Lab: Data Definition and Data Types

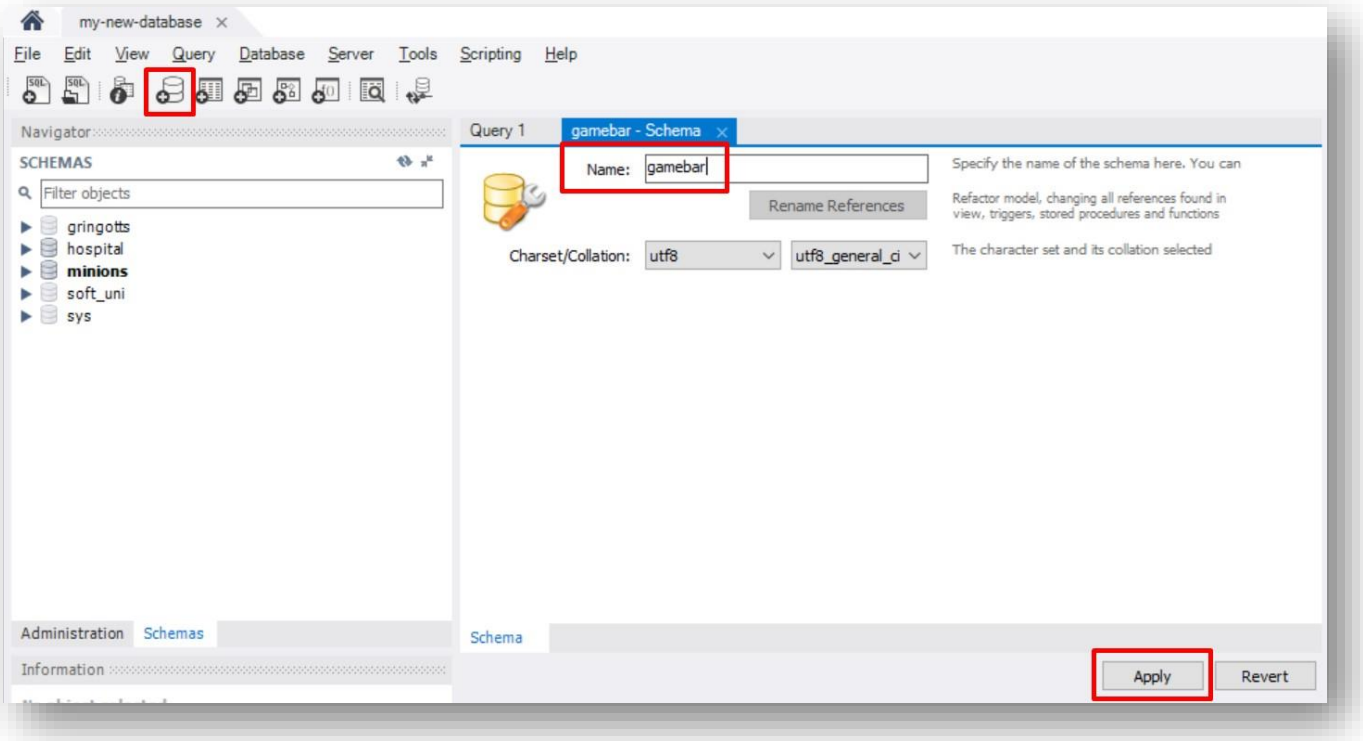
This document defines the **lab exercise assignments** for the [MySQL course @ Software University](#).

