Databases: Exercises 4 (14p/14p)

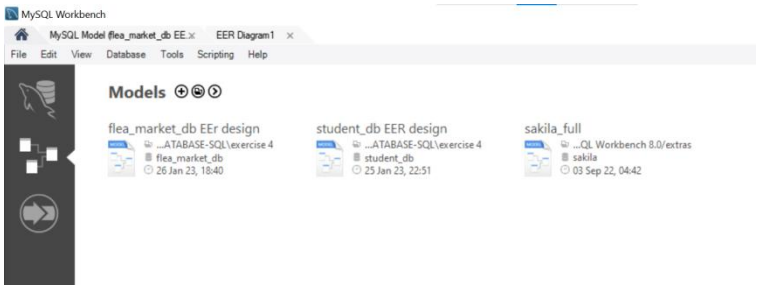
Task 1 [10p/10p]

The accompanying picture shows a preliminary sketch as a concept model for a database solution that manages items sold at the flea market, sellers, table bookers, buyers, table numbers and possible reservations. Items for sale can be saved, e.g. name, picture, price and category (e.g. clothing, video game, computer part)

- To do the above task I used MYSQL Workbench program to refine the EER diagram from the sketch of conceptual model given in the task about the kirpputori database (flea market).
- The screenshot in the docuent shows the various steps to refine EER diagram.

The graphic design tool produces an EER (Enhanced Entity Relationship) model that defines everything needed to create a database, such as database tables, relationships between them, views, permissions, etc.

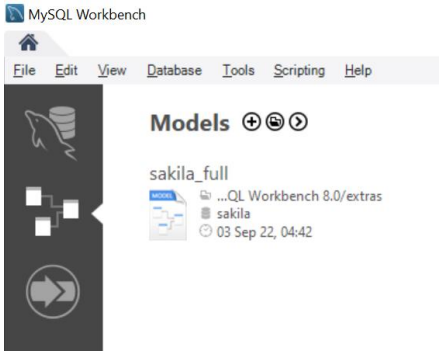
This model can be saved in an MWB (MySQL Workbench document) file and, as the development continues, reopened for development



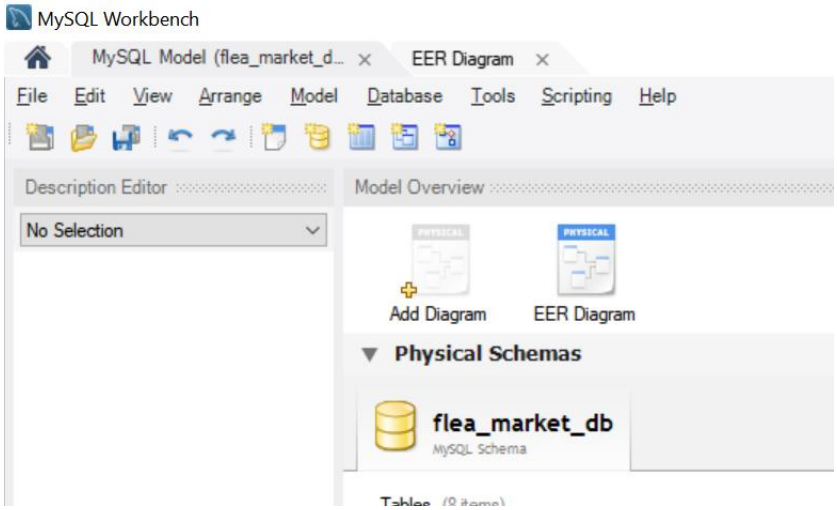
Creating new EER chart for fleamarket

1. Choosing Designer

- I selected the new template (+) in the given screenshot to create models.



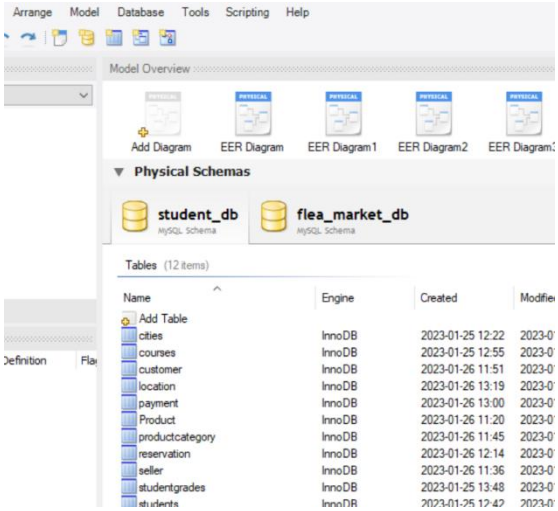
2. Created a new schema or database named flea_market_db by following the given instruction in the material.



