

Data Base System

Course Work Report

Parts A and B

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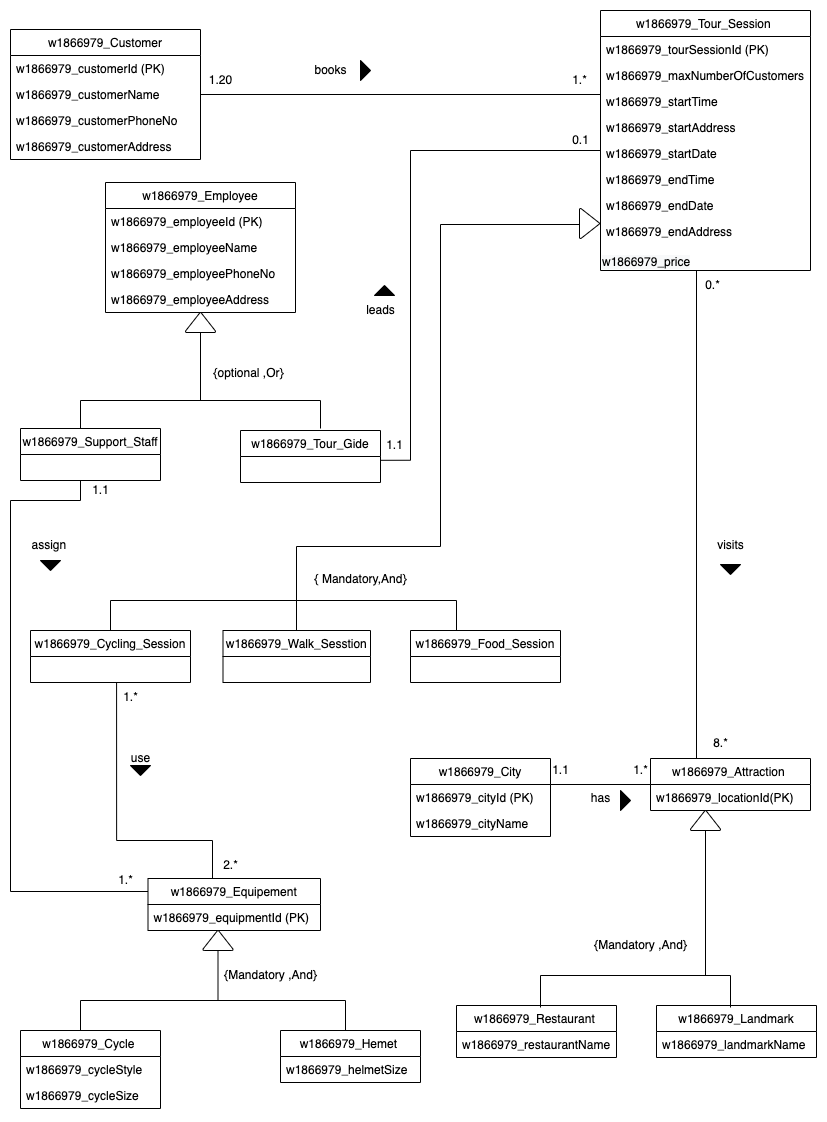
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# Entity Relationship Diagram



# Data Dictionaries

## 2.1 Entities

|  |  |
| --- | --- |
| Entity Name | Brief Description |
| w1866979\_Customer | Describing customers of tourmato |
| w1866979\_City | Describing cities provide in tourmato service |
| w1866979\_Attraction | Describing places in tour session |
| w1866979\_Tour\_Session | Describing Tour session information |
| w1866979\_Employee | Describing employees in tourmato |
| w1866979\_Support\_Staff | Describing employees to maintain the equipment |
| w1866979\_Tour\_Guide | Describing tour guide tour session to attraction in tourmato |
| w1866979\_Cycling\_Session | Describing tour session by cycling to attraction places |
| w1866979\_Walk\_Sesstion | Describing tour session by walking to attraction places |
| w1866979\_Food\_Session | Describe the tour session visiting different restaurants |
| w1866979\_Restaurant | Describing restaurants in tour session |
| w1866979\_Landmark | Describing the land marks in the city |
| w1866979\_Equipement | Describing equipment in the tour session |
| w1866979\_Cycle | Describing transport equipment in tour session |
| w1866979\_Hemet | Describing the equipment while using the cycle |

