CSC:785 Information Retrieval
Assignment 02
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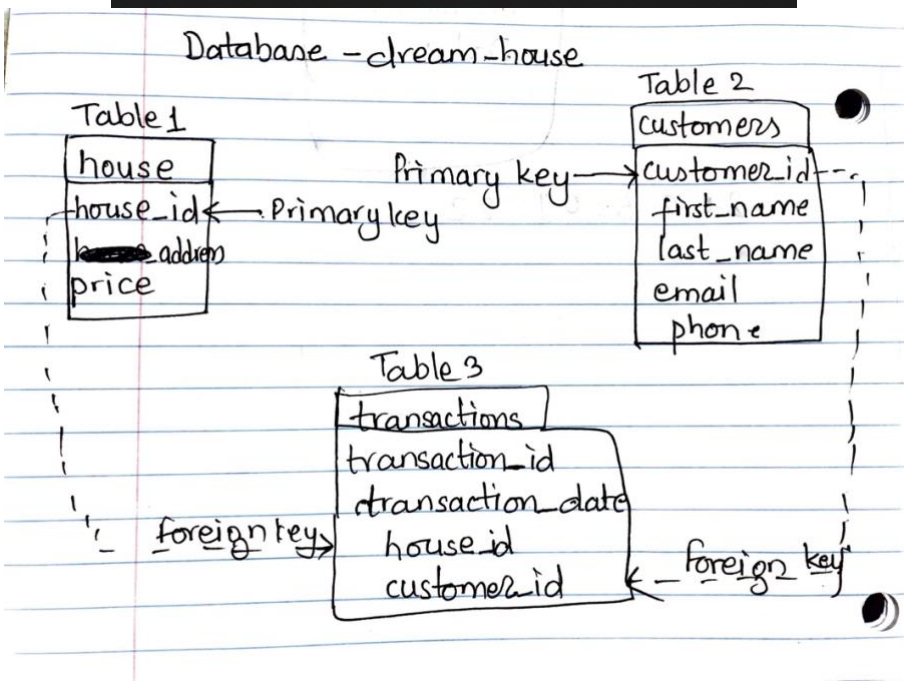
After creating a database (dream_house, for example), please do the following (sql commands are necessary):

To begin this assignment, the initial step involves installing MySQL and accessing the MySQL shell. In the first step, I created a database called 'dream_house.' To create this database, you can use the following SQL queries.

```
mysql> CREATE DATABASE dream_house;
Query OK, 1 row affected (0.01 sec)
```



1. Please input relations (max. 3).

   For the input relations let's create the three different tables named
   a. Table – customers
   b. Table – house
   c. Table - transactions

```
mysql> CREATE TABLE customers (customer_id INT PRIMARY KEY AUTO_INCREMENT, first_name
VARCHAR(50),  last_name VARCHAR(50), email VARCHAR(50), phone DECIMAL(10,0));
Query OK, 0 rows affected (0.04 sec)

mysql> INSERT INTO customers (first_name, last_name, email, phone)
    -> VALUES ("KC", "Santosh", 'santosh.kc@gmail.com', 9898123567),
    -> ("Srijana", "Raut", "srijana.raut@gmail.com", 7894569872),
    -> ("Alisha", "Karna", "karna.alisha@gmail.com", 5678923456);
Query OK, 3 rows affected (0.01 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> select * from customers;
+-------------+------------+-----------+-----------------------+------------+
| customer_id | first_name | last_name | email                 | phone      |
+-------------+------------+-----------+-----------------------+------------+
|           1 | KC         | Santosh   | santosh.kc@gmail.com  | 9898123567 |
|           2 | Srijana    | Raut      | srijana.raut@gmail.com | 7894569872 |
|           3 | Alisha     | Karna     | karna.alisha@gmail.com | 5678923456 |
+-------------+------------+-----------+-----------------------+------------+
3 rows in set (0.00 sec)
```

```
mysql> CREATE TABLE house (house_id INT PRIMARY KEY AUTO_INCREMENT, address VARCHAR(50
), price DECIMAL(10,2));
Query OK, 0 rows affected (0.02 sec)

mysql> INSERT INTO house (address, price) VALUES ("453 Elm Street", 78000.00), ("350 C
lark Street", 80000.00), ("422 N Dakota", 30000.00);
Query OK, 3 rows affected (0.02 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> select * from house;
+----------+-----------------+----------+
| house_id | address         | price    |
+----------+-----------------+----------+
|        1 | 453 Elm Street  | 78000.00 |
|        2 | 350 Clark Street | 80000.00 |
|        3 | 422 N Dakota    | 30000.00 |
+----------+-----------------+----------+
3 rows in set (0.00 sec)
```