3. Ensured the selection of the target database/ schema

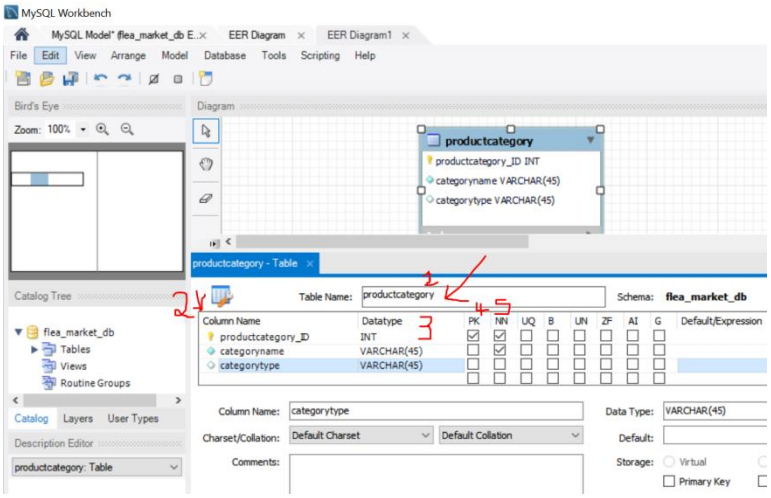
Close the previous window and select the database we named as active.

- It may lead to error or creating the tables in the previous database if we are not selecting the active database/schema. I faced this error while creating the EER chart and I rectified by renaming the database/schema. The error is shown in the below screen shot.



4. Created EER diagram
Tables and columns creation

- Selected Add Diagram then EER diagram design view is opened ---followed the material instructions
- Created table with column names
    1. given the name for the table(eg: productcategory),
    2. selected columns tab mentioned the column name (productcategory_ID, categoryname, categorytype)
    3. selected the respective Datatype(INT, VARCHAR(45),VARCHAR(45)) ,
    4. Selected type of key(PK) at productcategory_ID
    5. Selected NN(NOT NULL) value at productcategory_ID, categoryname.



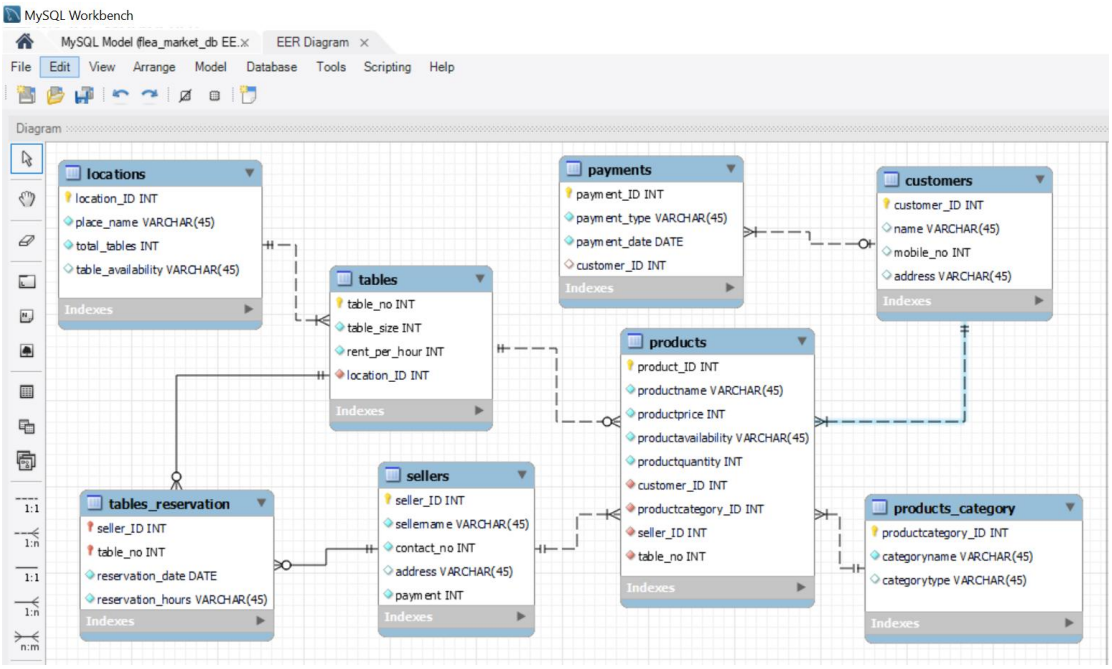
- In the same way 8 tables (productcategory, product, reservation, table, seller, customer, location, payment) are created with their columns
- Created and developed database model with an EER diagram and saved the created results at regular intervals.

