CSCI 5408 – Data Management, Warehousing, Analytics

Assignment 2

Work done by,

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DECLARATION

I, Guturu Rama Mohan Vishnu, declare that in assignment 2 of CSCI 5408 course, writing queries is not done programmatically or using any online or offline tools. However, the webpages or the domain mentioned in this document are visited manually, and some useful information is gathered for education purpose only. Information, such as email, personal contact numbers, or names of people are not extracted. The course instructor or the Faculty of Computer Science cannot be held responsible for any misuse of the extracted data.

Problem #2: Research and Development to simulate a distributed DBMS

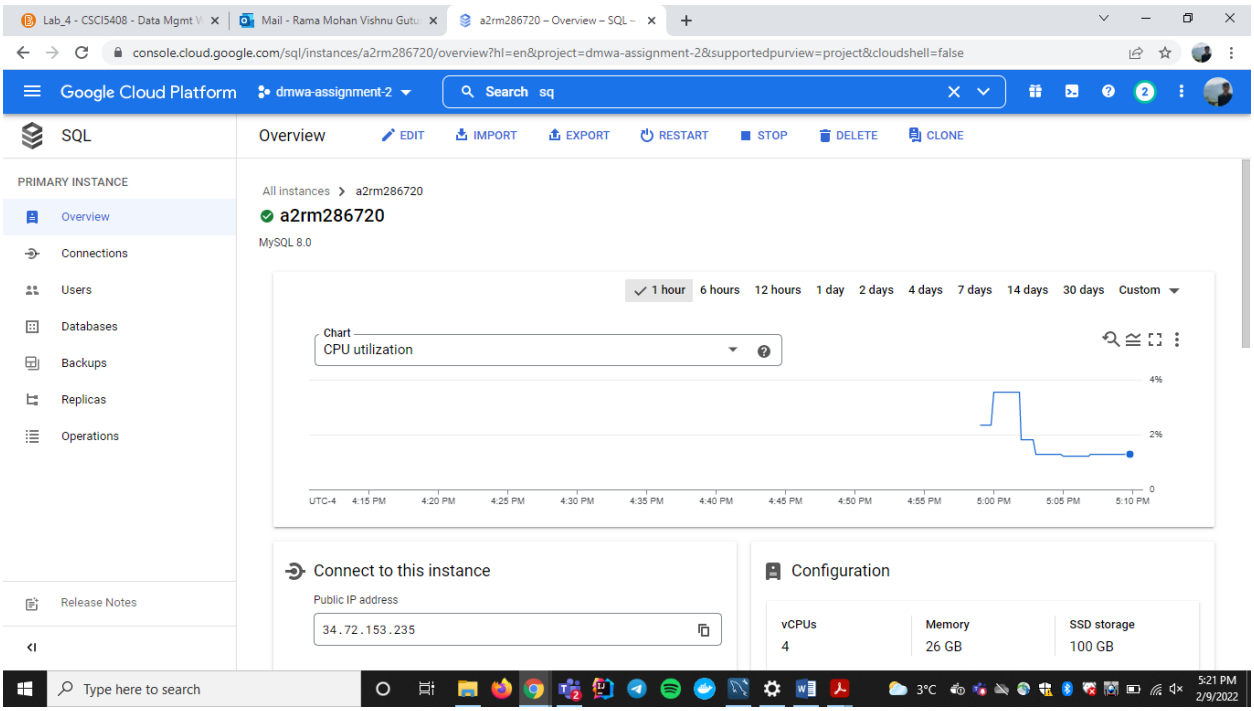
Solution:

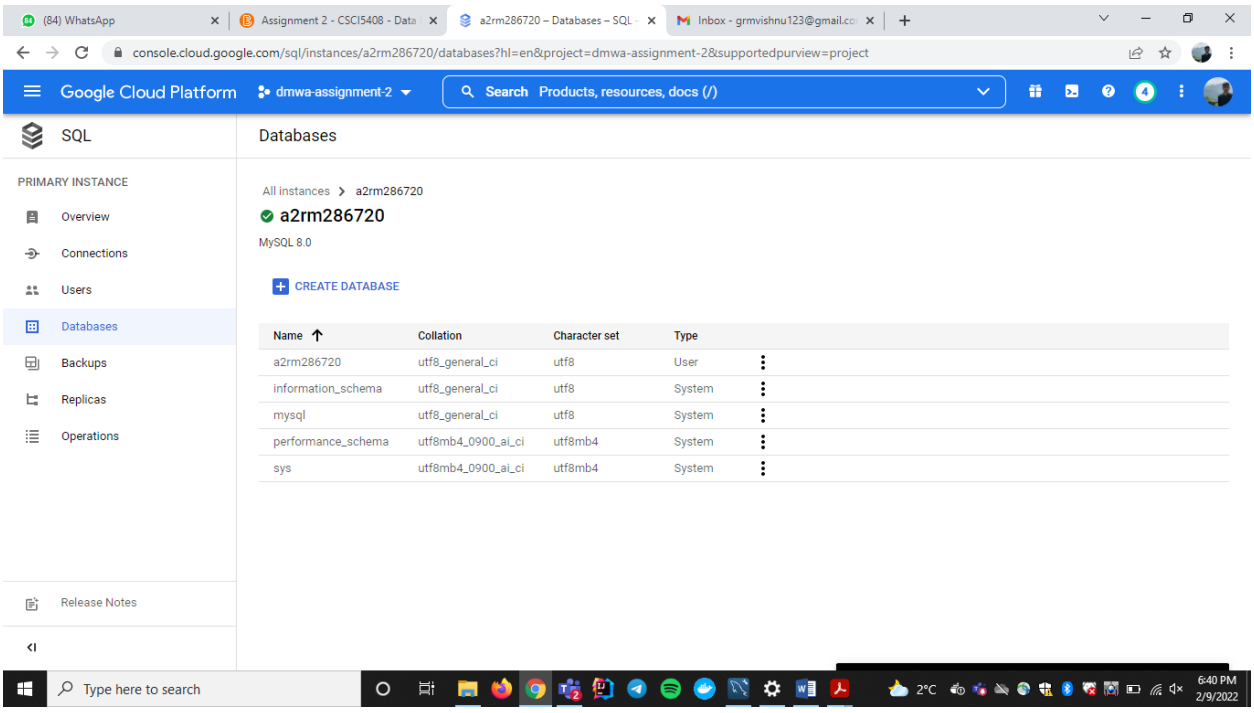
Task 1 – Building database from given dataset

The steps I have taken to clean up the .csv files are listed as below:

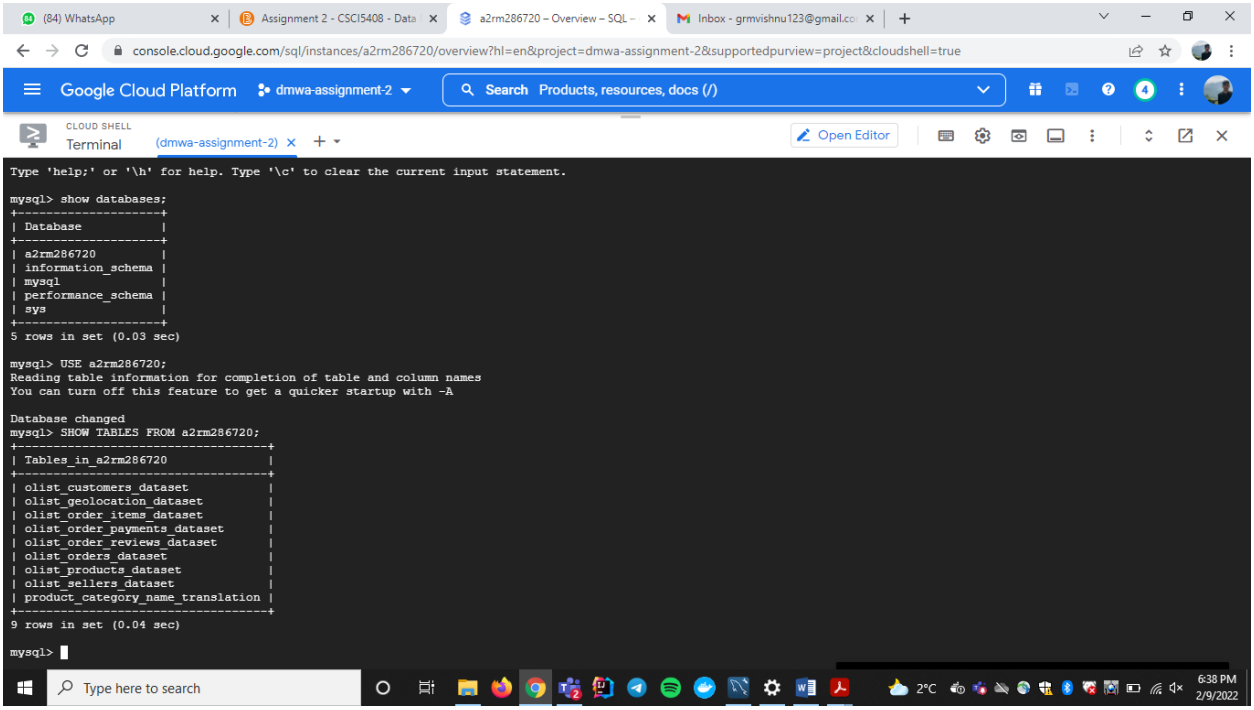
- First step I took to clean the datasets is to look for null values in it.
- The plan was to replace null values with ‘0’ if it’s a numerical column and replace with ‘’ if it’s a text/string column.
- I have gone through all the files but I couldn’t find a single null value in all the 9 datasets. So, I have processed to next step.
- Next step is to look for empty cells in numeric columns to replace them with ‘0’. I have found few empty cells in few files in numerical columns. So as planned, I replaced them with ‘0’.
- The next step in data cleaning is to remove data duplicates. There are some files which have duplicate values. So, in order to not have any issues while creating primary and foreign keys, I deleted the rows which had the duplicates.
- Since we do not need to remove any columns from the csv files, none of the columns were deleted.

