Database implementation

We used the following DDL commands to create our tables:

```
// Creating the tables

CREATE TABLE Watch_Brands (
  brand_name VARCHAR(50) NOT NULL,
  hq_city VARCHAR(50),
  hq_country VARCHAR(50),
  year_founded YEAR,
  founder VARCHAR(200),
  PRIMARY KEY (brand_name)
);

CREATE TABLE Watches (
  reference VARCHAR(30) NOT NULL,
  brand_name VARCHAR(50) NOT NULL,
  model_name VARCHAR(100),
  complication VARCHAR(100),
  case_material VARCHAR(100),
  bracelet_material VARCHAR(100),
  dial_color VARCHAR(100),
  hour_markings BOOL,
  lunette_material VARCHAR(100),
  retail_price FLOAT(30,2),
  PRIMARY KEY (reference),
  FOREIGN KEY (brand_name) REFERENCES Watch_Brands(brand_name) ON DELETE
CASCADE
);

CREATE TABLE Customers (
  customer_id INT AUTO_INCREMENT,
  first_name VARCHAR(50),
  last_name VARCHAR(50),
  email VARCHAR(60) UNIQUE,
  user_id VARCHAR(50) UNIQUE,
  year_joined YEAR,
  age INT,
  PRIMARY KEY (customer_id)
);

CREATE TABLE Reviews (
  review_id INT AUTO_INCREMENT,
```

```sql
  customer_id INT NOT NULL,
  review_text VARCHAR(500),
  stars FLOAT(2,1),
  author_id INT NOT NULL,
  PRIMARY KEY (review_id),
  FOREIGN KEY (customer_id) REFERENCES Customers(customer_id) ON DELETE
CASCADE,
  FOREIGN KEY (author_id) REFERENCES Customers(customer_id) ON DELETE CASCADE
);

CREATE TABLE Watch_Ownership (
  ownership_id INT AUTO_INCREMENT,
  customer_id INT NOT NULL,
  brand_name VARCHAR(50) NOT NULL,
  model_name VARCHAR(100),
  watch_collection_type VARCHAR(50),
  reference VARCHAR(30) NOT NULL,
  PRIMARY KEY (ownership_id),
  FOREIGN KEY (customer_id) REFERENCES Customers(customer_id) ON DELETE
CASCADE,
  FOREIGN KEY (brand_name) REFERENCES Watch_Brands(brand_name) ON DELETE
CASCADE,
  FOREIGN KEY (reference) REFERENCES Watches(reference) ON DELETE CASCADE
);

CREATE TABLE Brand_Market_Data (
  transaction_id INT AUTO_INCREMENT,
  brand_name VARCHAR(50) NOT NULL,
  price FLOAT(30,2),
  production_year YEAR,
  PRIMARY KEY (transaction_id),
  FOREIGN KEY (brand_name) REFERENCES Watch_Brands(brand_name) ON DELETE
CASCADE
);
```

Screenshots of database on GCP

```
mysql> show databases
    -> ;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| main               |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
5 rows in set (0.00 sec)
```

```
mysql> show tables;
+-------------------+
| Tables_in_main    |
+-------------------+
| Brand_Market_Data |
| Customers         |
| Reviews           |
| Watch_Brands      |
| Watch_Ownership   |
| Watches           |
+-------------------+
6 rows in set (0.00 sec)
```

(Our database is called "main")

Here are snapshots of our tables with their count.