1. Simple Database Operations Using MySQL Workbench

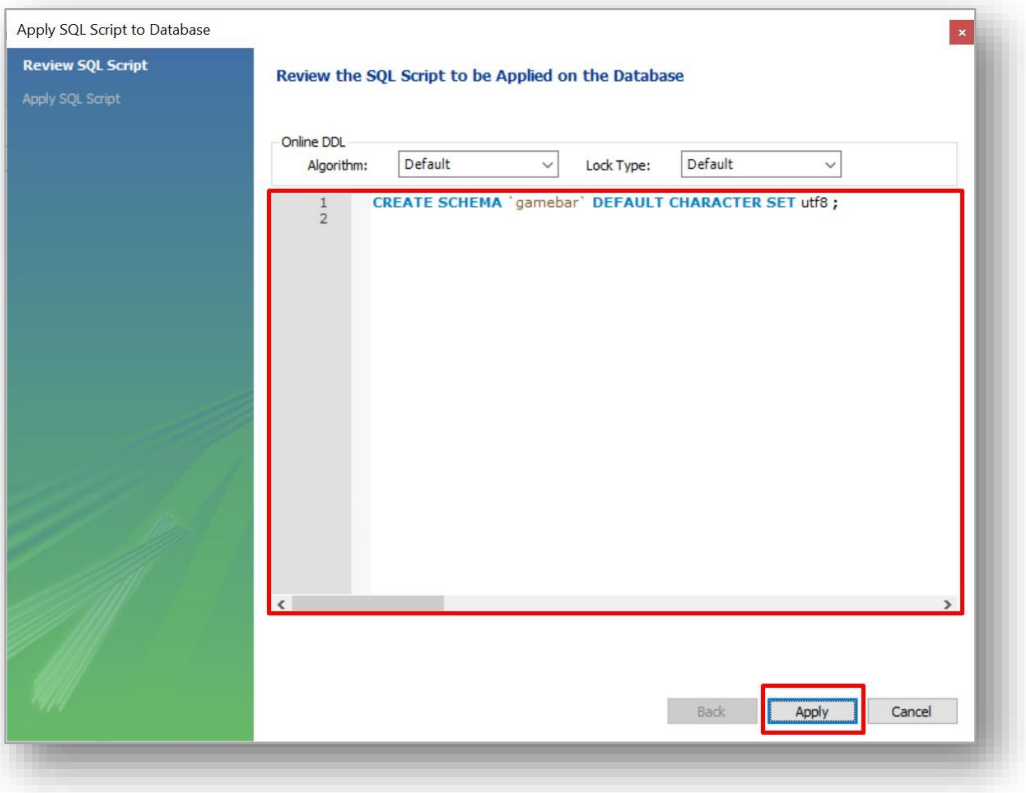
Create New Database

First, create an empty database gamebar.

New Create **Database (Schema)** window will appear. In the "**Name**" field type the name of your new database - "**gamebar**".



After clicking "Apply" you can see new window with the query that is about to be executed.



Create New Table

Right click the "**Tables**" and select "**Create Table**".