## 2.2 General Entity

|  |  |  |
| --- | --- | --- |
| General Entity | Specialised Entity | Brief Explanation |
| w1866979\_Tour\_Session | w1866979\_Cycling\_Session | Cycle used move to attractions in the tour section |
| w1866979\_Walk\_Sesstion | Walking to attraction places in the tour session |
| w1866979\_Food\_Session | Visit a different restaurant and taste different foods in the tour session |
| w1866979\_Employee | w1866979\_Support\_Staff | Crew members maintain equipment |
| w1866979\_Tour\_Gide | Crew members guide the customers in tour session |
| w1866979\_Attraction | w1866979\_Restaurant | Restaurants in tour session |
| w1866979\_Landmark | Landmarks in tour session |
| w1866979\_Equipement | w1866979\_Cycle | Cycle use to cycle session |
| w1866979\_Hemet | Equipment use for protection while riding cycle |

## 2.3 Relationships & Multiplicities

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Entity Name | Multiplicity | Relationship | multiplicity | Entity name | Brief Justifications for the Multiplicity |
| w1866979\_Customer | 1.\* | books | 1.\* | w1866979\_ Tour Session | One Customer need to book at least one tour session |
| One Customer can book many tour Sessions |
| A Tour session has at least one customer |
| A Tour session may have 20 maximum customers |
| w1866979\_Tour Session | 0.\* | visits | 8.\* | w1866979\_ Attraction | A Tour session visits a minimum of 8 attraction |
| A Tour session can visit many attraction |
| One attraction may not visit tour session |
| One attraction has many tour session |
| w1866979\_Tour  Guide | 1.1 | leads | 0.1 | w1866979\_ Tour  Session | A Tour guide may not leads a tour session |
| A Tour guide may lead a one tour session |
| One Tour session must lead one tour Guide |
| One Tour session can lead by only one tour guide |
| w1866979\_Support Staff | 1.1 | assign | 1.\* | w1866979\_ Equipment | One Support staff may not be assign equipment |
| One Support staff can be assigned to many equipment |
| One Equipment must be assigned to one person |
| One Equipment assign to at least one person |
| w1866979\_Cycling Session | 1.\* | use | 2.\* | w1866979\_ Equipment | One Cycle session must use at least two equipment |
| One Cycle session can use many equipment |
| One Equipment may use to one cycle session |
| One Equipment can be use many cycling session |
| w1866979\_City | 1.1 | has | 1.\* | w1866979\_ Attraction | One City has at least one attraction |
| One City has many attractions |
| One Attraction must have located one city |
| One Attraction may have one city |