Proof that I have completed the required steps regarding creating a GCP MySQL Virtual Machine Instance and imported the tables in to the instance:

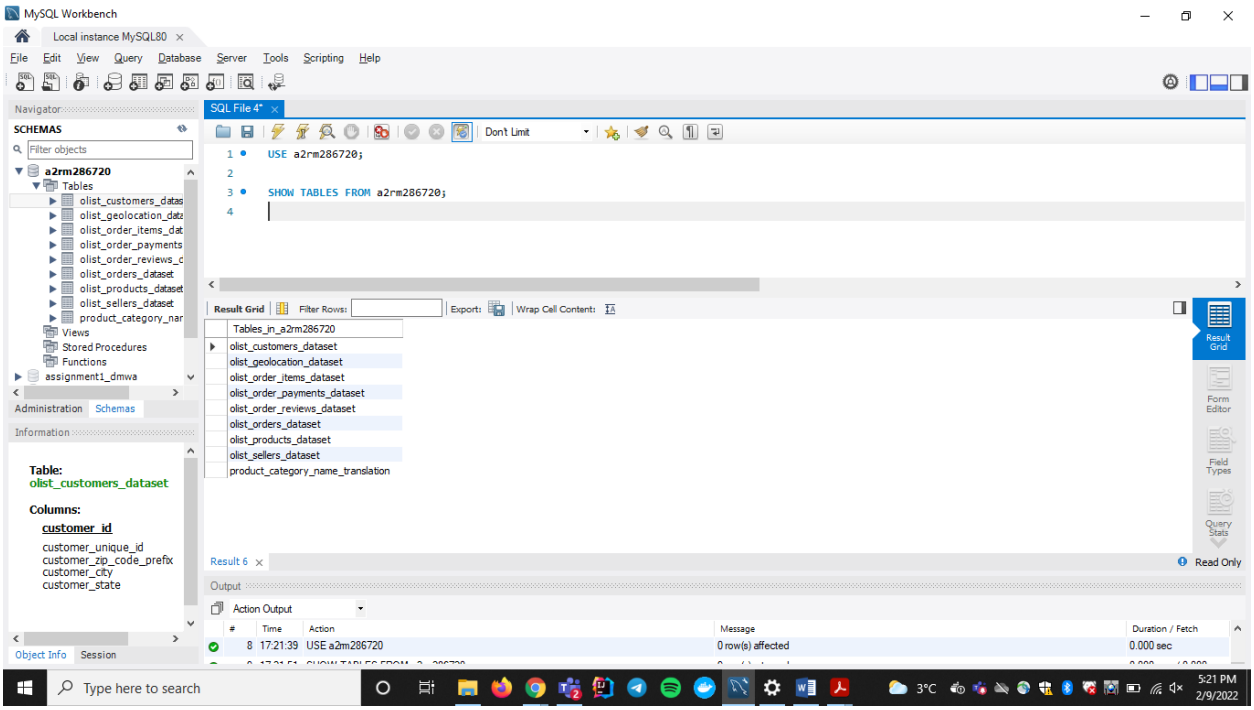




Screenshot of running the MySQL command “SHOW TABLES FROM a2rm286720;” in GCP Virtual Machine instance:



Screenshot of running the MySQL command “SHOW TABLES FROM a2rm286720;” in my local instance:



Task 2 – Perform Transaction in your local machine

Queries for task 2 as required are:

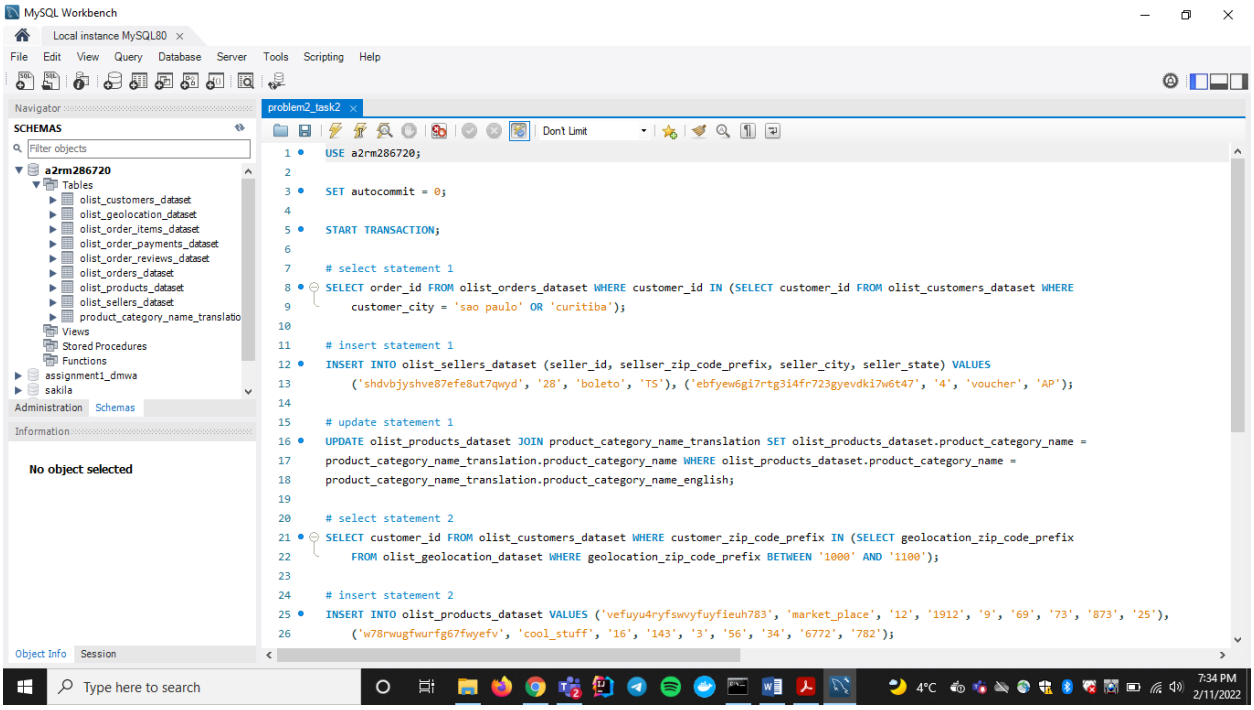
```
USE a2rm286720;

SET autocommit = 0;

START TRANSACTION;


# select statement 1

SELECT order_id FROM olist_orders_dataset WHERE customer_id IN (SELECT customer_id
FROM olist_customers_dataset WHERE customer_city = 'sao paulo' OR 'curitiba');


# insert statement 1

INSERT INTO olist_sellers_dataset (seller_id, sellser_zip_code_prefix, seller_city, seller_state)
VALUES ('shdvbjyshve87efe8ut7qwyd', '28', 'boleto', 'TS'),
('ebfyew6gi7rtg3i4fr723gyevdki7w6t47', '4', 'voucher', 'AP');


# update statement 1

UPDATE olist_products_dataset JOIN product_category_name_translation SET
olist_products_dataset.product_category_name =
product_category_name_translation.product_category_name WHERE
olist_products_dataset.product_category_name =
product_category_name_translation.product_category_name_english;


# select statement 2
```

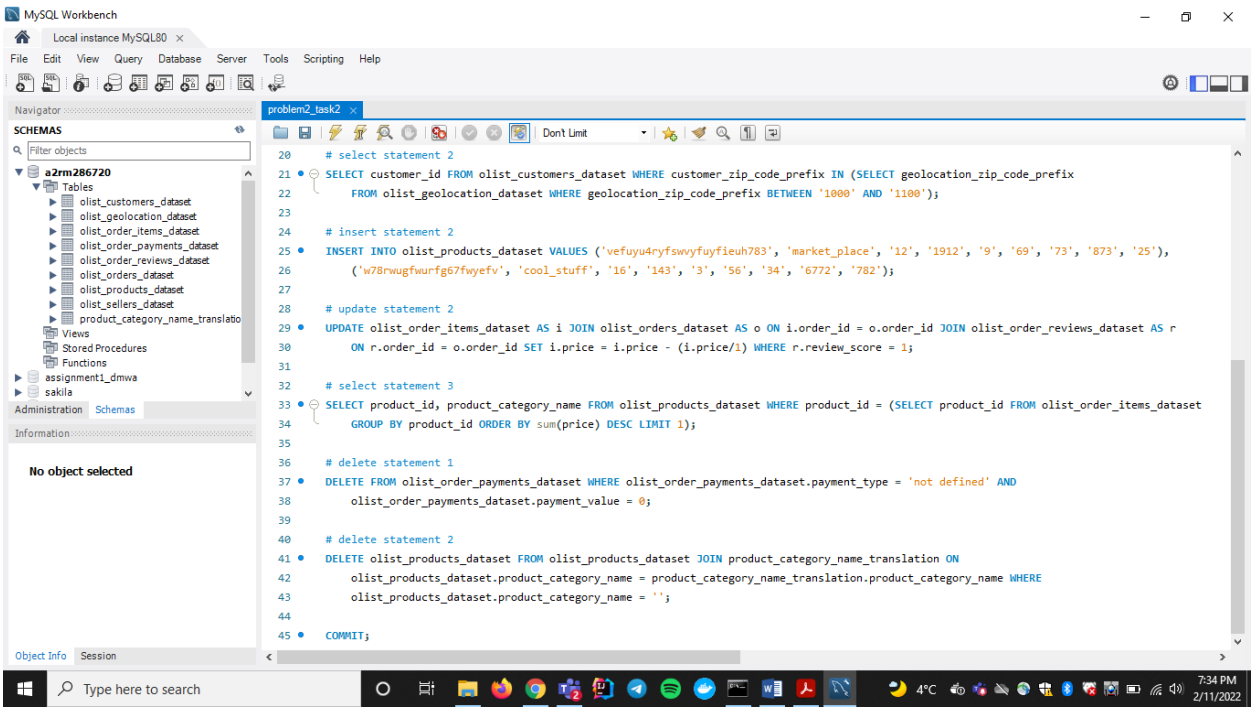
```
SELECT customer_id FROM olist_customers_dataset WHERE customer_zip_code_prefix IN
(SELECT geolocation_zip_code_prefix FROM olist_geolocation_dataset WHERE
geolocation_zip_code_prefix BETWEEN '1000' AND '1100');


# insert statement 2

INSERT INTO olist_products_dataset VALUES ('vefuyu4ryfswvyfuyfieuh783', 'market_place',
'12', '1912', '9', '69', '73', '873', '25'), ('w78rwugfwurfg67fwyefv', 'cool_stuff', '16', '143', '3', '56',
'34', '6772', '782');


# update statement 2

UPDATE olist_order_items_dataset AS i JOIN olist_orders_dataset AS o ON i.order_id =
o.order_id JOIN olist_order_reviews_dataset AS r ON r.order_id = o.order_id SET i.price =
i.price - (i.price/1) WHERE r.review_score = 1;


# select statement 3

SELECT product_id, product_category_name FROM olist_products_dataset WHERE
product_id = (SELECT product_id FROM olist_order_items_dataset GROUP BY product_id
ORDER BY sum(price) DESC LIMIT 1);


# delete statement 1

DELETE FROM olist_order_payments_dataset WHERE
olist_order_payments_dataset.payment_type = 'not defined' AND
olist_order_payments_dataset.payment_value = 0;


# delete statement 2
```

DELETE olist_products_dataset FROM olist_products_dataset JOIN product_category_name_translation ON olist_products_dataset.product_category_name = product_category_name_translation.product_category_name WHERE olist_products_dataset.product_category_name = '';