Connections between the tables

- Connection are drawn by following the given example instruction in the material.
- In this task the tables detail relationship are shown in the screenshot in the EER diagram and its brief desription below the screenshot

The following screenshots shows the EER diagram for fleamarket(kirpputori):

While designing an fleamarket system database, we can encounter multiple problems. One of the significant problems in developing the fleamarket system is keeping in mind all the constraints. These constraints should ensure a seller can easily reserve tables by rental reservation and sell their products to customers.



- Fleamarket located in different locations allows multiple customers and sellers to buy and sell their products and for seller to reserve the tables.
- Each fleamarket place as particular location ID, location name, total table availability which helps in the reservation of table for the sellers at that location.
- The system can track each seller and record their contact number, address and payment information.
- The sellers can reserve the table no, based on the size and duration of time they can pay rent for the table which are available in different locations to sell their different quantities of products of different categories with uniqueID and price.
- The sellers can reserve many tables at different location for different timings.
- Each product in the fleamarket has a unique ID and price, availability and quantity of product.
- The system can track each customer and record their phone number, address and payment information.
- Customers can purchase products from multiple sections.
- Customers can pay for their purchases on a particular date through debit/ credit cards or cash, with a payment ID.

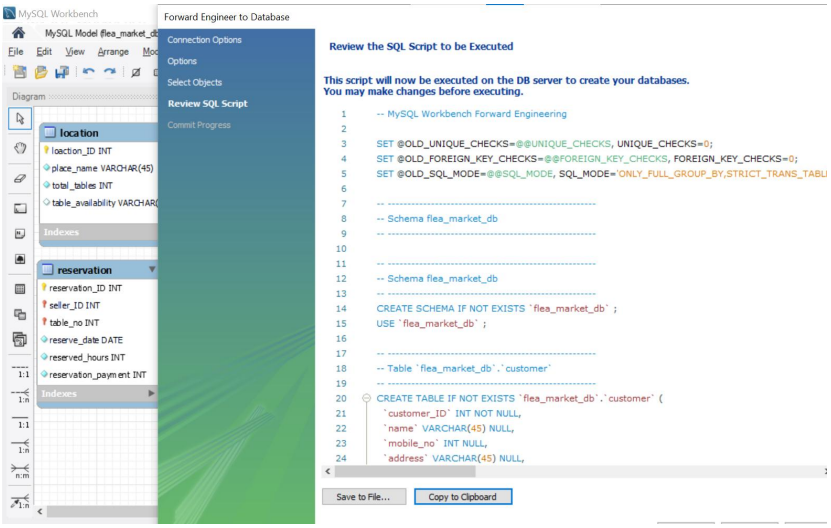
Task 2 [4p/4p]

The database defined above with Workbench on the database server of XAMPP choice with the Forward Engineer function.