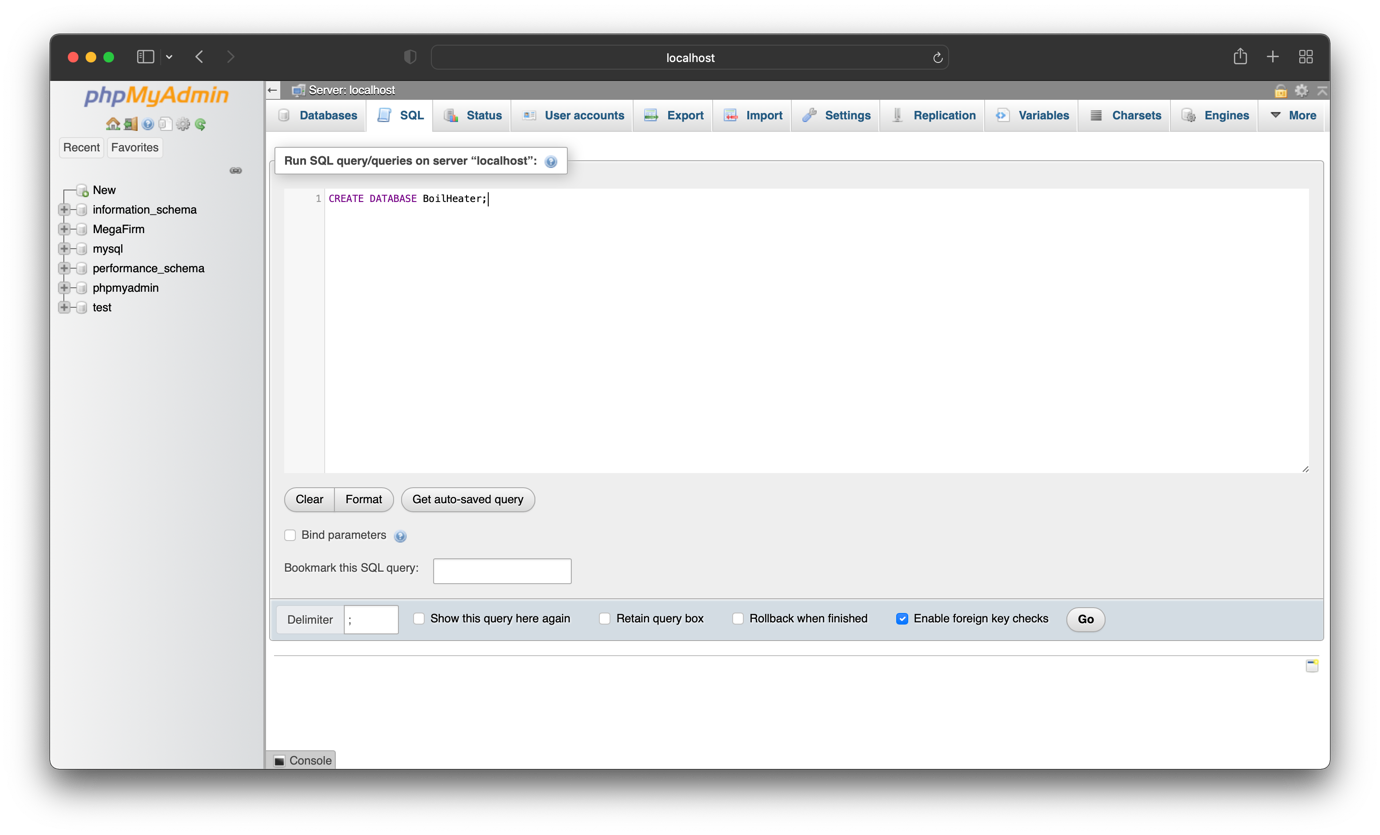