Now, creating the last table

```
mysql> CREATE TABLE transactions (
    ->     transaction_id INT PRIMARY KEY AUTO_INCREMENT,
    ->     transaction_date DATE,
    ->     customer_id INT,
    ->     house_id INT,
    ->     FOREIGN KEY (customer_id) REFERENCES customers(customer_id),
    ->     FOREIGN KEY (house_id) REFERENCES house(house_id)
    -> );
Query OK, 0 rows affected (0.03 sec)
```

```
mysql> INSERT INTO transactions (transaction_date, customer_id, house_id) VALUES     ('2023-09-22', 1, 2),     ('2023-09-23', 2, 3),     ('2023-09-24', 3, 1);
Query OK, 3 rows affected (0.00 sec)
Records: 3  Duplicates: 0  Warnings: 0

mysql> SELECT * FROM transactions;
+----------------+------------------+-------------+----------+
| transaction_id | transaction_date | customer_id | house_id |
+----------------+------------------+-------------+----------+
|              4 | 2023-09-22       |           1 |        2 |
|              5 | 2023-09-23       |           2 |        3 |
|              6 | 2023-09-24       |           3 |        1 |
+----------------+------------------+-------------+----------+
3 rows in set (0.00 sec)
```

2. Show primary, foreign and secondary keys from the relations.

Primary Key

Table 1 – customers

```
mysql>  Show index from dream_house.customers where key_name='PRIMARY';
+-----------+------------+----------+--------------+-------------+-----------+-------------+----------+--------+------+------------+---------+---------------+---------+------------+
| Table     | Non_unique | Key_name | Seq_in_index | Column_name | Collation | Cardinality | Sub_part | Packed | Null | Index_type | Comment | Index_comment | Visible | Expression |
+-----------+------------+----------+--------------+-------------+-----------+-------------+----------+--------+------+------------+---------+---------------+---------+------------+
| customers |          0 | PRIMARY  |            1 | customer_id | A         |           3 |     NULL |   NULL |      | BTREE      |         |               | YES     | NULL       |
+-----------+------------+----------+--------------+-------------+-----------+-------------+----------+--------+------+------------+---------+---------------+---------+------------+
1 row in set (0.02 sec)
```

Table 2 – house

```
mysql>  Show index from dream_house.house where key_name='PRIMARY';
+-------+------------+----------+--------------+-------------+-----------+-------------+----------+--------+------+------------+---------+---------------+---------+------------+
| Table | Non_unique | Key_name | Seq_in_index | Column_name | Collation | Cardinality | Sub_part | Packed | Null | Index_type | Comment | Index_comment | Visible | Expression |
+-------+------------+----------+--------------+-------------+-----------+-------------+----------+--------+------+------------+---------+---------------+---------+------------+
| house |          0 | PRIMARY  |            1 | house_id    | A         |           3 |     NULL |   NULL |      | BTREE      |         |               | YES     | NULL       |
+-------+------------+----------+--------------+-------------+-----------+-------------+----------+--------+------+------------+---------+---------------+---------+------------+
1 row in set (0.01 sec)
```

Table 3 – transactions

```
mysql>  Show index from dream_house.transactions where key_name='PRIMARY';
+--------------+------------+----------+--------------+----------------+-----------+-------------+----------+--------+------+------------+---------+---------------+---------+------------+
| Table        | Non_unique | Key_name | Seq_in_index | Column_name    | Collation | Cardinality | Sub_part | Packed | Null | Index_type | Comment | Index_comment | Visible | Expression |
+--------------+------------+----------+--------------+----------------+-----------+-------------+----------+--------+------+------------+---------+---------------+---------+------------+
| transactions |          0 | PRIMARY  |            1 | transaction_id | A         |           3 |     NULL |   NULL |      | BTREE      |         |               | YES     | NULL       |
+--------------+------------+----------+--------------+----------------+-----------+-------------+----------+--------+------+------------+---------+---------------+---------+------------+
1 row in set (0.01 sec)
```

Secondary key

```
mysql> SELECT COLUMN_NAME
    -> FROM INFORMATION_SCHEMA.COLUMNS
    -> WHERE TABLE_SCHEMA = "dream_house"
    -> AND COLUMN_KEY NOT IN ('PRI', 'MUL');
+------------------+
| COLUMN_NAME      |
+------------------+
| first_name       |
| last_name        |
| email            |
| phone            |
| address          |
| price            |
| transaction_date |
+------------------+
7 rows in set (0.00 sec)
```