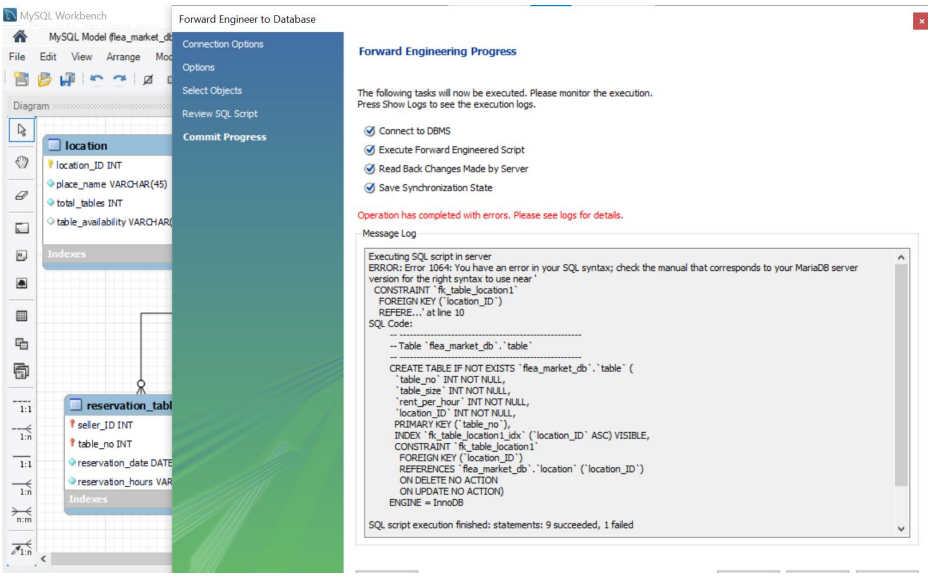
The below screenshot shows the list of databases in the XAMPP database server before the Forward Engineer function in the SQL command line interface.

```
PS C:\XAMPP\mysql\bin> .\mysql.exe -u root -p;
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 11
Server version: 10.4.27-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| phpmyadmin         |
| student_db         |
| test               |
+--------------------+
6 rows in set (0.002 sec)
```

The below screenshot shows one of the step in the forward Engineer of the model in the Workbench.

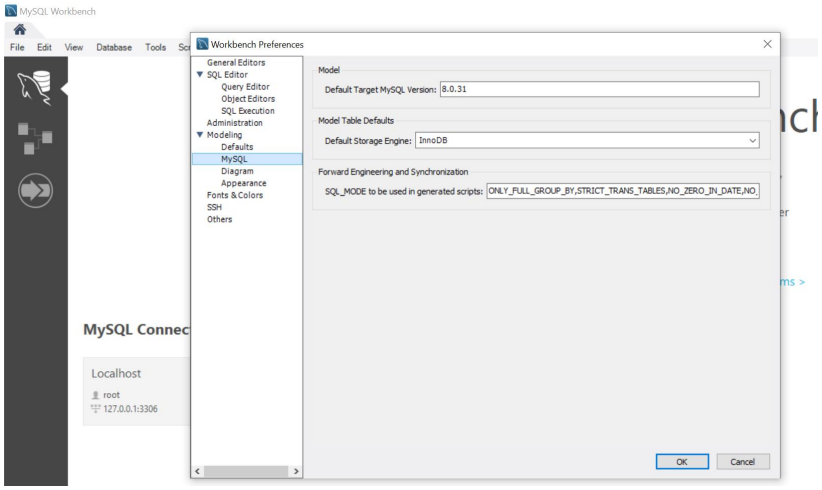


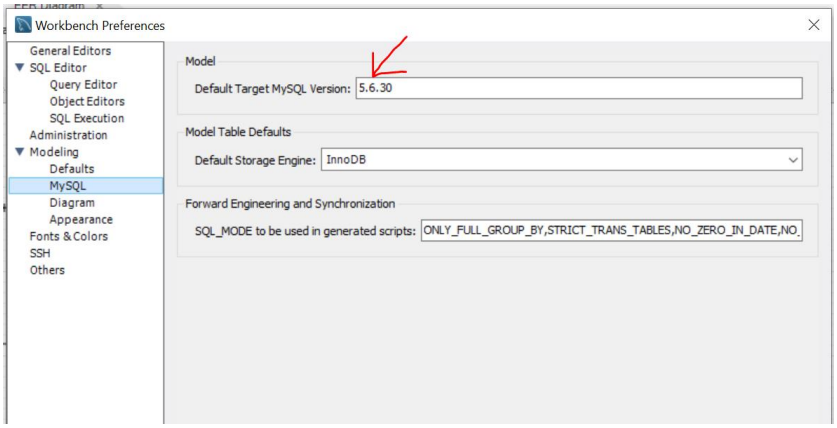
Here I observed Error 1064 which is due to the VISIBLE/INVISIBLE parameters of the INDEX specifications.