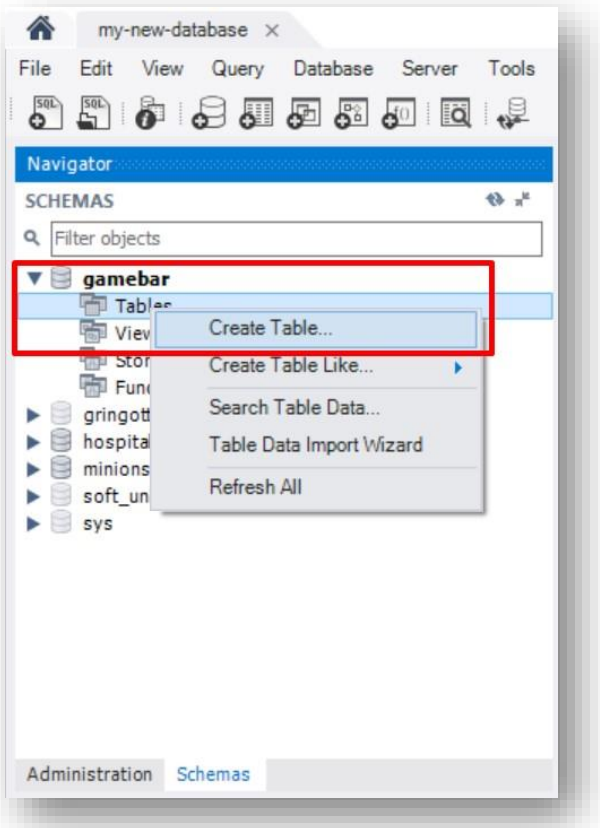
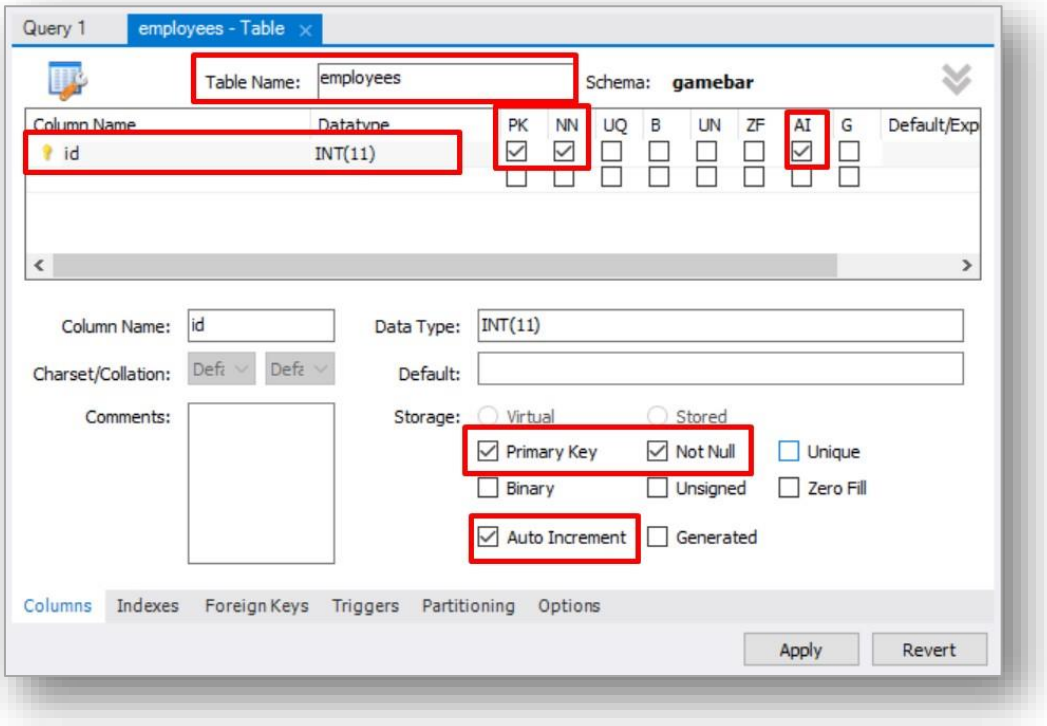


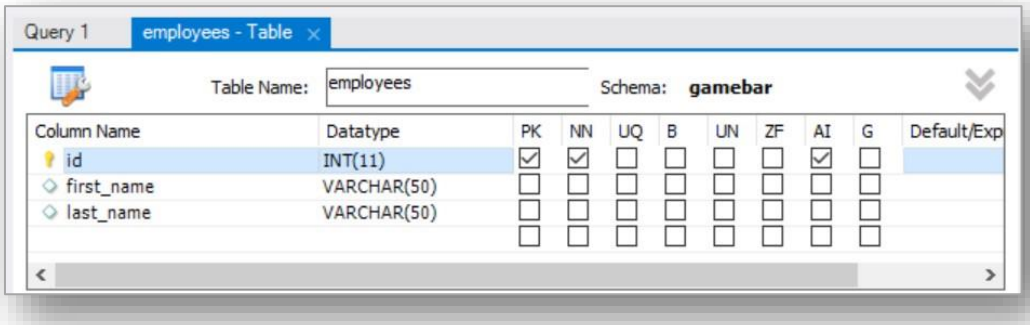
Table creation tab will appear. In the "**Table Name**" field type the name of your new table – "**employees**". From the "**Columns**" tab you can start creating your table fields.

First create an "**id**" field. It will be set to **`INT, PRIMARY KEY(PK)`** and **`NOT NULL(NN)`**. Check the **`AUTO_INCREMENT(AI)`** too by selecting **`Auto Increment (AI)`**.