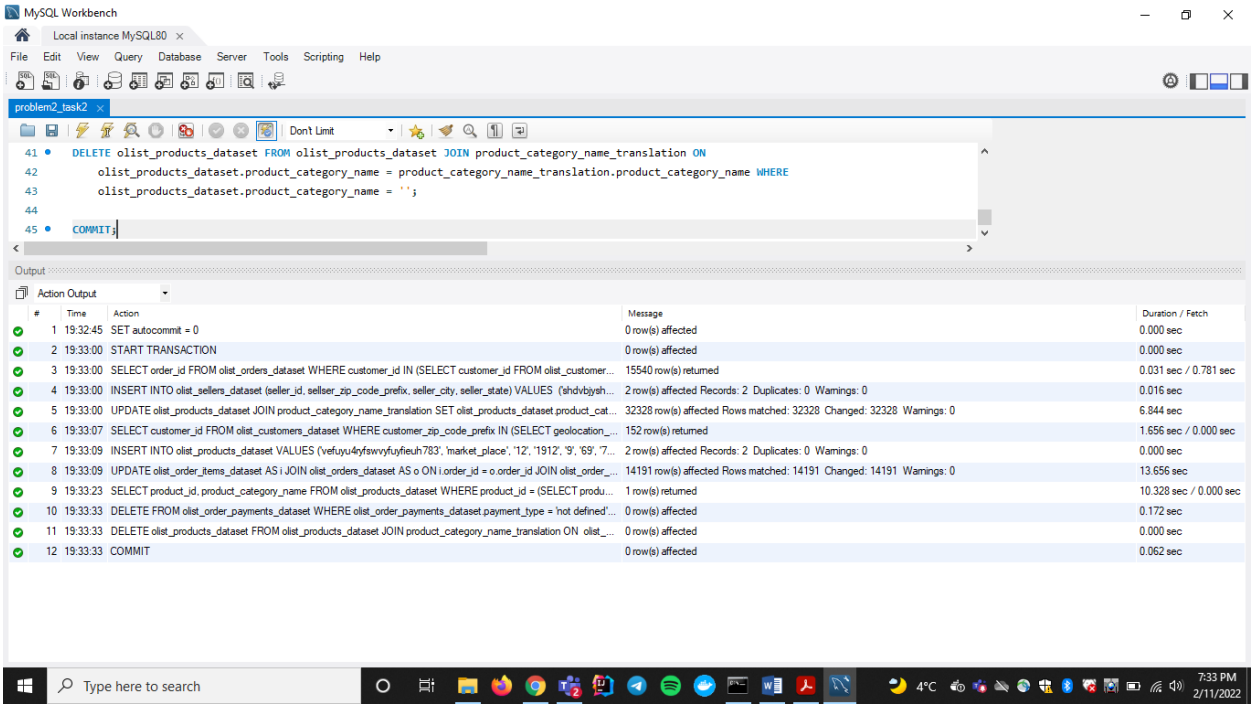
COMMIT;

I have also added the screenshots of it as proof in this document:





Proof that the transaction was successful without any issues and also to show the transaction time/queries time:



Task 3 – Perform Transaction in the Remote machine

Queries for task 3 as required are:

```
USE a2rm286720;

SET autocommit = 0;

START TRANSACTION;


# insert statement 1

INSERT INTO olist_customers_dataset (customer_id, customer_unique_id,
customer_zip_code_prefix, customer_city, customer_state) VALUES
('yugrfo6i7fgqufyhgr36fre8', '3uygfi45f7evu6e74fr8u7we', '23453', 'halifax', 'NS'),
('eyrgfu5quyfu3y4rfvge6w483hrey', '437gf34gr79giwf84', '785', 'mumbai', 'Karnataka'),
('fyg7e5t3874witirwufhgrw4urhof83', 'i34gt7824tr93igrf723i', '1912', 'hyderabad' , 'telangana'),
('ugfo3746f73twrg7fi2qgefw', 'wu4tgr78wegtf7834gfu7wki7gf', '2119', 'hyderabad', 'telangana');


# insert statement 2

INSERT INTO product_category_name_translation (product_category_name,
product_category_name_english) VALUES ('lait', 'milk'), ('yaourt', 'yogurt'), ('fromage',
'cheese'), ('beurre', 'butter');


# select statement 1

SELECT * FROM olist_products_dataset INNER JOIN (SELECT product_id FROM
olist_order_items_dataset ORDER BY (order_item_id*price) DESC LIMIT 1) AS A ON
A.product_id = olist_products_dataset.product_id;


# select statement 2
```

```
SELECT seller_id FROM olist_sellers_dataset WHERE sellser_zip_code_prefix IN (SELECT geolocation_zip_code_prefix FROM olist_geolocation_dataset WHERE geolocation_zip_code_prefix BETWEEN '1000' AND '1100');
```

select statement 3

```
SELECT olist_sellers_dataset.seller_id, olist_sellers_dataset.sellser_zip_code_prefix, olist_sellers_dataset.seller_city, olist_sellers_dataset.seller_state FROM olist_sellers_dataset JOIN olist_order_items_dataset ON olist_sellers_dataset.seller_id = olist_order_items_dataset.seller_id JOIN olist_orders_dataset ON olist_order_items_dataset.order_id = olist_orders_dataset.order_id JOIN (SELECT order_id FROM olist_order_payments_dataset ORDER BY payment_installments DESC LIMIT 1) AS A ON A.order_id = olist_orders_dataset.order_id;
```

update statement 1

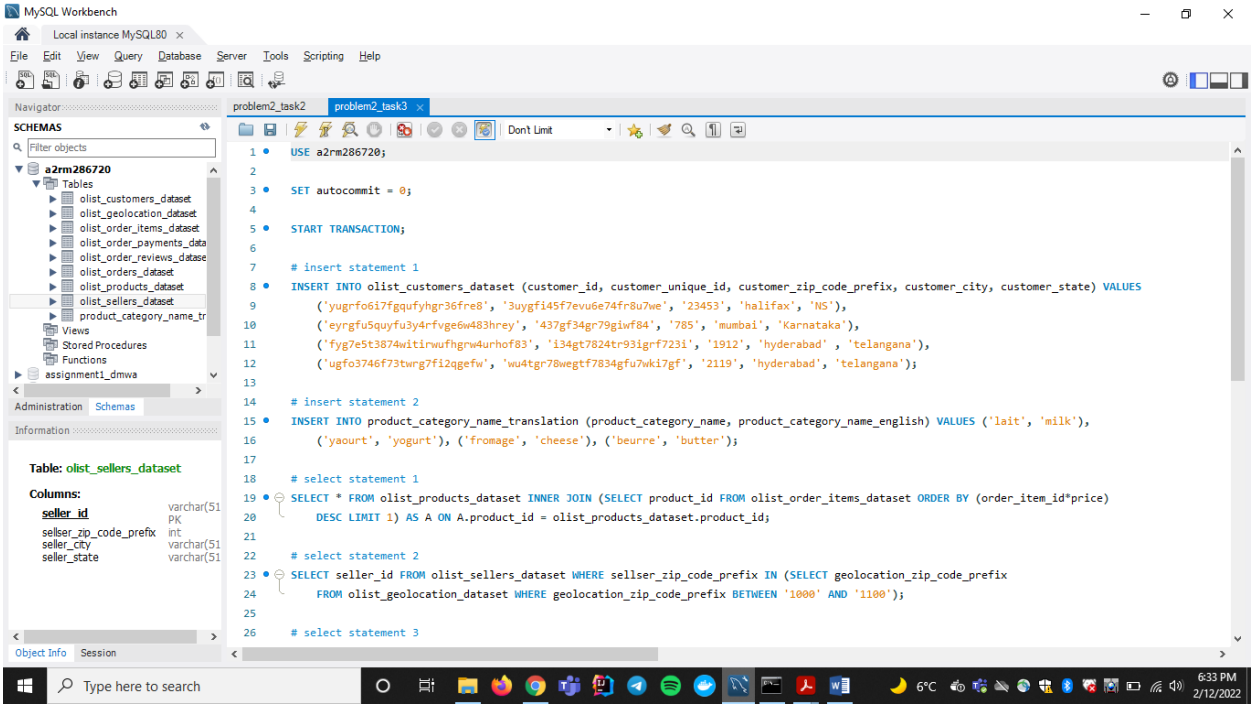
```
UPDATE olist_sellers_dataset JOIN olist_geolocation_dataset ON olist_sellers_dataset.sellser_zip_code_prefix = olist_geolocation_dataset.geolocation_zip_code_prefix SET olist_sellers_dataset.sellser_zip_code_prefix = 143 AND olist_sellers_dataset.seller_city = 'markapur' AND olist_geolocation_dataset.geolocation_zip_code_prefix = 143 AND olist_geolocation_dataset.geolocation_state = 'AP' WHERE olist_sellers_dataset.seller_state = 'PR';
```

