, 2);
 6
 7
```

8- Create the class diagram for the system

…