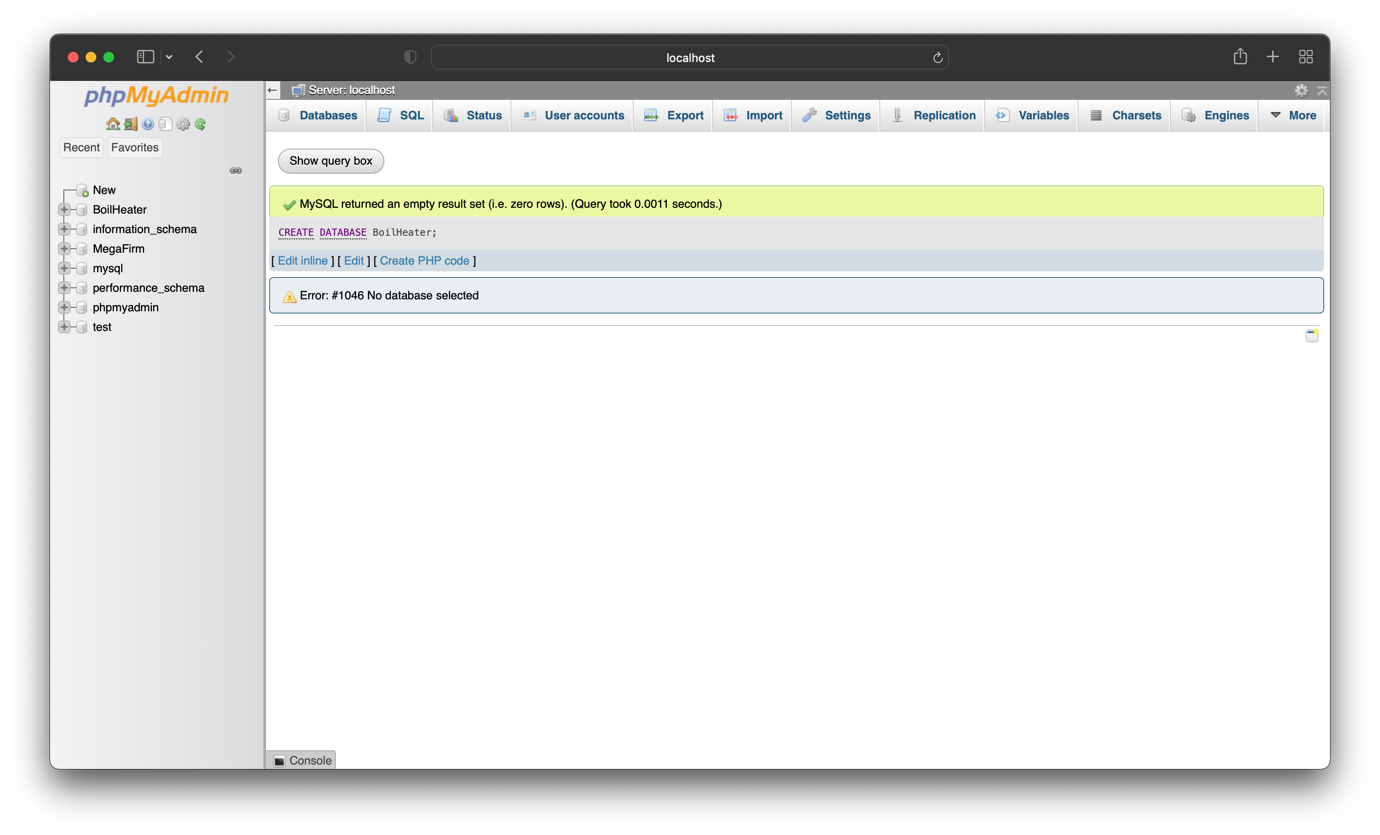
## 2.4 Attributes & Primary Keys