Make the "**id**" field to be **`Primary Key (PK).`**

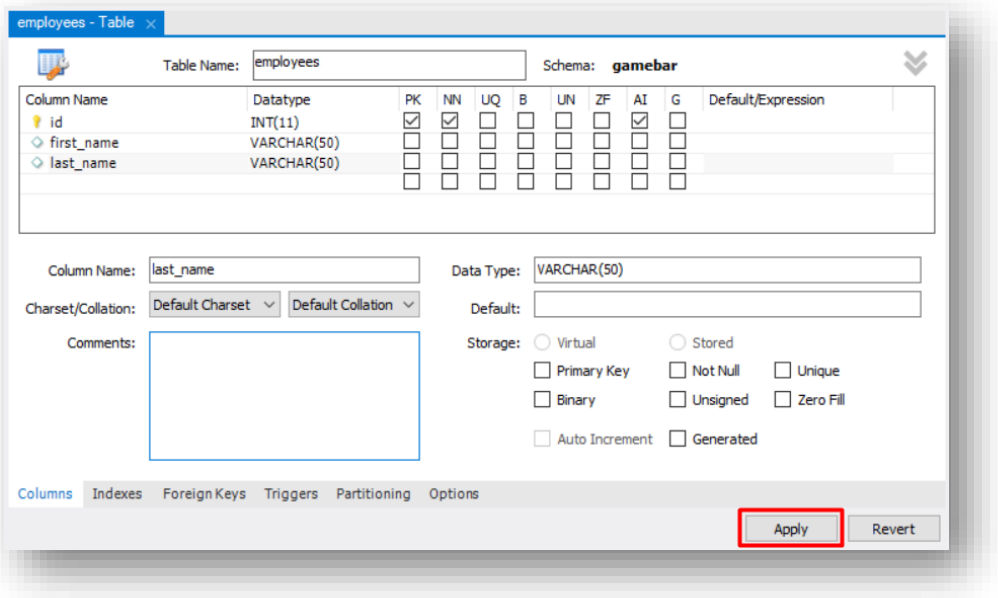


Create 2 more fields – "**first_name**" and "**last_name**".



Follow us:

Click **Apply** to review and execute the SQL statement.



Similar to "**employees**" create 2 more tables.

Table "**categories**":

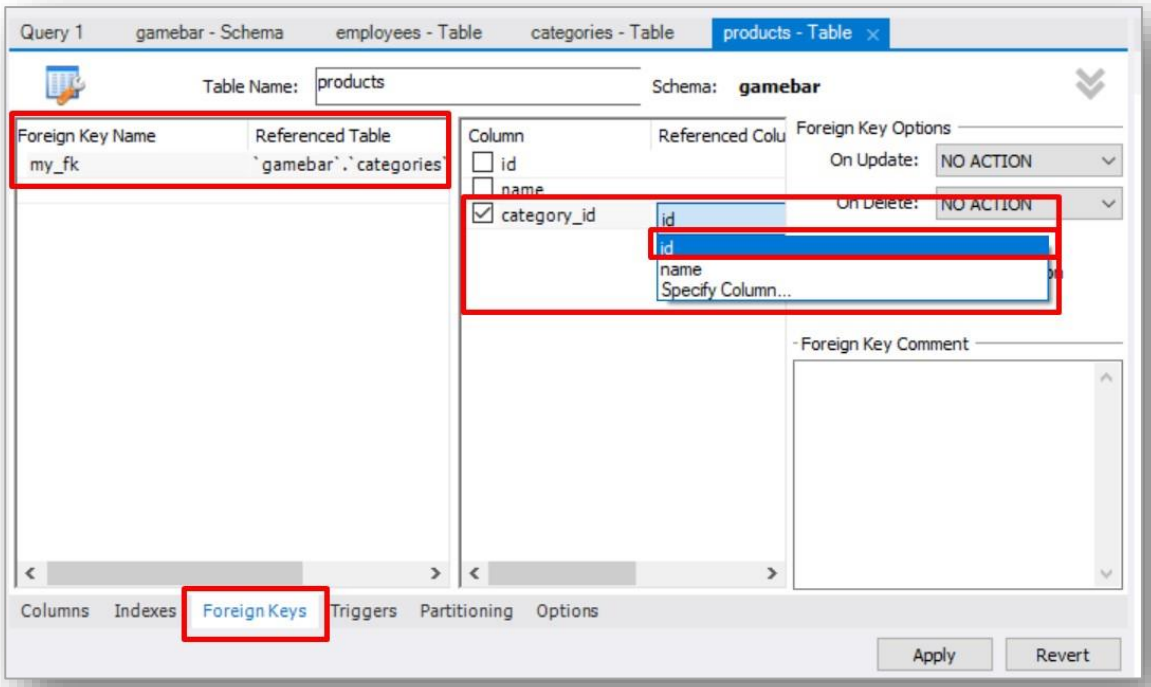
- id – **INT**, **primary key**, **NOT NULL**, **AUTO_INCREMENT**;
- name – **VARCHAR**, **NOT NULL**;