1. Brand_Market_Data

```
mysql> select * from Brand_Market_Data limit 20
    -> ;
+----------------+----------------------+----------+-----------------+
| transaction_id | brand_name           | price    | production_year |
+----------------+----------------------+----------+-----------------+
|              3 | Audemars Piguet      | 39825.00 |            2022 |
|              8 | A. Lange & Söhne     | 16900.00 |            2013 |
|             16 | Longines             |   749.00 |            0000 |
|             20 | Omega                |  5000.00 |            2024 |
|             26 | Hamilton             |   950.00 |            0000 |
|             34 | Ebel                 |  1750.00 |            0000 |
|             39 | Montblanc            |  1000.00 |            2017 |
|             40 | Oris                 |  2150.00 |            0000 |
|             41 | Montblanc            |  2800.00 |            2022 |
|             42 | Parmigiani Fleurier  |  9950.00 |            0000 |
|             57 | Franck Muller        | 19999.00 |            0000 |
|             60 | U-Boat               |   975.00 |            2024 |
|             74 | Parmigiani Fleurier  | 16674.00 |            2023 |
|             82 | Breguet              | 35000.00 |            2024 |
|            100 | Cartier              |  7100.00 |            2019 |
|            104 | Maurice Lacroix      |  4950.00 |            0000 |
|            105 | Zenith               |  7800.00 |            0000 |
|            107 | TAG Heuer            |  5195.00 |            2023 |
|            115 | Bulgari              | 27000.00 |            0000 |
|            123 | Junghans             |   313.00 |            1960 |
+----------------+----------------------+----------+-----------------+
20 rows in set (0.00 sec)

mysql> select count(*) from Brand_Market_Data
    -> ;
+----------+
| count(*) |
+----------+
|     9922 |
+----------+
1 row in set (0.01 sec)
```

Note: The production_year was set to null (0000) when the information was not provided

2. Watch_Brands

```
mysql> select * from Watch_Brands limit 20
    -> ;
+----------------------+---------------------+---------------+--------------+----------------------------------------------------+
| brand_name           | hq_city             | hq_country    | year_founded | founder                                            |
+----------------------+---------------------+---------------+--------------+----------------------------------------------------+
| A. Lange & Söhne     | Glashütte           | Germany       |         0000 | Ferdinand Adolph Lange                             |
| Arnold & Son         | La Chaux-de-Fonds   | Switzerland   |         0000 | John Arnold                                        |
| Audemars Piguet      | Le Brassus          | Switzerland   |         0000 | Jules Louis Audemars & Edward-Auguste Piguet       |
| Baume & Mercier      | Geneva              | Switzerland   |         0000 | Louis-Ulysse Baume & Alexandre Mercier             |
| Bell & Ross          | Paris               | France        |         1992 | Bruno Belamich & Carlos A. Rosillo                 |
| Blancpain            | Paudex              | Switzerland   |         0000 | Jehan-Jacques Blancpain                            |
| Bovet                | Geneva              | Switzerland   |         0000 | Édouard Bovet                                      |
| Brand Name           | HQ City             | HQ Country    |         0000 | Founder Name                                       |
| Breguet              | Paris               | France        |         0000 | Abraham-Louis Breguet                              |
| Breitling            | Grenchen            | Switzerland   |         0000 | Léon Breitling                                     |
| Bulgari              | Rome                | Italy         |         0000 | Sotirios Voulgaris                                 |
| Cartier              | Paris               | France        |         0000 | Louis-François Cartier                             |
| Chopard              | Geneva              | Switzerland   |         0000 | Louis-Ulysse Chopard                               |
| Corum                | La Chaux-de-Fonds   | Switzerland   |         1955 | René Bannwart & André Valentin                     |
| De Bethune           | Le Sentier          | Switzerland   |         2002 | David Zanetta & Denis Flageollet                   |
| Ebel                 | La Chaux-de-Fonds   | Switzerland   |         1911 | Eugène Blum                                        |
| F.P. Journe          | Geneva              | Switzerland   |         1999 | François-Paul Journe                               |
| Franck Muller        | Geneva              | Switzerland   |         1991 | Franck Muller                                      |
| Frederique Constant  | Plan-les-Ouates     | Switzerland   |         1988 | Aletta Bax & Peter Stas                            |
| Girard-Perregaux     | La Chaux-de-Fonds   | Switzerland   |         0000 | Jean-François Bautte                               |
+----------------------+---------------------+---------------+--------------+----------------------------------------------------+
20 rows in set (0.01 sec)

mysql> select count(*) from Watch_Brands;
+----------+
| count(*) |
+----------+
|       50 |
+----------+
1 row in set (0.01 sec)
```