|  |  |  |
| --- | --- | --- |
| Entity Name | Attribute of this entity | Brief explanation |
| w1866979\_Customer | w1866979\_customerId (PK) | Uniquely identify customer |
| w1866979\_customerName | Customers full name |
| w1866979\_customerPhoneNo | Customer phone number |
| w1866979\_customerAddress | Customer address |
| w1866979\_Employee | w1866979\_employeeId (PK) | Uniquely identify employee |
| w1866979\_employeeName | Employee name |
| w1866979\_employeePhoneNo | Employee phone number |
| w1866979\_employeeAddress | Employee address |
| w1866979\_Tour\_Session | w1866979\_tourSessionId (PK) | Uniquely identify tour session id |
| w1866979\_maxNumberOfCustomers | Maximum number of customers for tour session |
| w1866979\_startTime | Tour session start time |
| w1866979\_startAddress | Tour session start address |
| w1866979\_startDate | Tour session start date |
| w1866979\_endTime | Tour session end time |
| w1866979\_endDate | Tour session end date |
| w1866979\_endAddress | Tour session end Address |
| w1866979\_price | Tour session price |
| w1866979\_City | w1866979\_cityId (PK) | Uniquely identify city |
| w1866979\_cityName | City name |
| w1866979\_Attraction | w1866979\_locationId (PK) | Uniquely identify attraction |
| w1866979\_Restaurant | w1866979\_restaurantName | Name of the restaurant |
| w1866979\_Landmark | w1866979\_landmarkName | Name of the landmark |
| w1866979\_Equipement | w1866979\_equipmentId (PK) | Uniquely identify equipment |
| w1866979\_Cycle | w1866979\_cycleStyle | Cycle style |
| w1866979\_cycleSize | Cycle size |
| w1866979\_Hemet | w1866979\_helmetSize | Helmet size |
| w1866979\_Cycling\_Session |  |  |
| w1866979\_Walk\_Sesstion |  |  |
| w1866979\_Food\_Session |  |  |
| w1866979\_Support\_Staff |  |  |
| w1866979\_Tour\_Gide |  |  |

# 3. BoilHeater Database part B

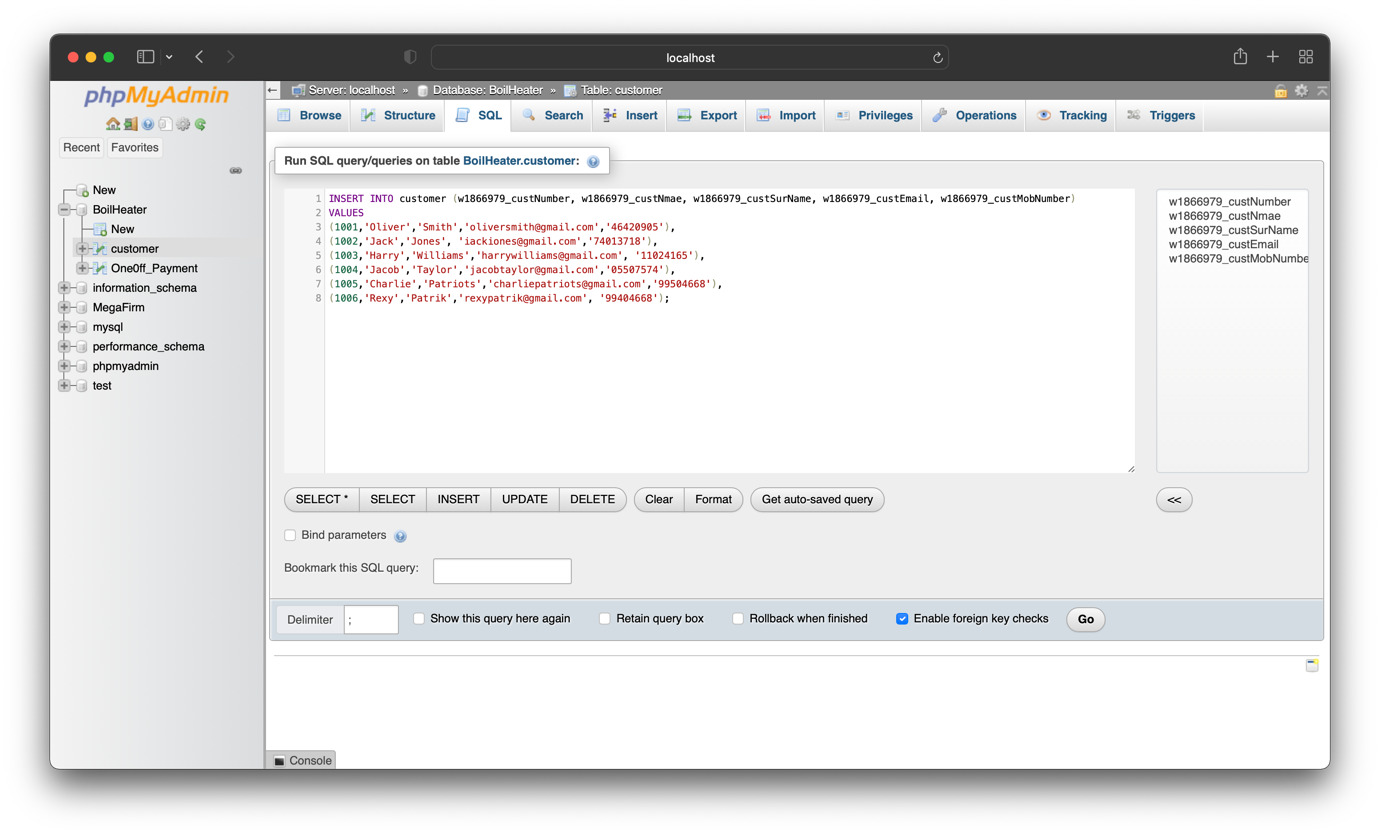
## 3.1 Logical Entity Relationship Diagram