Table "**products**":

- id – **INT**, **primary key**, **NOT NULL**, **AUTO_INCREMENT**;
- name – **VARCHAR**, **NOT NULL**;
- category_id – **INT**, **foreign key** referenced to the "**categories**" table (**id**)

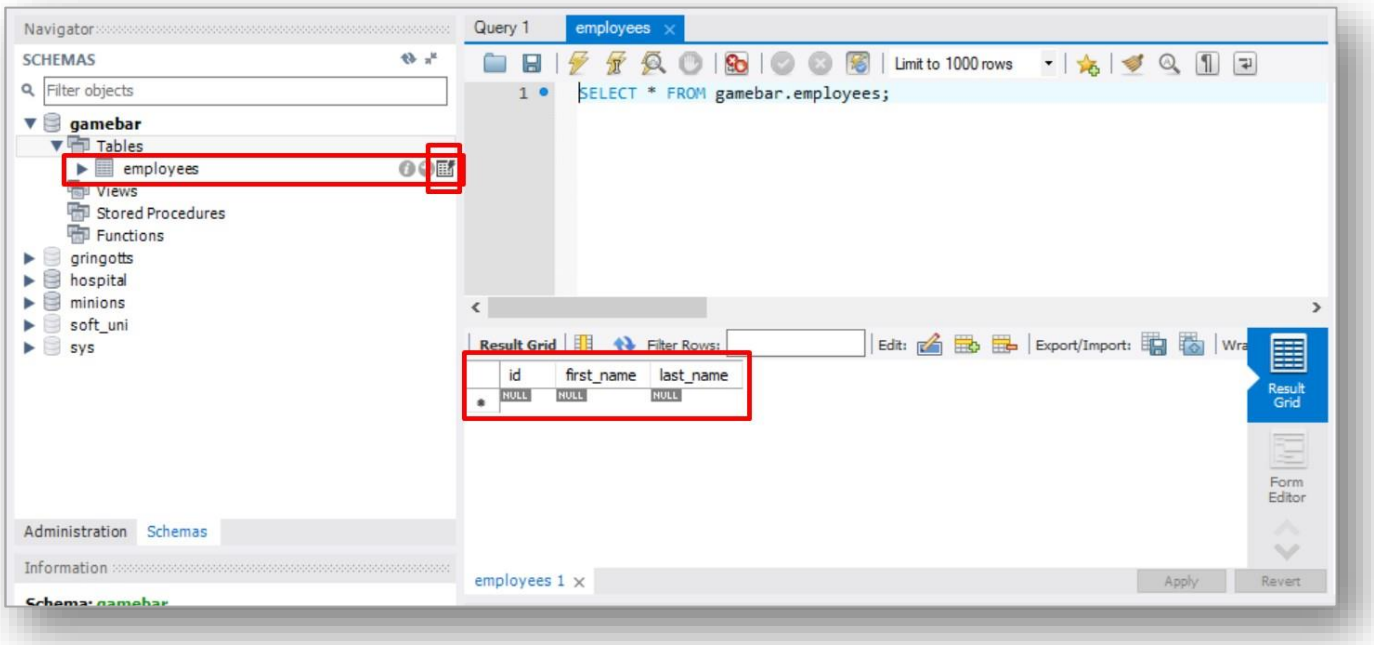
Foreign keys are created in the "**Foreign keys**" tab:

- **Reference table** – select the table from which you will choose a column to link your foreign key – "**categories**";
- **Columns** – select the column you want to be set as foreign key – "**category_id**";
- **Referenced columns** – select the column set to primary to link the foreign key – "**id**";