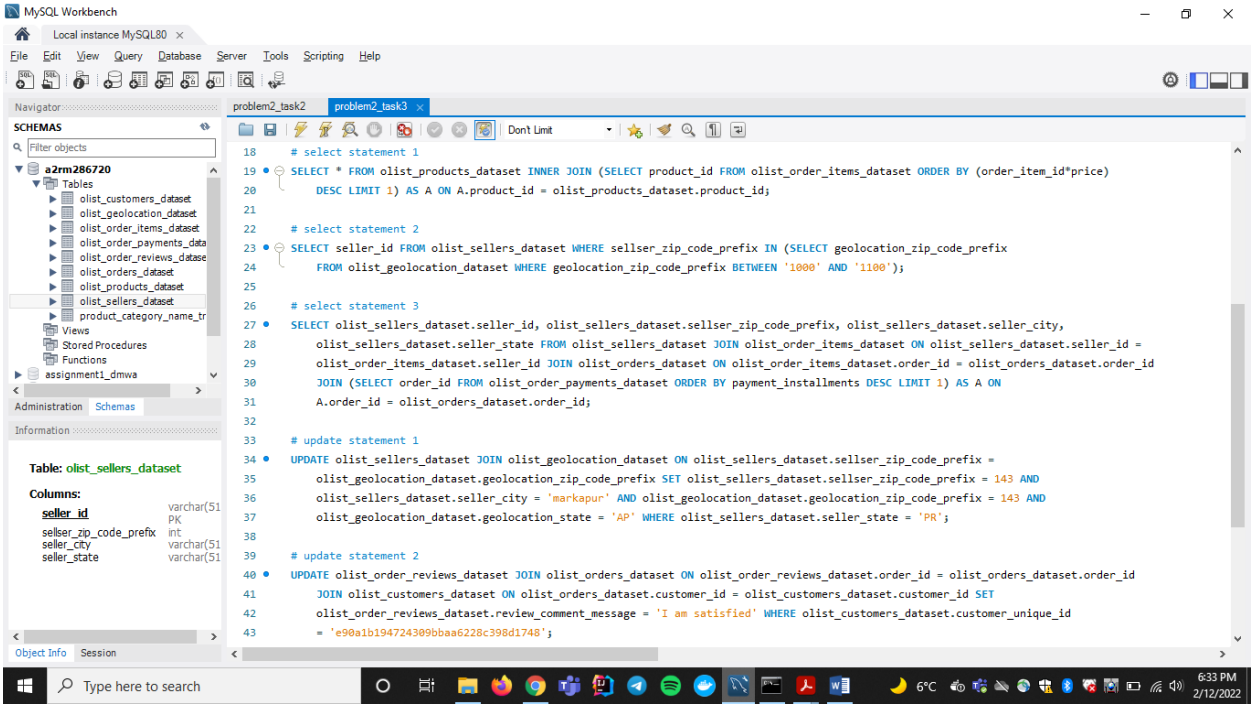
update statement 2

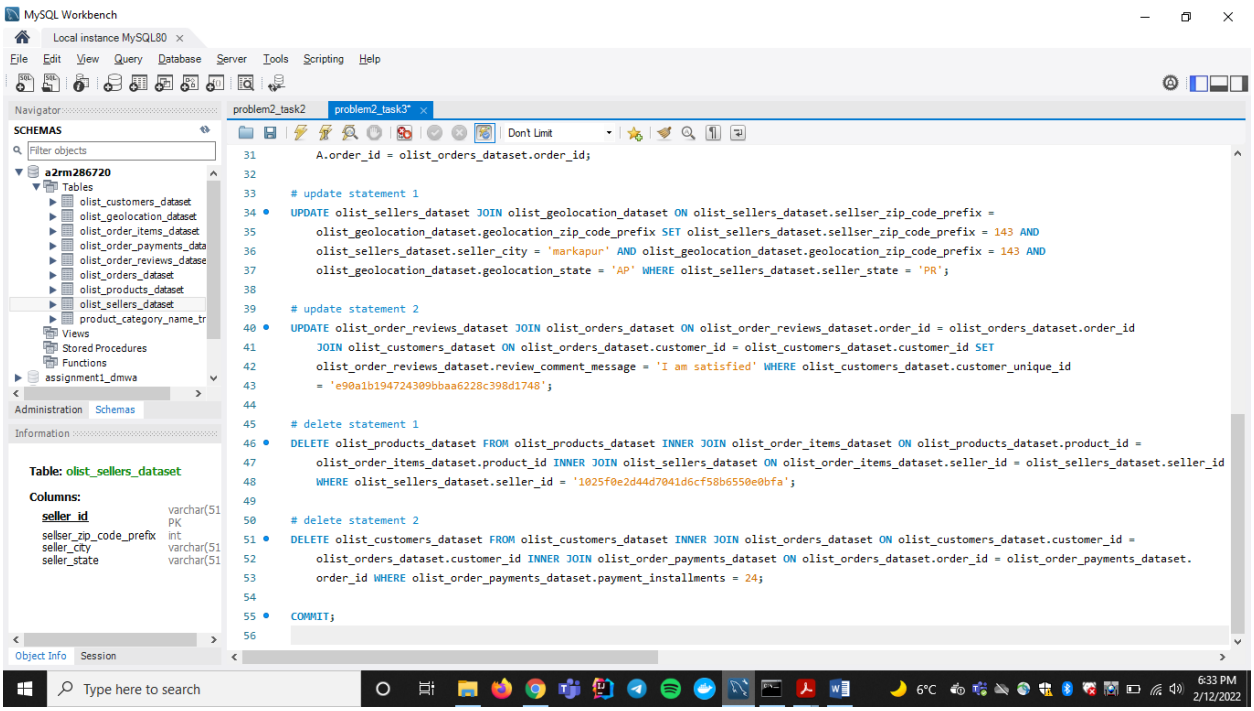
```
UPDATE olist_order_reviews_dataset JOIN olist_orders_dataset ON olist_order_reviews_dataset.order_id = olist_orders_dataset.order_id JOIN olist_customers_dataset ON olist_orders_dataset.customer_id = olist_customers_dataset.customer_id SET
```

```
olist_order_reviews_dataset.review_comment_message = 'I am satisfied' WHERE
olist_customers_dataset.customer_unique_id = 'e90a1b194724309bbaa6228c398d1748';


# delete statement 1

DELETE olist_products_dataset FROM olist_products_dataset INNER JOIN
olist_order_items_dataset ON olist_products_dataset.product_id =
olist_order_items_dataset.product_id INNER JOIN olist_sellers_dataset ON
olist_order_items_dataset.seller_id = olist_sellers_dataset.seller_id WHERE
olist_sellers_dataset.seller_id = '1025f0e2d44d7041d6cf58b6550e0bfa';


# delete statement 2

DELETE olist_customers_dataset FROM olist_customers_dataset INNER JOIN
olist_orders_dataset ON olist_customers_dataset.customer_id = olist_orders_dataset.customer_id
INNER JOIN olist_order_payments_dataset ON olist_orders_dataset.order_id =
olist_order_payments_dataset.order_id WHERE
olist_order_payments_dataset.payment_installments = 24;


COMMIT;
```

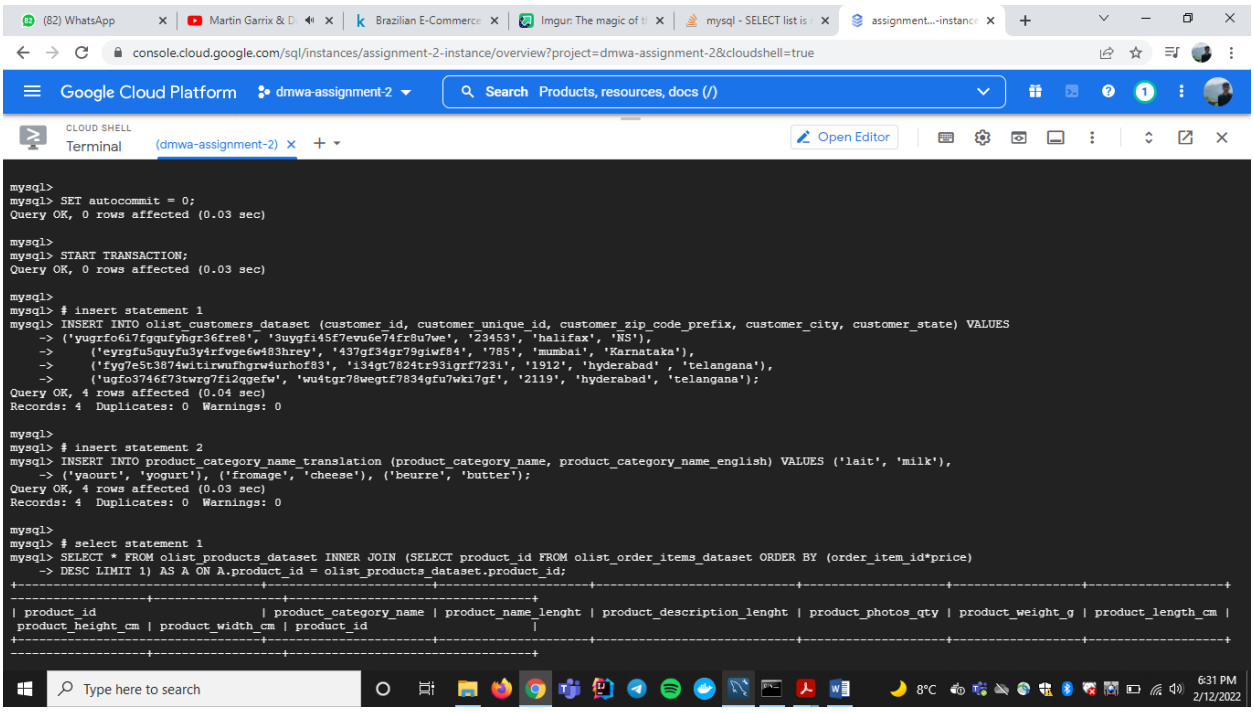
I have also added the screenshots of it as proof in this document:

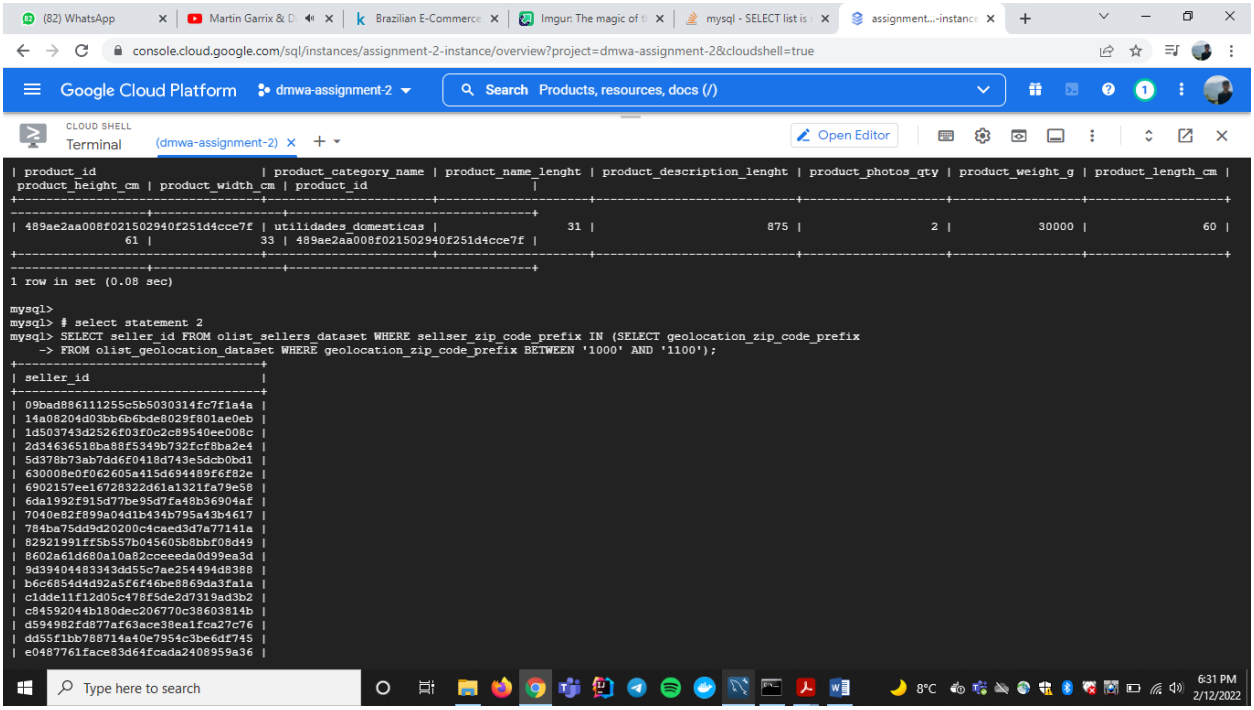






Proof that the transaction was successful without any issues and also to show the transaction time/queries time:

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mysql - SELECT list is
assignment...-instance
console.cloud.google.com/sql/instances/assignment-2-instance/overview?project=dmwa-assignment-2&cloudshell=true
Google Cloud Platform
dmwa-assignment-2
Search Products, resources, docs (/)
CLOUD SHELL
Terminal
(dmwa-assignment-2)
Open Editor
| product_id | product_category_name | product_name_lenght | product_description_lenght | product_photos_qty | product_weight_g | product_length_cm | product_height_cm | product_width_cm | product_id |
| 489ae2aa008f021502940f251d4cce7f | utilidades_domesticas | 31 | 875 | 2 | 30000 | 60 | 61 | 33 | 489ae2aa008f021502940f251d4cce7f |
1 row in set (0.08 sec)
mysql>
mysql> # select statement 2
mysql> SELECT seller_id FROM olist_sellers_dataset WHERE sellser_zip_code_prefix IN (SELECT geolocation_zip_code_prefix
-> FROM olist_geolocation_dataset WHERE geolocation_zip_code_prefix BETWEEN '1000' AND '1100');
| seller_id |
| 09bad886111255c5b5030314fc7f1a4a |
| 14a08204d03bb6b6bde8029f801ae0eb |
| 1d503743d2526f03f0c2c89540ee008c |
| 2d34636518ba88f5349b732fcf8ba2e4 |
| 5d378b73ab7dd6f0418d743e5dcb0bd1 |
| 630008e0f062605a415d694489f6f82e |
| 6902157ee16728322d61a1321fa79e58 |
| 6da1992f915d77be95d7fa48b36904af |
| 7040e82f899a04d1b434b795a43b4617 |
| 784ba75dd9d20200c4caed3d7a77141a |
| 82921991ff5b557b045605b8bbf08d49 |
| 8602a61d680a10a82cceeeda0d99ea3d |
| 9d39404483343dd55c7ae254494d8388 |
| b6c6854d4d92a5f6f46be8869da3fa1a |
| c1dde11f12d05c478f5de2d7319ad3b2 |
| c84592044b180dec206770c38603814b |
| d594982fd877af63ace38ea1fca27c76 |
| dd55f1bb788714a40e7954c3be6df745 |
| e0487761face83d64fcada2408959a36 |
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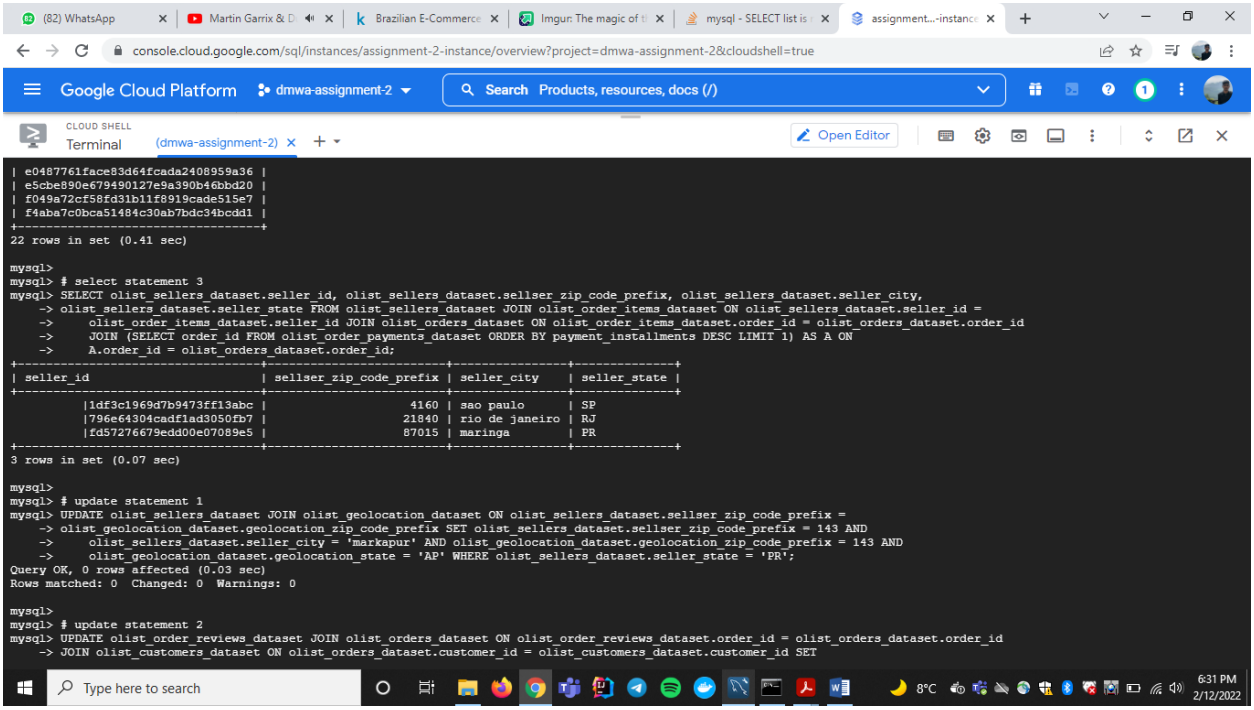
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mysql - SELECT list is
assignment...-instance
console.cloud.google.com/sql/instances/assignment-2-instance/overview?project=dmwa-assignment-2&cloudshell=true
Google Cloud Platform
dmwa-assignment-2
Search Products, resources, docs (/)
CLOUD SHELL
Terminal
(dmwa-assignment-2)
Open Editor
| e0487761face83d64fcada2408959a36 |
| e5cbe890e679490127e9a390b46bbd20 |
| f049a72cf58fd31b11f8919cade515e7 |
| f4aba7c0bca51484c30ab7bdc34bcdd1 |
22 rows in set (0.41 sec)
mysql>
mysql> # select statement 3
mysql> SELECT olist_sellers_dataset.seller_id, olist_sellers_dataset.sellser_zip_code_prefix, olist_sellers_dataset.seller_city,
-> olist_sellers_dataset.seller_state FROM olist_sellers_dataset JOIN olist_order_items_dataset ON olist_sellers_dataset.seller_id =
-> olist_order_items_dataset.seller_id JOIN olist_orders_dataset ON olist_order_items_dataset.order_id = olist_orders_dataset.order_id
-> JOIN (SELECT order_id FROM olist_order_payments_dataset ORDER BY payment_installments DESC LIMIT 1) AS A ON
-> A.order_id = olist_orders_dataset.order_id;
seller_id	sellser_zip_code_prefix	seller_city	seller_state
1df3c1969d7b9473ff13abc	4160	sao paulo	SP
796e64304cadf1ad3050fb7	21840	rio de janeiro	RJ
fd57276679edd00e07089e5	87015	maringa	PR
3 rows in set (0.07 sec)
mysql>
mysql> # update statement 1
mysql> UPDATE olist_sellers_dataset JOIN olist_geolocation_dataset ON olist_sellers_dataset.sellser_zip_code_prefix =
-> olist_geolocation_dataset.geolocation_zip_code_prefix SET olist_sellers_dataset.sellser_zip_code_prefix = 143 AND
-> olist_sellers_dataset.seller_city = 'markapur' AND olist_geolocation_dataset.geolocation_zip_code_prefix = 143 AND
-> olist_geolocation_dataset.geolocation_state = 'AP' WHERE olist_sellers_dataset.seller_state = 'PR';
Query OK, 0 rows affected (0.03 sec)
Rows matched: 0 Changed: 0 Warnings: 0
mysql>
mysql> # update statement 2
mysql> UPDATE olist_order_reviews_dataset JOIN olist_orders_dataset ON olist_order_reviews_dataset.order_id = olist_orders_dataset.order_id
-> JOIN olist_customers_dataset ON olist_orders_dataset.customer_id = olist_customers_dataset.customer_id SET
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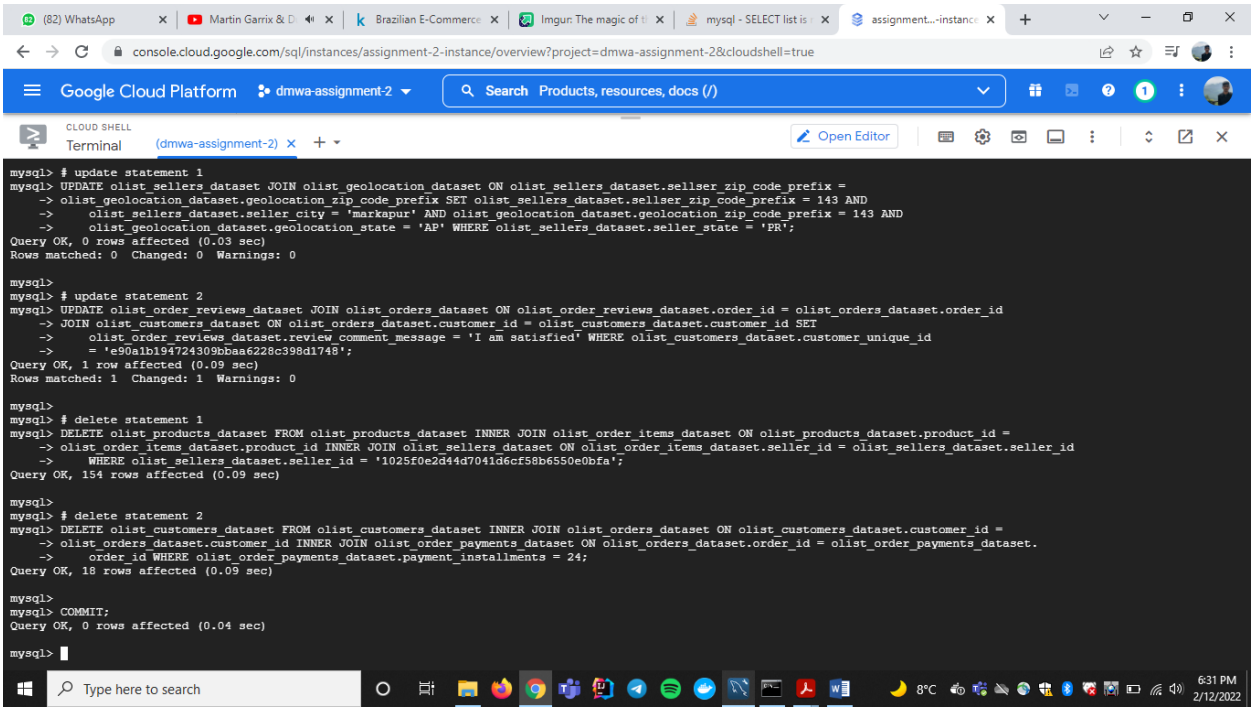
2/12/2022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Brazilian E-Commerce
Imgur: The magic of t
mysql - SELECT list is r
assignment...-instance
console.cloud.google.com/sql/instances/assignment-2-instance/overview?project=dmwa-assignment-2&cloudshell=true
Google Cloud Platform
dmwa-assignment-2
Search Products, resources, docs (/)
CLOUD SHELL
Terminal
(dmwa-assignment-2)
Open Editor
mysql> # update statement 1
mysql> UPDATE olist_sellers_dataset JOIN olist_geolocation_dataset ON olist_sellers_dataset.sellser_zip_code_prefix =
-> olist_geolocation_dataset.geolocation_zip_code_prefix SET olist_sellers_dataset.sellser_zip_code_prefix = 143 AND
-> olist_sellers_dataset.seller_city = 'markapur' AND olist_geolocation_dataset.geolocation_zip_code_prefix = 143 AND
-> olist_geolocation_dataset.geolocation_state = 'AP' WHERE olist_sellers_dataset.seller_state = 'PR';
Query OK, 0 rows affected (0.03 sec)
Rows matched: 0 Changed: 0 Warnings: 0
mysql>
mysql> # update statement 2
mysql> UPDATE olist_order_reviews_dataset JOIN olist_orders_dataset ON olist_order_reviews_dataset.order_id = olist_orders_dataset.order_id
-> JOIN olist_customers_dataset ON olist_orders_dataset.customer_id = olist_customers_dataset.customer_id SET
-> olist_order_reviews_dataset.review_comment_message = 'I am satisfied' WHERE olist_customers_dataset.customer_unique_id
-> = 'e90a1b194724309bbaa6228c398d1748';
Query OK, 1 row affected (0.09 sec)
Rows matched: 1 Changed: 1 Warnings: 0
mysql>
mysql> # delete statement 1
mysql> DELETE olist_products_dataset FROM olist_products_dataset INNER JOIN olist_order_items_dataset ON olist_products_dataset.product_id =
-> olist_order_items_dataset.product_id INNER JOIN olist_sellers_dataset ON olist_order_items_dataset.seller_id = olist_sellers_dataset.seller_id
-> WHERE olist_sellers_dataset.seller_id = '1025f0e2d44d7041d6cf58b6550e0bfa';
Query OK, 154 rows affected (0.09 sec)
mysql>
mysql> # delete statement 2
mysql> DELETE olist_customers_dataset FROM olist_customers_dataset INNER JOIN olist_orders_dataset ON olist_customers_dataset.customer_id =
-> olist_orders_dataset.customer_id INNER JOIN olist_order_payments_dataset ON olist_orders_dataset.order_id = olist_order_payments_dataset.
-> order_id WHERE olist_order_payments_dataset.payment_installments = 24;
Query OK, 18 rows affected (0.09 sec)
mysql>
mysql> COMMIT;
Query OK, 0 rows affected (0.04 sec)
mysql>
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Task 4 – Perform Distributed Transaction