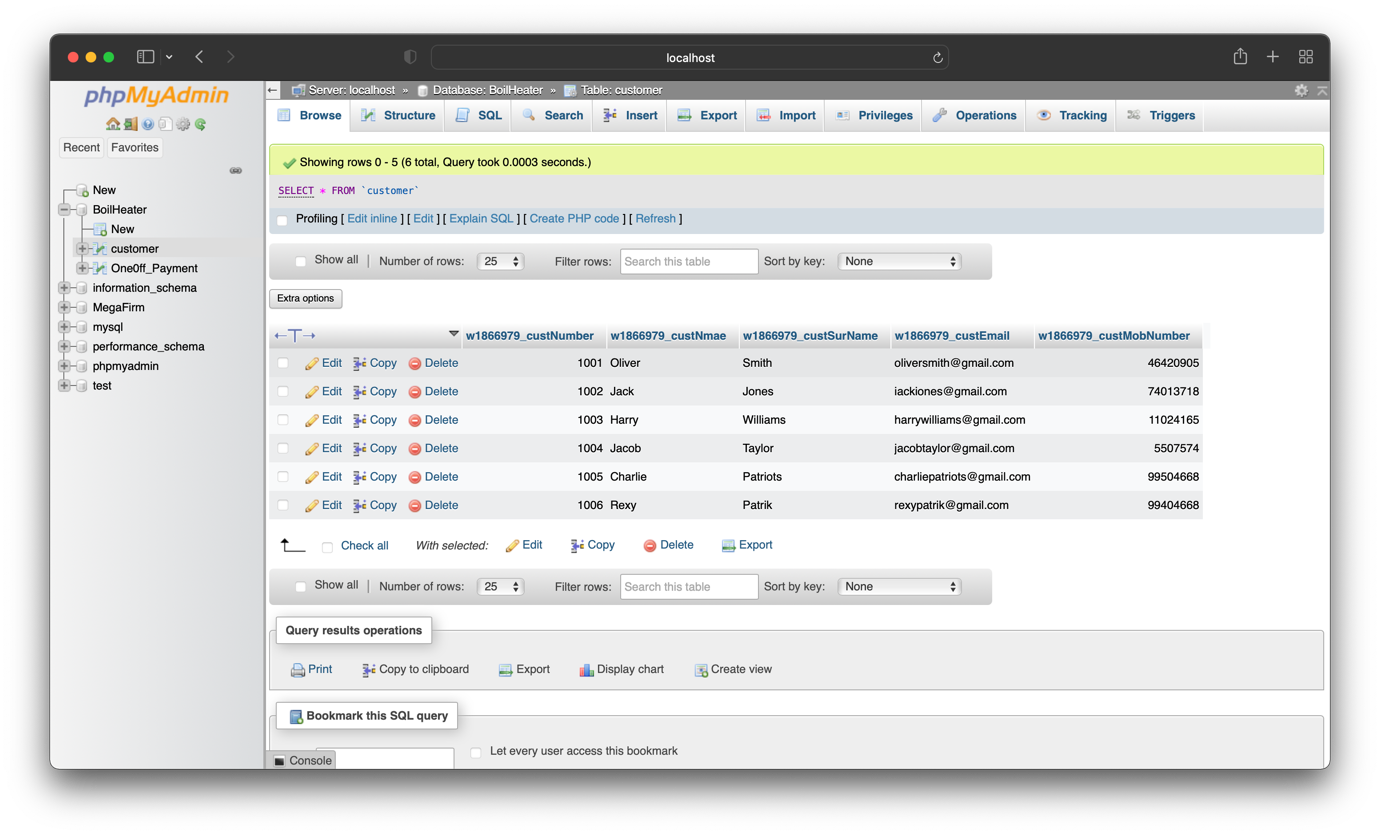
## 3.2 MySQL Screenshots