3. Watches

```
mysql> select * from Watches limit 20;
+-----------------------------------+-----------------+----------------------------------+--------------+---------------+------------------+-------------+---------------+-----------------+--------------+
| reference                         | brand_name      | model_name                       | complication | case_material | bracelet_material| dial_color  | hour_markings | lunette_material| retail_price |
+-----------------------------------+-----------------+----------------------------------+--------------+---------------+------------------+-------------+---------------+-----------------+--------------+
|                                   | Oris            | Artelier Worldtimer              | Automatic    | Steel         | Steel            | Black       |             1 | Steel           |      1479.00 |
| "Dark Lord" 2022 Special Editi    | TAG Heuer       | Monaco                           | Automatic    | Titanium      | Crocodile-Leather| Black       |             0 | Titanium        |      8900.00 |
| "Survivor" Limited Edition 261    | Audemars Piguet | Royal Oak Offshore Chronograph   | Automatic    | Titanium      | Rubber           | Black       |             0 | Ceramic         |     37000.00 |
| (223) Vintage Omega Genève Sea    | Omega           | Seamaster                        | Hand-wound   | Steel         | Leather          | White       |             0 | Steel           |       595.00 |
| 000443742-001                     | U-Boat          | Thousands of Feet                | Automatic    | Steel         | Leather          | Black       |             1 | Steel           |      1261.00 |
| 0021-1418                         | Blancpain       | Villeret                         | Automatic    | Yellow Gold   | Yellow Gold      | White       |             1 | Yellow Gold     |      3740.00 |
| 0021-1418-55                      | Blancpain       | Villeret Ultra-Slim              | Hand-wound   | Yellow Gold   | Crocodile-Leather| White       |             1 | Yellow Gold     |      4043.00 |
| 0021-3427-55                      | Blancpain       | Villeret Ultra-Slim              | Hand-wound   | Platinum      | Leather          | White       |             1 | Platinum        |      5757.00 |
| 0033-3427-55A                     | Blancpain       | Villeret                         | Hand-wound   | Platinum      | Crocodile-Leather| White       |             1 | Platinum        |    127662.00 |
| 00443742-001                      | U-Boat          | Thousands of Feet                | Hand-wound   | Steel         | Leather          | Black       |             0 | Steel           |      1490.00 |
| 007 210.92.42.20.01.001(New)      | Omega           | Seamaster Diver 300 M            | Automatic    | Titanium      | Textile          | Brown       |             0 | Aluminium       |      6378.00 |
| 0095-1127-58                      | Blancpain       | Villeret Ultra-Slim              | Automatic    | Steel         | Steel            | White       |             1 | Steel           |      3499.00 |
| 01 0122 346                       | Zenith          | Port Royal                       | Automatic    | Steel         | Leather          | Gold        |             0 | Steel           |      1030.00 |
| 01 111 7700 4061                  | Oris            | Artelier Calibre 111             | Automatic    | Steel         | Leather          | Silver      |             1 | Steel           |      4795.00 |
| 01 111 7700 4065                  | Oris            | Artelier Calibre 111             | Hand-wound   | Steel         | Steel            | Blue        |             1 | Steel           |      4525.00 |
| 01 111 7700 6061-SET 1 23 78      | Oris            | Artelier Calibre 111             | Hand-wound   | Rose Gold     | Leather          | White       |             1 | Rose Gold       |     13350.00 |
| 01 112 7726 4051-Set 8 23 79      | Oris            | Artelier Calibre 112             | Hand-wound   | Steel         | Steel            | White       |             0 | Steel           |      5134.00 |
| 01 112 7726 4055-Set 1 23 72FC    | Oris            | Artelier Calibre 112             | Hand-wound   | Steel         | Crocodile-Leather| Blue        |             0 | Steel           |      4500.00 |
| 01 114 7746 4063-Set 1 22 72FC    | Oris            | Big Crown ProPilot Calibre 114   | Hand-wound   | Steel         | Leather          | Gray        |             1 | Silver          |      3193.00 |
| 01 115 7759 7153-Set7 22 01TLC    | Oris            | ProPilot X                       | Hand-wound   | Titanium      | Titanium         | Transparent |             0 | Titanium        |      4990.00 |
+-----------------------------------+-----------------+----------------------------------+--------------+---------------+------------------+-------------+---------------+-----------------+--------------+
20 rows in set (0.00 sec)
```

```
mysql> select count(*) from Watches;
+----------+
| count(*) |
+----------+
|    17884 |
+----------+
1 row in set (0.01 sec)
```

4. The remaining tables (Customers, Reviews, and Watch_Ownership) are user data tables so they are currently empty (will be filled by user activity on the app)