Foreign Key

```
mysql> SELECT
    ->   TABLE_NAME,COLUMN_NAME,CONSTRAINT_NAME, REFERENCED_TABLE_NAME,REFERENCED_COLUMN_NAME
    -> FROM
    ->   INFORMATION_SCHEMA.KEY_COLUMN_USAGE
    -> WHERE
    ->   REFERENCED_TABLE_SCHEMA = 'dream_house' AND
    -> REFERENCED_TABLE_NAME = "transactions";
Empty set (0.02 sec)

mysql> SELECT    TABLE_NAME,COLUMN_NAME,CONSTRAINT_NAME, REFERENCED_TABLE_NAME,REFERENCED_COLUMN_NAME FROM
INFORMATION_SCHEMA.KEY_COLUMN_USAGE WHERE   REFERENCED_TABLE_SCHEMA = 'dream_house' AND REFERENCED_TABLE_NAME
 = "customers";
+--------------+-------------+--------------------+-----------------------+------------------------+
| TABLE_NAME   | COLUMN_NAME | CONSTRAINT_NAME    | REFERENCED_TABLE_NAME | REFERENCED_COLUMN_NAME |
+--------------+-------------+--------------------+-----------------------+------------------------+
| transactions | customer_id | transactions_ibfk_1 | customers             | customer_id            |
+--------------+-------------+--------------------+-----------------------+------------------------+
1 row in set (0.00 sec)

mysql> SELECT    TABLE_NAME,COLUMN_NAME,CONSTRAINT_NAME, REFERENCED_TABLE_NAME,REFERENCED_COLUMN_NAME FROM
INFORMATION_SCHEMA.KEY_COLUMN_USAGE WHERE   REFERENCED_TABLE_SCHEMA = 'dream_house' AND REFERENCED_TABLE_NAME
 = "house";
+--------------+-------------+--------------------+-----------------------+------------------------+
| TABLE_NAME   | COLUMN_NAME | CONSTRAINT_NAME    | REFERENCED_TABLE_NAME | REFERENCED_COLUMN_NAME |
+--------------+-------------+--------------------+-----------------------+------------------------+
| transactions | house_id    | transactions_ibfk_2 | house                 | house_id               |
+--------------+-------------+--------------------+-----------------------+------------------------+
1 row in set (0.01 sec)
```

3. Provide an example of a query where two relations are involved.
4.

This query will retrieve the customer's first name, last name, email, and the transaction date for all transactions involving a house with a price greater than $60,000.00:

```
mysql> SELECT
    ->     c.first_name,
    ->     c.last_name,
    ->     c.email,
    ->     t.transaction_date
    -> FROM
    ->     customers c
    -> JOIN
    ->     transactions t ON c.customer_id = t.customer_id
    -> JOIN
    ->     house h ON t.house_id = h.house_id
    -> WHERE
    ->     h.price > 60000.00;
+------------+-----------+-----------------------+------------------+
| first_name | last_name | email                 | transaction_date |
+------------+-----------+-----------------------+------------------+
| Alisha     | Karna     | karna.alisha@gmail.com | 2023-09-24       |
| KC         | Santosh   | santosh.kc@gmail.com   | 2023-09-22       |
+------------+-----------+-----------------------+------------------+
2 rows in set (0.00 sec)
```

```
+------------+-----------+-----------------------+----------+------------------+
| first_name | last_name | email                 | price    | transaction_date |
+------------+-----------+-----------------------+----------+------------------+
| Alisha     | Karna     | karna.alisha@gmail.com | 78000.00 | 2023-09-24       |
| KC         | Santosh   | santosh.kc@gmail.com   | 80000.00 | 2023-09-22       |
+------------+-----------+-----------------------+----------+------------------+
2 rows in set (0.00 sec)
```

For the column price add h.price in SELECT case.

5. Create new user and grant privileges for data manipulation (limitation: select and insert).

```
mysql> CREATE USER 'new_users'@'localhost' IDENTIFIED BY "test";
Query OK, 0 rows affected (0.02 sec)

mysql> GRANT SELECT, INSERT ON dream_house.* TO 'new_users'@'localhost';
Query OK, 0 rows affected (0.01 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.00 sec)

mysql> SHOW GRANTS FOR 'new_users'@'localhost';
+-----------------------------------------------------------------+
| Grants for new_users@localhost                                  |
+-----------------------------------------------------------------+
| GRANT USAGE ON *.* TO `new_users`@`localhost`                   |
| GRANT SELECT, INSERT ON `dream_house`.* TO `new_users`@`localhost` |
+-----------------------------------------------------------------+
2 rows in set (0.00 sec)
```

6. Backup the database.
   To create a backup, we need to come out of the MySQL shell to our bash command line.

```
(base) srijanaraut@Srijanas-MBP ~ % mysqldump -h localhost -uroot -p dream_house>  ~/dreamhouse_backup.sql;
Enter password:
(base) srijanaraut@Srijanas-MBP ~ %
```

   The backup sql files is attached with this pdf file.