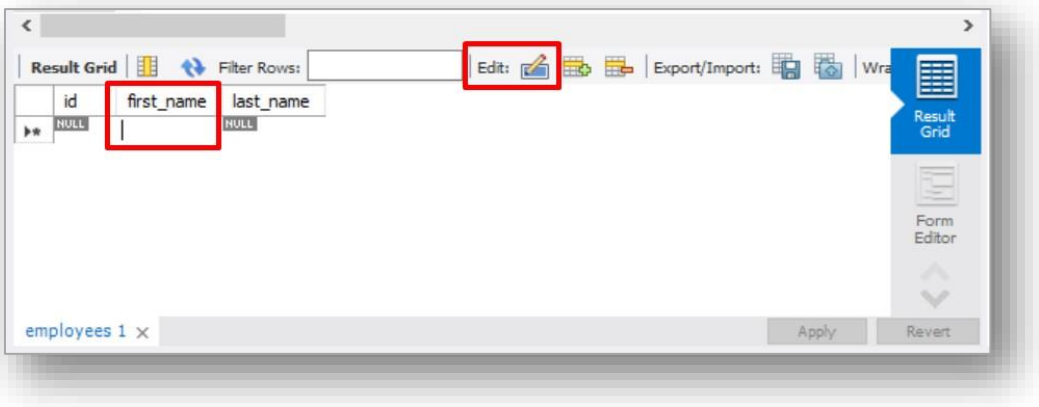
Insert Data in Tables

Now we can start adding some records to our newly created tables. First select the "**employees**" table:



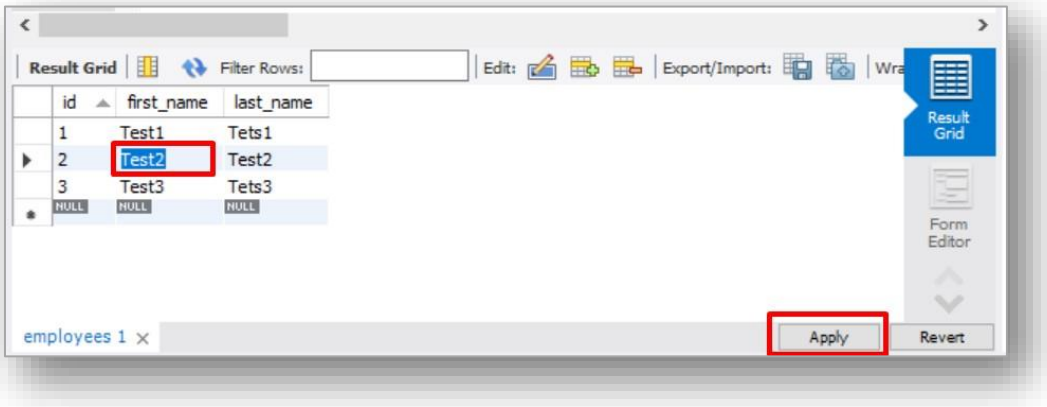
Select the **Edit button** to add new record.

Fill in the fields with values. Create 3 records in each table.