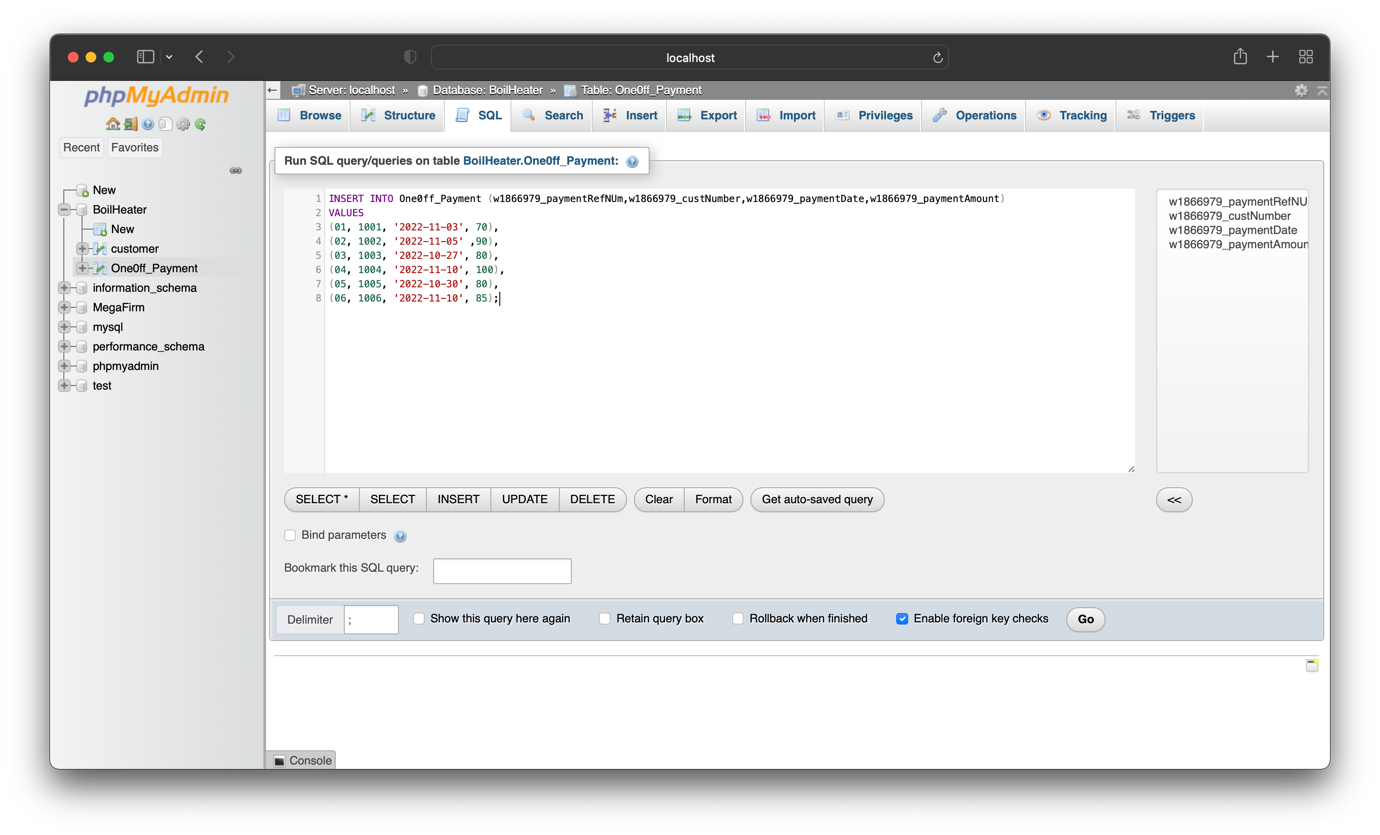
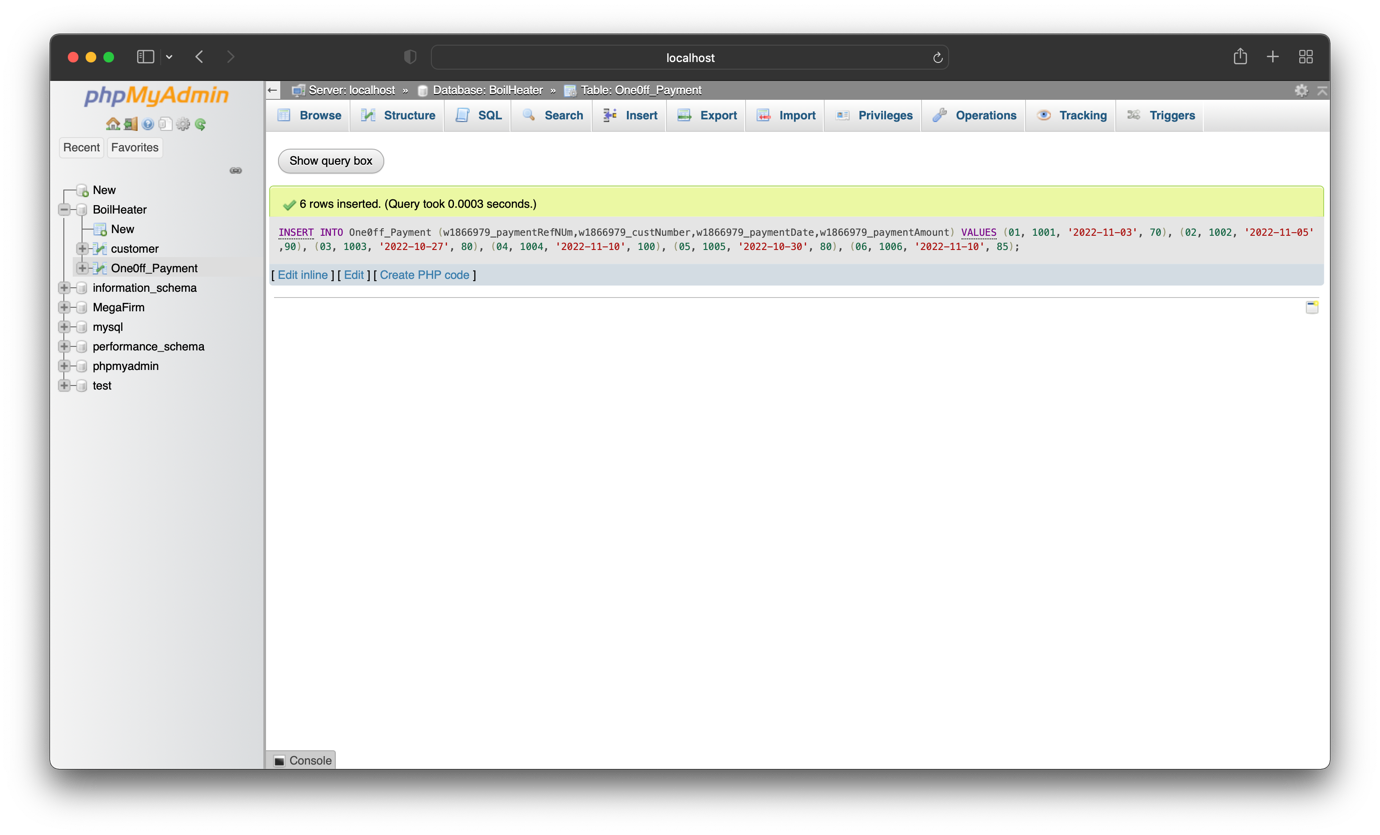
3.2.1 Create Database