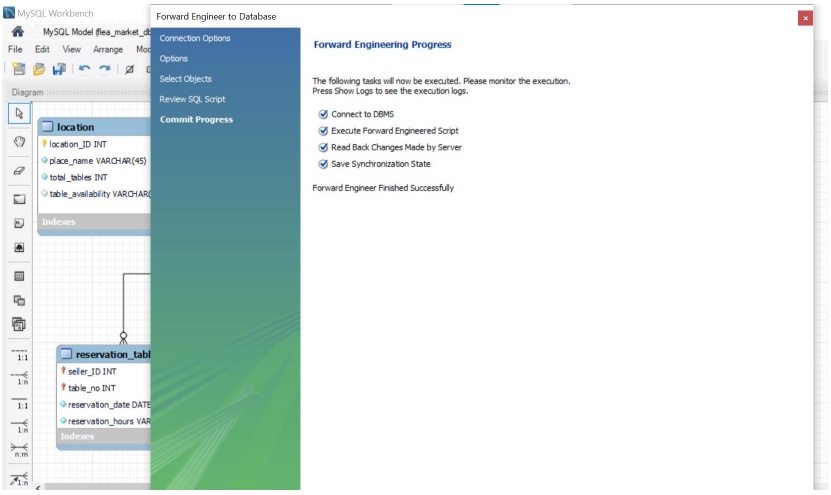
To clear this error I changed the MySQL version preferences to 5.6.30

- Edit/Preferences/Modeling/MySQL:
- Default Target MySQL Version: 5.6.30

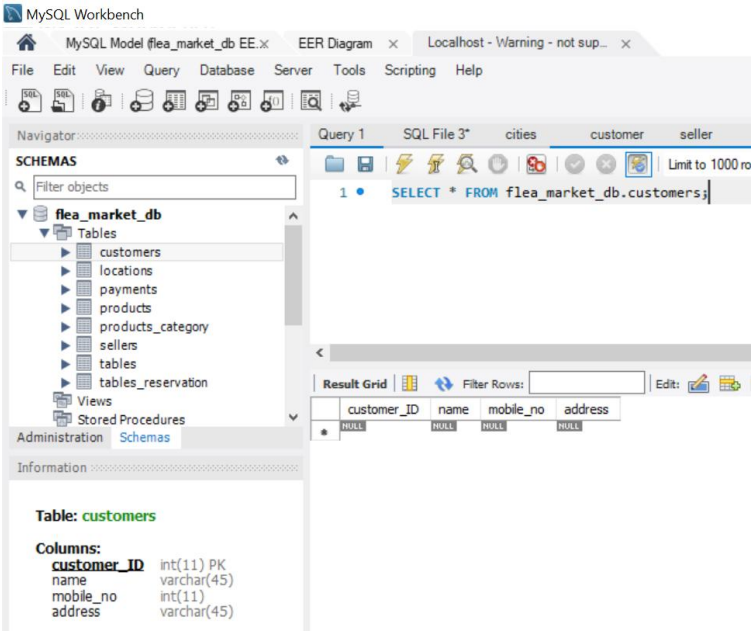




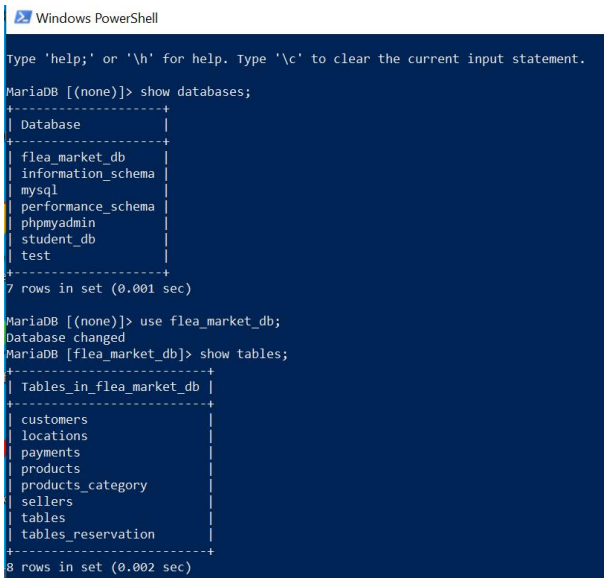
Then the forward engineering function was finished successfully.