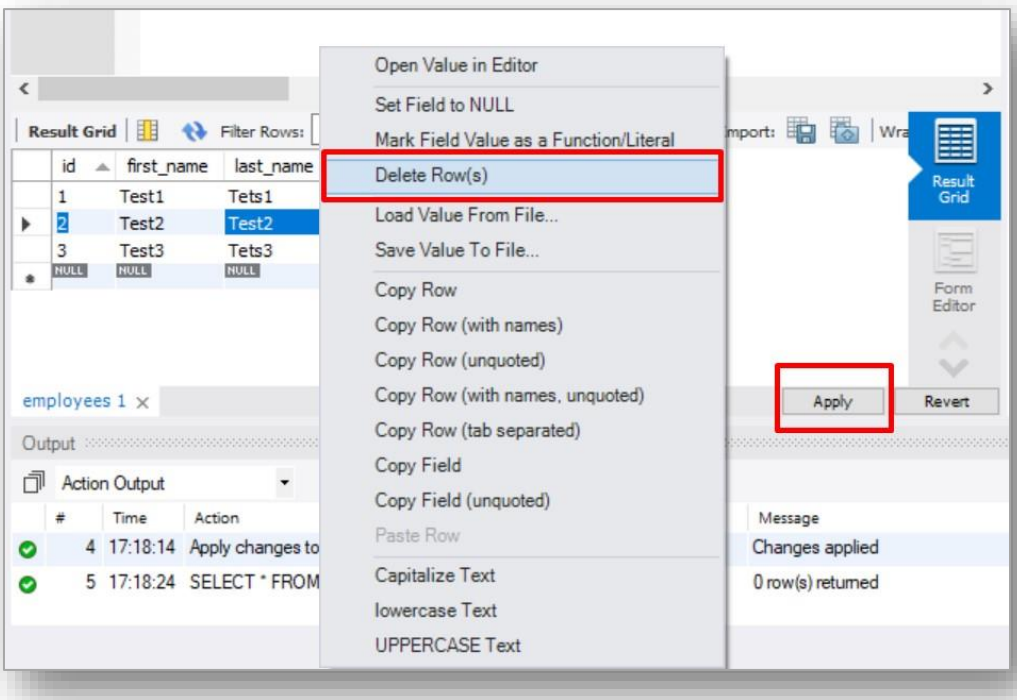
Editing Data

Data in tables can easily be edited with the GUI. Now that we've populated our tables with test records we can edit them by **clicking on the value field**.



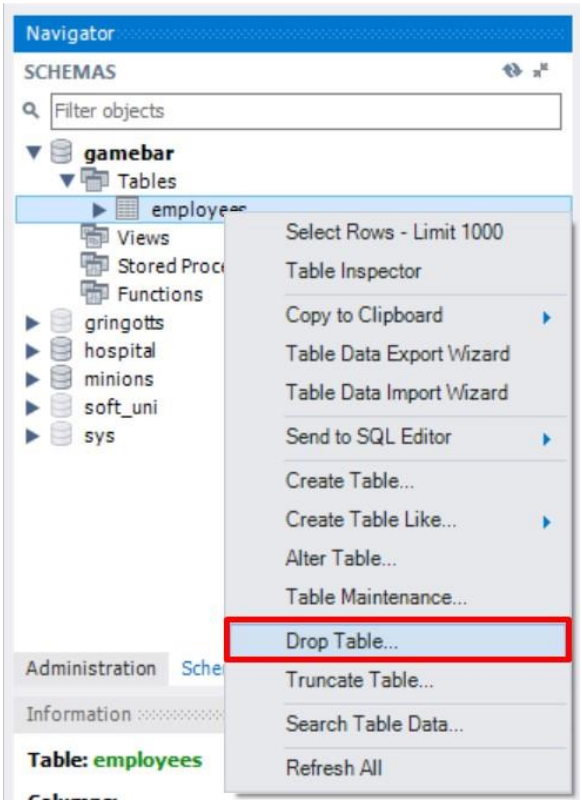
Deleting Data

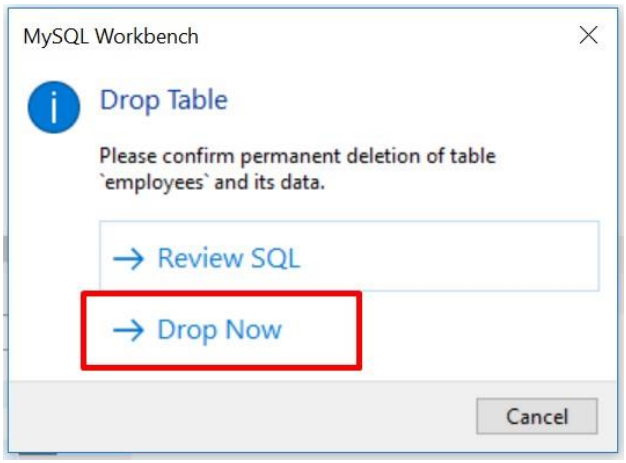
Data deletion is easy too. We just right click the row we want to delete and select "**Delete Row(s)**".



Dropping Tables

We can delete the whole table, by selecting the one we want to delete, right click and choose "**Drop Table…**". **You cannot undo this action.**