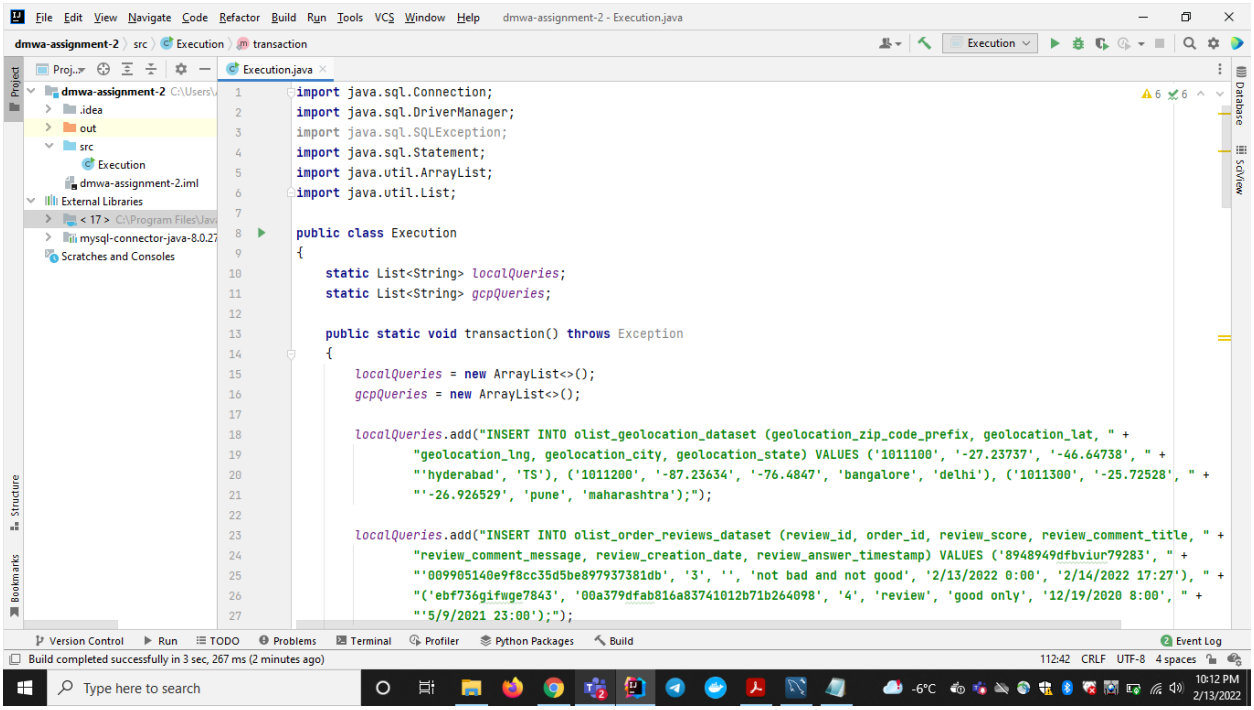
Queries for task 4 as required are:

```
USE a2rm286720;

SET autocommit = 0;

START TRANSACTION;


# insert statement 1

INSERT INTO olist_geolocation_dataset (geolocation_zip_code_prefix, geolocation_lat,
geolocation_lng, geolocation_city, geolocation_state) VALUES ('10101', '-27.23737', '-
46.64738', 'hyderabad', 'TS'), ('10102', '-87.23634', '-76.4847', 'bangalore', 'delhi'), ('10103', '-
25.72528', '-26.926529', 'pune', 'maharashtra');


# insert statement 2

INSERT INTO olist_order_reviews_dataset (review_id, order_id, review_score,
review_comment_title, review_comment_message, review_creation_date,
review_answer_timestamp) VALUES ('8948949dfbviur79283',
'009905140e9f8cc35d5be897937381db', '3', '', 'not bad and not good', '2/13/2022 0:00',
'2/14/2022 17:27'), ('ebf736gifwge7843', '00a379dfab816a83741012b71b264098', '4', 'review',
'good only', '12/19/2020 8:00', '5/9/2021 23:00');


# select statement 1

SELECT olist_customers_dataset.customer_id, olist_customers_dataset.customer_city,
olist_customers_dataset.customer_state FROM olist_customers_dataset JOIN
olist_orders_dataset ON olist_customers_dataset.customer_id = olist_orders_dataset.customer_id
WHERE olist_orders_dataset.customer_id = (SELECT customer_id FROM olist_orders_dataset
```

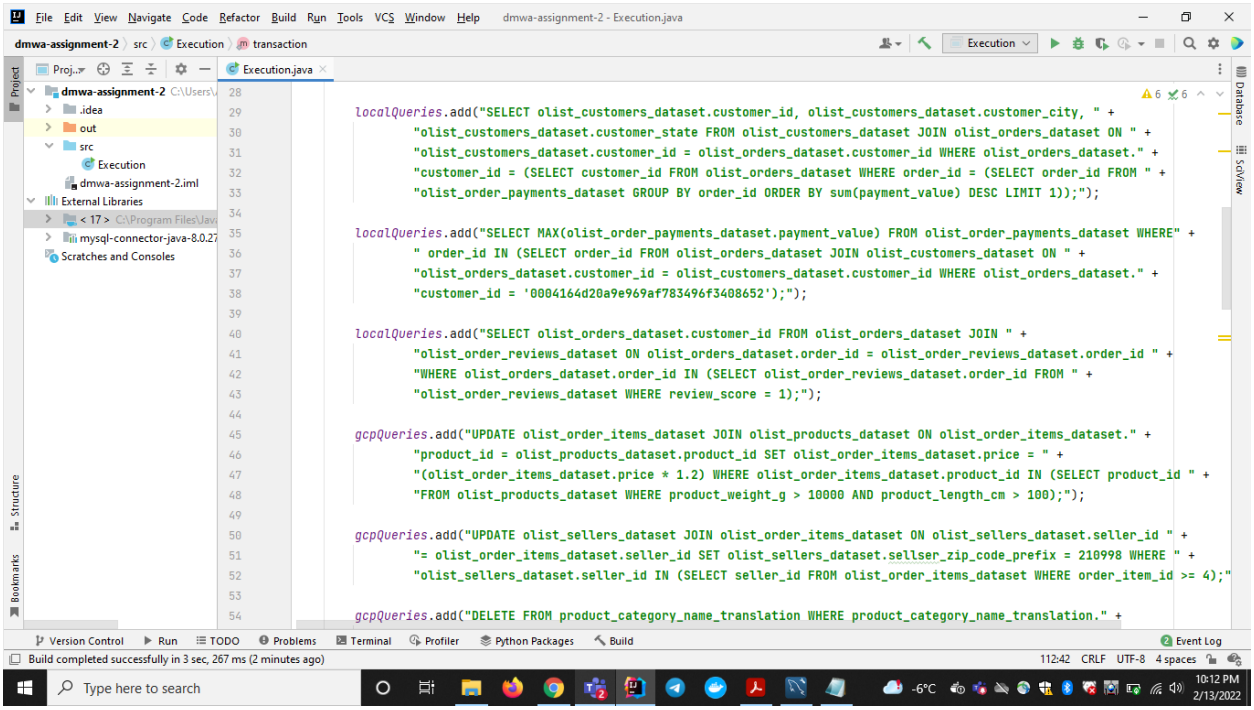
```
WHERE order_id = (SELECT order_id FROM olist_order_payments_dataset GROUP BY
order_id ORDER BY sum(payment_value) DESC LIMIT 1));


# select statement 2

SELECT MAX(olist_order_payments_dataset.payment_value) FROM
olist_order_payments_dataset WHERE order_id IN (SELECT order_id FROM
olist_orders_dataset JOIN olist_customers_dataset ON olist_orders_dataset.customer_id =
olist_customers_dataset.customer_id WHERE olist_orders_dataset.customer_id =
'0004164d20a9e969af783496f3408652');


# select statement 3

SELECT olist_orders_dataset.customer_id FROM olist_orders_dataset JOIN
olist_order_reviews_dataset ON olist_orders_dataset.order_id =
olist_order_reviews_dataset.order_id WHERE olist_orders_dataset.order_id IN (SELECT
olist_order_reviews_dataset.order_id FROM olist_order_reviews_dataset WHERE review_score
= 1);


# update statement 1

UPDATE olist_order_items_dataset JOIN olist_products_dataset ON
olist_order_items_dataset.product_id = olist_products_dataset.product_id SET
olist_order_items_dataset.price = (olist_order_items_dataset.price * 1.1) WHERE
olist_order_items_dataset.product_id IN (SELECT product_id FROM olist_products_dataset
WHERE product_weight_g > 10000 AND product_length_cm > 100);


# update statement 2

UPDATE olist_sellers_dataset JOIN olist_order_items_dataset ON olist_sellers_dataset.seller_id
= olist_order_items_dataset.seller_id SET olist_sellers_dataset.sellser_zip_code_prefix = 190699
```

```
WHERE olist_sellers_dataset.seller_id IN (SELECT seller_id FROM olist_order_items_dataset
WHERE order_item_id >= 3);


# delete statement 1

DELETE FROM product_category_name_translation WHERE
product_category_name_translation.product_category_name IN (SELECT
product_category_name FROM olist_products_dataset WHERE product_description_lenght >
1000);


# delete statement 2

DELETE olist_products_dataset FROM olist_products_dataset WHERE
olist_products_dataset.product_id IN (SELECT product_id FROM olist_order_items_dataset
WHERE seller_id IN (SELECT seller_id FROM olist_sellers_dataset WHERE
sellser_zip_code_prefix = 14093));


COMMIT;
```