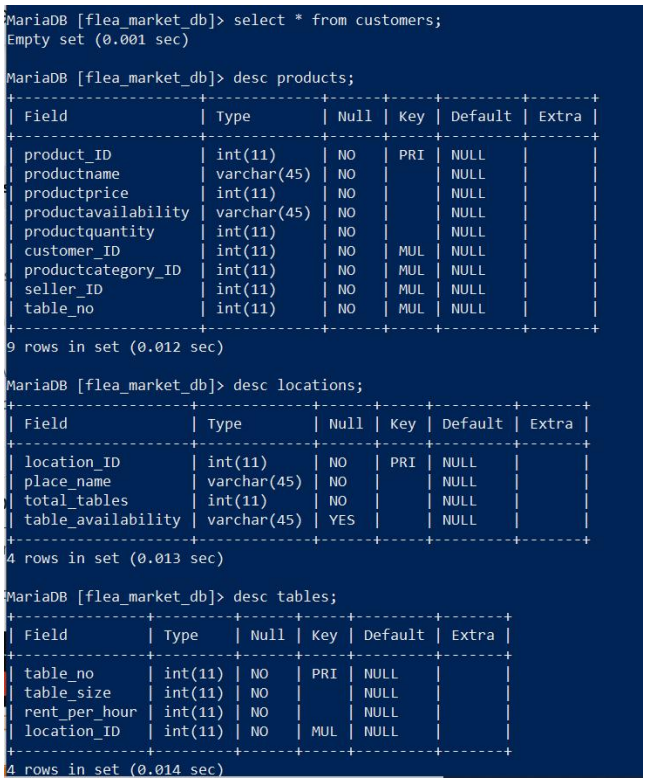
SQL statements generated by Workbench to create the database are shown in given screenshots .



Using the SQL command line interface the following mentioned statements in the screenshot are checked to show all the databases in the database server XAMPP consists of and also some other SQL statements are run to check the tables and columns present in the flea_market_db. The results are in the screenshots.



```
Windows PowerShell

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> show databases;
+--------------------+
| Database           |
+--------------------+
| flea_market_db     |
| information_schema |
| mysql              |
| performance_schema |
| phpmyadmin         |
| student_db         |
| test               |
+--------------------+
7 rows in set (0.001 sec)

MariaDB [(none)]> use flea_market_db;
Database changed
MariaDB [flea_market_db]> show tables;
+--------------------------+
| Tables_in_flea_market_db |
+--------------------------+
| customers                |
| locations                |
| payments                 |
| products                 |
| products_category        |
| sellers                  |
| tables                   |
| tables_reservation       |
+--------------------------+
8 rows in set (0.002 sec)
```



```
MariaDB [flea_market_db]> select * from customers;
Empty set (0.001 sec)

MariaDB [flea_market_db]> desc products;
+---------------------+-------------+------+-----+---------+-------+
| Field               | Type        | Null | Key | Default | Extra |
+---------------------+-------------+------+-----+---------+-------+
| product_ID          | int(11)     | NO   | PRI | NULL    |       |
| productname         | varchar(45) | NO   |     | NULL    |       |
| productprice        | int(11)     | NO   |     | NULL    |       |
| productavailability | varchar(45) | NO   |     | NULL    |       |
| productquantity     | int(11)     | NO   |     | NULL    |       |
| customer_ID         | int(11)     | NO   | MUL | NULL    |       |
| productcategory_ID  | int(11)     | NO   | MUL | NULL    |       |
| seller_ID           | int(11)     | NO   | MUL | NULL    |       |
| table_no            | int(11)     | NO   | MUL | NULL    |       |
+---------------------+-------------+------+-----+---------+-------+
9 rows in set (0.012 sec)

MariaDB [flea_market_db]> desc locations;
+--------------------+-------------+------+-----+---------+-------+
| Field              | Type        | Null | Key | Default | Extra |
+--------------------+-------------+------+-----+---------+-------+
| location_ID        | int(11)     | NO   | PRI | NULL    |       |
| place_name         | varchar(45) | NO   |     | NULL    |       |
| total_tables       | int(11)     | NO   |     | NULL    |       |
| table_availability | varchar(45) | YES  |     | NULL    |       |
+--------------------+-------------+------+-----+---------+-------+
4 rows in set (0.013 sec)

MariaDB [flea_market_db]> desc tables;
+---------------+---------+------+-----+---------+-------+
| Field         | Type    | Null | Key | Default | Extra |
+---------------+---------+------+-----+---------+-------+
| table_no      | int(11) | NO   | PRI | NULL    |       |
| table_size    | int(11) | NO   |     | NULL    |       |
| rent_per_hour | int(11) | NO   |     | NULL    |       |
| location_ID   | int(11) | NO   | MUL | NULL    |       |
+---------------+---------+------+-----+---------+-------+
4 rows in set (0.014 sec)
```