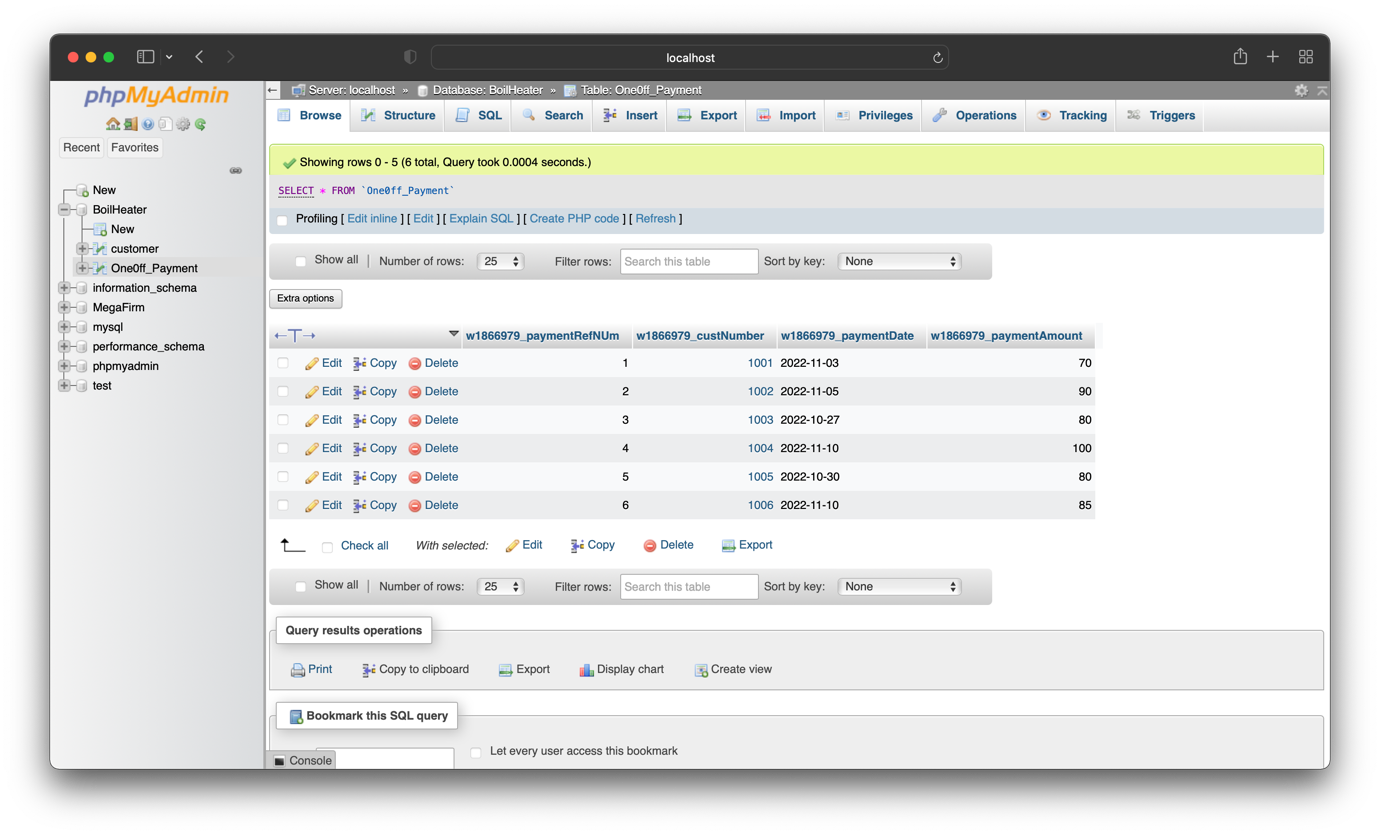
### 3.2.2 Create customer Table

### 3.2.3 Create oneoff\_payment Table

3.2.4 Populating customer Table



3.2.5 Populating oneoff\_Payment Table



### 3.2.6 Query

# 4 MySQL and MongoDB

|  |  |
| --- | --- |
| MySQL | MongoDB |
| open-source relational database management system (RDBMS) | open-source non-relational database management system (NoSQL) |
| MySQL is quite slow in comparison to MongoDB while dealing with large databases. | It has the ability to handle large unstructured data |
| Constant development is done by the Oracle Corporation. | Ongoing development is done by MongoDB, Inc. |
| options for scalability are much more limited. | the database is extremely easy to scale |
| MySQL supports JOIN operations. | MongoDB doesn’t support JOIN. |
| Supported languages are C++, C and JavaScript | Supported languages are C++, C |
| In MySQL, each individual records are stored as ‘rows’ in a table | In MongoDB, each individual records are stored as ‘documents’. |
| A ‘table’ is used to store rows (records) of similar type. | Documents belonging to a particular class or group as stored in a ‘collection’. |
| MySQL concept does not allow efficient replication and sharding but in MySQL, one can access associated data using joins which minimizes duplication. | MongoDB was designed with high availability and scalability in mind, and includes out-of-the-box replication and sharding. |
| Risk of SQL injection attacks | No schema definition required so lesser risk of attack due to design |

# Reference

* Comparing The Differences - MongoDB Vs MySQL. (no date). *MongoDB*. Available from https://www.mongodb.com/compare/mongodb-mysql [Accessed 7 December 2022].
* MongoDB vs MySQL. (2018). *GeeksforGeeks*. Available from https://www.geeksforgeeks.org/mongodb-vs-mysql/ [Accessed 7 December 2022].
* Taylor, D. (2020). MongoDB vs MySQL – Difference Between Them. Available from https://www.guru99.com/mongodb-vs-mysql.html [Accessed 7 December 2022].