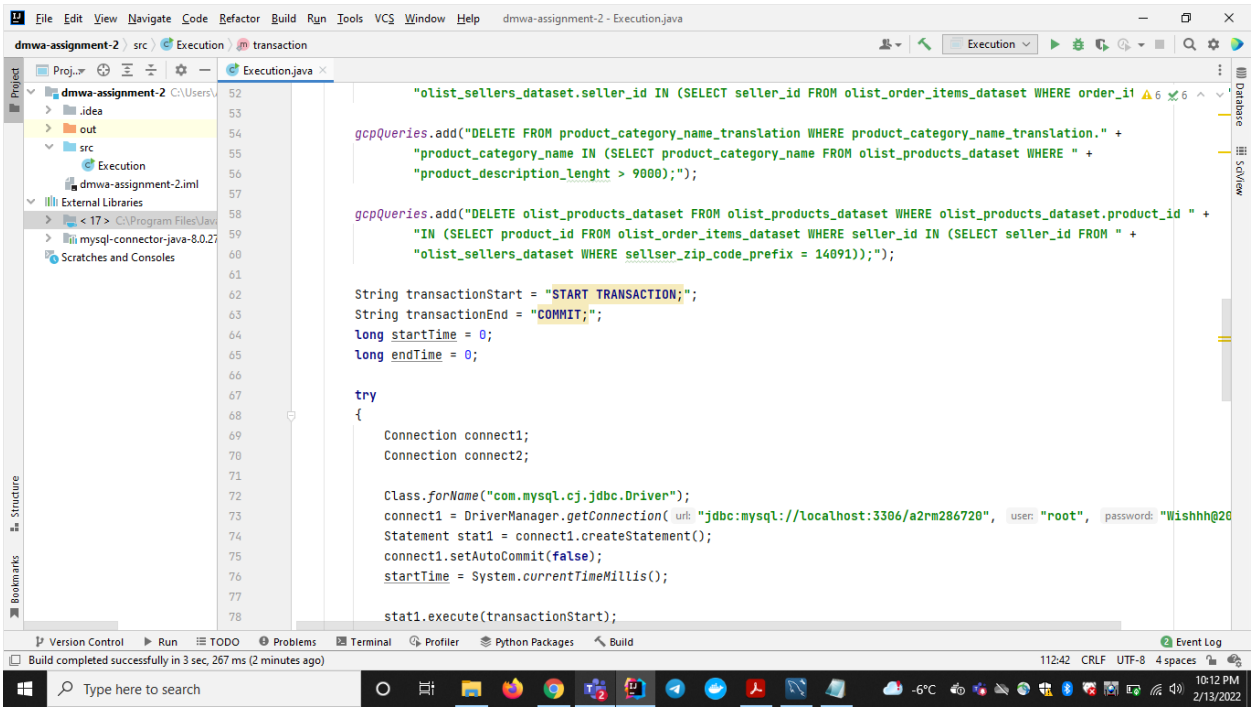
I have also added the screenshots of the code as proof in this document:



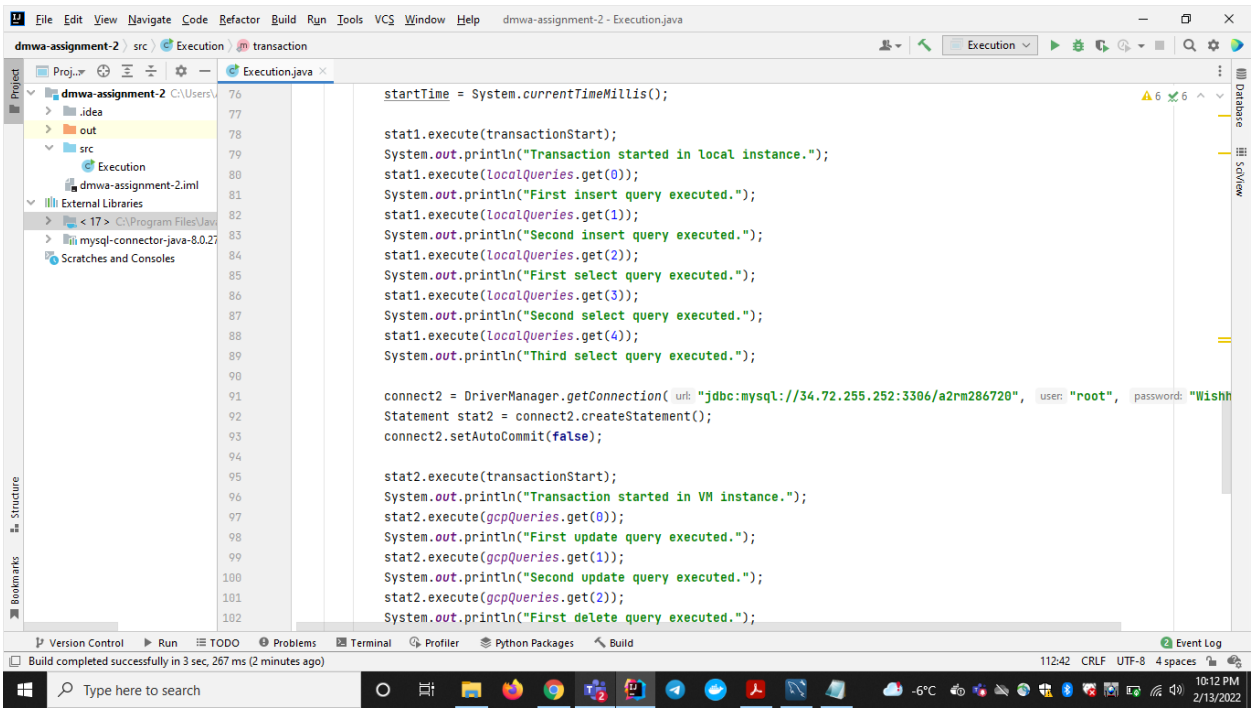
```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;
import java.sql.Statement;
import java.util.ArrayList;
import java.util.List;

public class Execution
{
    static List<String> localQueries;
    static List<String> gcpQueries;

    public static void transaction() throws Exception
    {
        localQueries = new ArrayList<>();
        gcpQueries = new ArrayList<>();

        localQueries.add("INSERT INTO olist_geolocation_dataset (geolocation_zip_code_prefix, geolocation_lat, " +
                "geolocation_lng, geolocation_city, geolocation_state) VALUES ('1011100', '-27.23737', '-46.64738', " +
                "'hyderabad', 'TS'), ('1011200', '-87.23634', '-76.4847', 'bangalore', 'delhi'), ('1011300', '-25.72528', " +
                "'-26.926529', 'pune', 'maharashtra');");

        localQueries.add("INSERT INTO olist_order_reviews_dataset (review_id, order_id, review_score, review_comment_title, " +
                "review_comment_message, review_creation_date, review_answer_timestamp) VALUES ('8948949dfbviur79283', " +
                "'009905140e9f8cc35d5be897937381db', '3', '', 'not bad and not good', '2/13/2022 0:00', '2/14/2022 17:27'), " +
                "('ebf736gifwge7843', '00a379dfab816a83741012b71b264098', '4', 'review', 'good only', '12/19/2020 8:00', " +
                "'5/9/2021 23:00');");
```



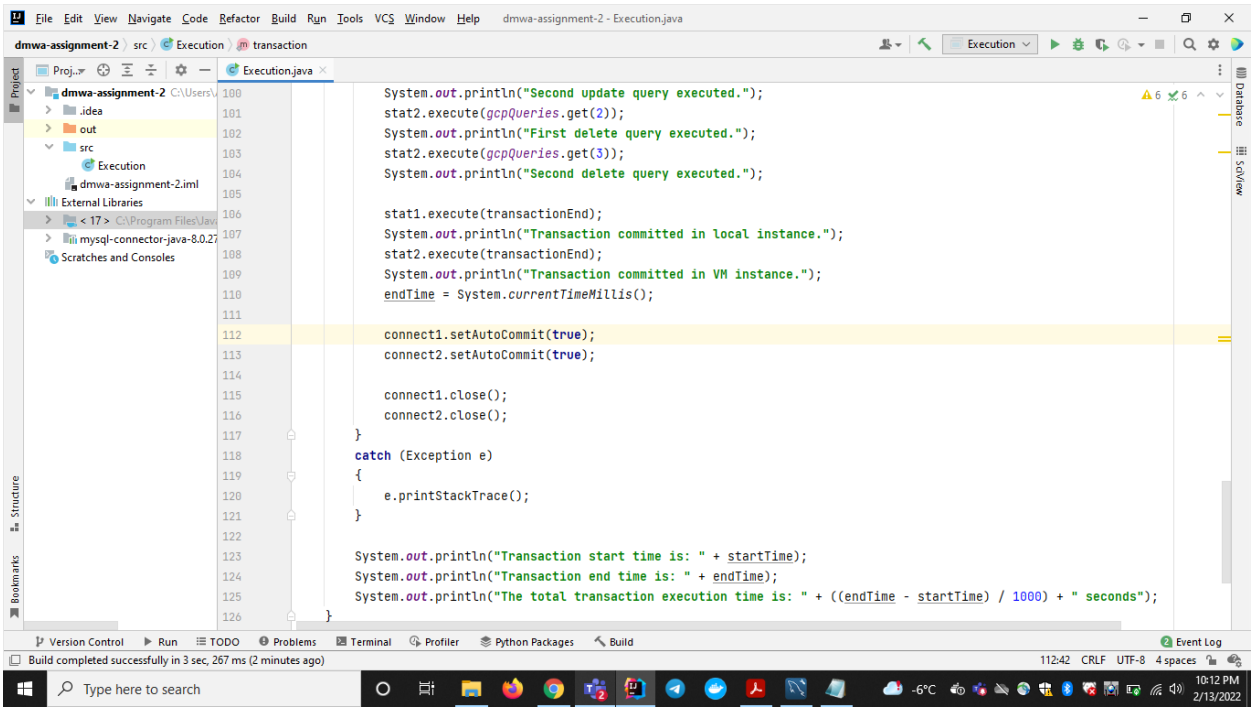
```
        localQueries.add("SELECT olist_customers_dataset.customer_id, olist_customers_dataset.customer_city, " +
                "olist_customers_dataset.customer_state FROM olist_customers_dataset JOIN olist_orders_dataset ON " +
                "olist_customers_dataset.customer_id = olist_orders_dataset.customer_id WHERE olist_orders_dataset." +
                "customer_id = (SELECT customer_id FROM olist_orders_dataset WHERE order_id = (SELECT order_id FROM " +
                "olist_order_payments_dataset GROUP BY order_id ORDER BY sum(payment_value) DESC LIMIT 1));");

        localQueries.add("SELECT MAX(olist_order_payments_dataset.payment_value) FROM olist_order_payments_dataset WHERE" +
                " order_id IN (SELECT order_id FROM olist_orders_dataset JOIN olist_customers_dataset ON " +
                "olist_orders_dataset.customer_id = olist_customers_dataset.customer_id WHERE olist_orders_dataset." +
                "customer_id = '0004164d20a9e969af783496f3408652');");

        localQueries.add("SELECT olist_orders_dataset.customer_id FROM olist_orders_dataset JOIN " +
                "olist_order_reviews_dataset ON olist_orders_dataset.order_id = olist_order_reviews_dataset.order_id " +
                "WHERE olist_orders_dataset.order_id IN (SELECT olist_order_reviews_dataset.order_id FROM " +
                "olist_order_reviews_dataset WHERE review_score = 1);");

        gcpQueries.add("UPDATE olist_order_items_dataset JOIN olist_products_dataset ON olist_order_items_dataset." +
                "product_id = olist_products_dataset.product_id SET olist_order_items_dataset.price = " +
                "(olist_order_items_dataset.price * 1.2) WHERE olist_order_items_dataset.product_id IN (SELECT product_id " +
                "FROM olist_products_dataset WHERE product_weight_g > 10000 AND product_length_cm > 100);");

        gcpQueries.add("UPDATE olist_sellers_dataset JOIN olist_order_items_dataset ON olist_sellers_dataset.seller_id " +
                "= olist_order_items_dataset.seller_id SET olist_sellers_dataset.sellser_zip_code_prefix = 210998 WHERE " +
                "olist_sellers_dataset.seller_id IN (SELECT seller_id FROM olist_order_items_dataset WHERE order_item_id >= 4);"

        gcpQueries.add("DELETE FROM product_category_name_translation WHERE product_category_name_translation." +
```



```
"olist_sellers_dataset.seller_id IN (SELECT seller_id FROM olist_order_items_dataset WHERE order_id

gcpQueries.add("DELETE FROM product_category_name_translation WHERE product_category_name_translation." +
        "product_category_name IN (SELECT product_category_name FROM olist_products_dataset WHERE " +
        "product_description_lenght > 9000);");

gcpQueries.add("DELETE olist_products_dataset FROM olist_products_dataset WHERE olist_products_dataset.product_id " +
        "IN (SELECT product_id FROM olist_order_items_dataset WHERE seller_id IN (SELECT seller_id FROM " +
        "olist_sellers_dataset WHERE sellser_zip_code_prefix = 14091));");

String transactionStart = "START TRANSACTION;";
String transactionEnd = "COMMIT;";
long startTime = 0;
long endTime = 0;

try
{
    Connection connect1;
    Connection connect2;

    Class.forName("com.mysql.cj.jdbc.Driver");
    connect1 = DriverManager.getConnection( url: "jdbc:mysql://localhost:3306/a2rm286720",  user: "root",  password: "Wishhh@20
    Statement stat1 = connect1.createStatement();
    connect1.setAutoCommit(false);
    startTime = System.currentTimeMillis();

    stat1.execute(transactionStart);
```



```
    startTime = System.currentTimeMillis();

    stat1.execute(transactionStart);
    System.out.println("Transaction started in local instance.");
    stat1.execute(localQueries.get(0));
    System.out.println("First insert query executed.");
    stat1.execute(localQueries.get(1));
    System.out.println("Second insert query executed.");
    stat1.execute(localQueries.get(2));
    System.out.println("First select query executed.");
    stat1.execute(localQueries.get(3));
    System.out.println("Second select query executed.");
    stat1.execute(localQueries.get(4));
    System.out.println("Third select query executed.");

    connect2 = DriverManager.getConnection( url: "jdbc:mysql://34.72.255.252:3306/a2rm286720",  user: "root",  password: "Wishh
    Statement stat2 = connect2.createStatement();
    connect2.setAutoCommit(false);

    stat2.execute(transactionStart);
    System.out.println("Transaction started in VM instance.");
    stat2.execute(gcpQueries.get(0));
    System.out.println("First update query executed.");
    stat2.execute(gcpQueries.get(1));
    System.out.println("Second update query executed.");
    stat2.execute(gcpQueries.get(2));
    System.out.println("First delete query executed.");
```