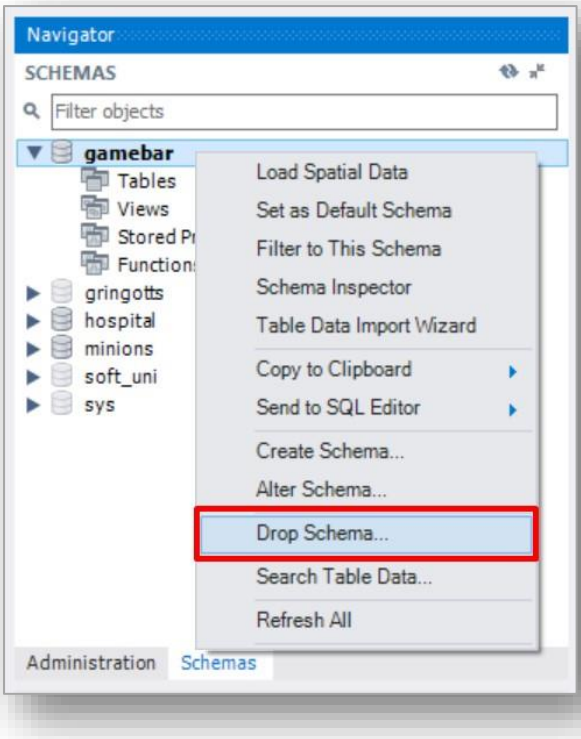




Dropping the Database

As table dropping, we can drop the database too. **This action cannot be undone too.**

Right click the database you want to drop and select "**Drop Schema…**".

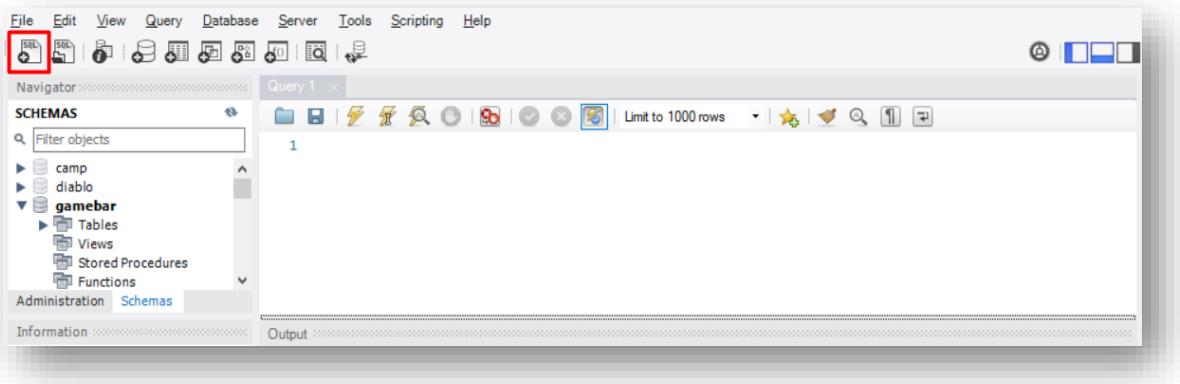


2. Simple Database Operations Using Queries

Now we are going to do the same steps from Part 1 using simple MySQL queries.

Exercises from this section should be submit in JUDGE – From 1 to 5.

Queries are written in the "Query" tab.



Descriptions for Exercises in Judge System

0. Create New Database

Write a query that will create the "**gamebar**" database.

1. Create Tables

When we create tables, we specify the database we want to add them to. This is done by using the "**USE**" clause.

Submit your solutions in JUDGE without the "`USE {database name}`" row.

Table "**employees**":

- id – **`INT`**, **`primary key`**, **`AUTO_INCREMENT`**;
- first_name – **`VARCHAR`**, **`NOT NULL`**;
- last_name – **`VARCHAR`**, **`NOT NULL`**;

Create the "**categories**" and "**products**" tables analogically:

Table "**categories**":

- id – **`INT`**, **`primary key`**, **`AUTO_INCREMENT`**;
- name – **`VARCHAR`**, **`NOT NULL`**;

Table "**products**":

- id – **`INT`**, **`primary key`**, **`AUTO_INCREMENT`**;
- name – **`VARCHAR`**, **`NOT NULL`**;
- category_id – **`INT`**, **`NOT NULL`** – it is not a foreign key for now.

2. Insert Data in Tables

Inserting data can be done with a query too. To do that we use the "**`INSERT`**" clause. Populate the "**employees**" table with 3 test values.

3. Alter Tables

Altering the tables is done via the "**`ALTER TABLE`**" clause. Add a new column – "**middle_name**" to the "**employees**" table.

4. Adding Constraints

Create the connection via foreign key between the "**products**" and "**categories**" tables that you've created earlier. Make "**category_id**" **foreign key linked to "id" in the "categories" table**.

5. Modifying Columns

Change the property "**`VARCHAR(50)`**" to "**`VARCHAR(100)`**" to the "**middle_name**" column in "**employees**" table.