File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
dmwa-assignment-2 - Execution.java
dmwa-assignment-2 src Execution transaction
Execution
Execution.java
dmwa-assignment-2 C:\Users\
.idea
out
src
Execution
dmwa-assignment-2.iml
External Libraries
< 17 > C:\Program Files\Jav
mysql-connector-java-8.0.27
Scratches and Consoles
System.out.println("Second update query executed.");
stat2.execute(gcpQueries.get(2));
System.out.println("First delete query executed.");
stat2.execute(gcpQueries.get(3));
System.out.println("Second delete query executed.");
stat1.execute(transactionEnd);
System.out.println("Transaction committed in local instance.");
stat2.execute(transactionEnd);
System.out.println("Transaction committed in VM instance.");
endTime = System.currentTimeMillis();
connect1.setAutoCommit(true);
connect2.setAutoCommit(true);
connect1.close();
connect2.close();
}
catch (Exception e)
{
e.printStackTrace();
}
System.out.println("Transaction start time is: " + startTime);
System.out.println("Transaction end time is: " + endTime);
System.out.println("The total transaction execution time is: " + ((endTime - startTime) / 1000) + " seconds");
}
Version Control Run TODO Problems Terminal Profiler Python Packages Build Event Log
Build completed successfully in 3 sec, 267 ms (2 minutes ago)
112:42 CRLF UTF-8 4 spaces
Type here to search
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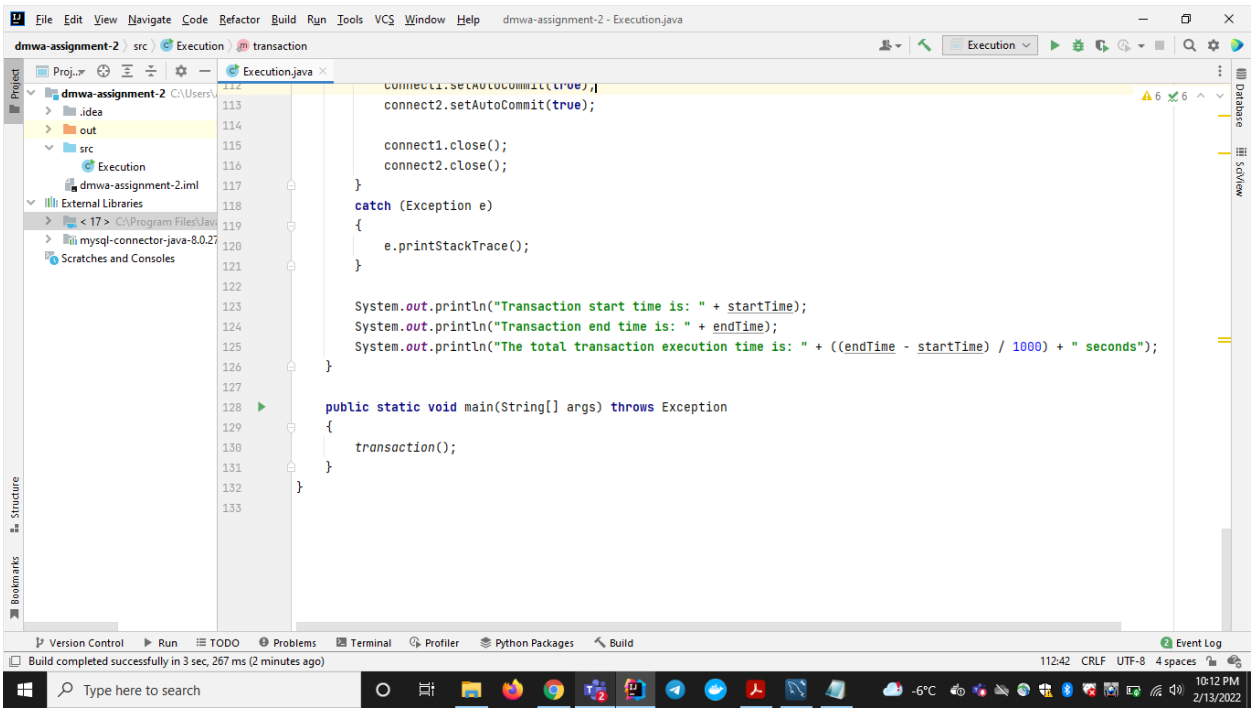
10:12 PM
2/13/2022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dmwa-assignment-2 - Execution.java
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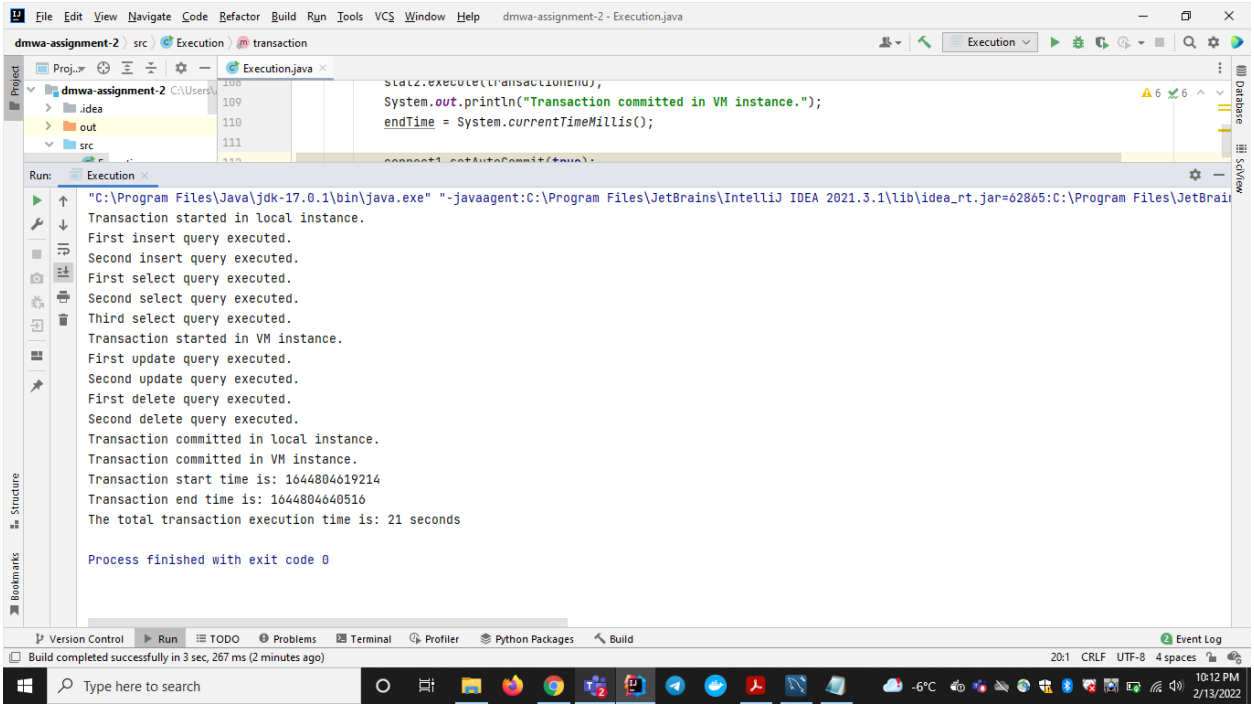
Scratches and Consoles
connect1.setAutoCommit(true);
connect2.setAutoCommit(true);
connect1.close();
connect2.close();
}
catch (Exception e)
{
e.printStackTrace();
}
System.out.println("Transaction start time is: " + startTime);
System.out.println("Transaction end time is: " + endTime);
System.out.println("The total transaction execution time is: " + ((endTime - startTime) / 1000) + " seconds");
}
public static void main(String[] args) throws Exception
{
transaction();
}
}
Version Control Run TODO Problems Terminal Profiler Python Packages Build Event Log
Build completed successfully in 3 sec, 267 ms (2 minutes ago)
112:42 CRLF UTF-8 4 spaces
Type here to search
-6°C
10:12 PM
2/13/2022

Proof that the transaction was successful without any issues and also to show the transaction time/queries time:



Worksheet

Tasks	Execution Time	Transaction Query	Your Observations
Task 2	33.546 seconds	Mentioned above in the document	Technically, the update statements took longer than the rest of the statements. Insert statements were the fastest to get executed. Delete statements are the second fastest whereas the select statements were also fast enough except one statement, where it took almost 10 sec.
Task 3	1.03 seconds	Mentioned above in the document	Each and every statement that was executed on VM instance happened real real quick. The execution time difference between the local instance and VM instance is unbelievable. No statement on VM instance took more than 0.5 seconds to get executed and show the result.
Task 4	21.302 seconds	Mentioned above in the document	Even though this was a distributed transaction, the connections to the databases and switching the connections

			happened fast enough. Execution of the queries also happened in a good time, not fast not slow. So I can say that even distributed transactions happen fast enough.

My gitlab assignment 2 repo url : https://git.cs.dal.ca/rguturu/csci-5408-w2022-b00871849-gutururamamohanvishnu/-/tree/main/assignment-2