

***SET09801***

***Database Systems***

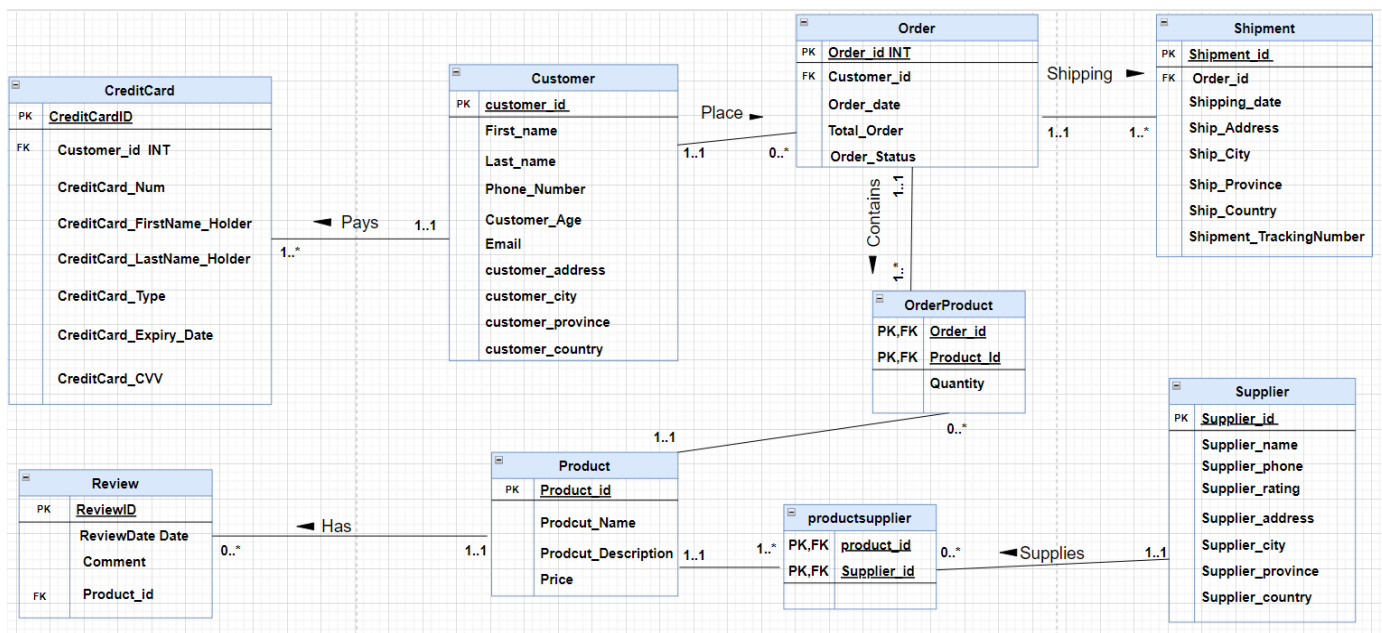
***Stage 2***

***Matriculation Number: 40522091***

The ER diagram has been updated to make it more accurate and effective. The modifications are as follows:

- 1) Address and CustomerAddress tables have been removed from the original ER diagram. The customer\_address, customer\_city, customer\_province, customer\_country attributes have been added to the customer table.
- 2) The relationship between suppliers and product table have been corrected. This is because the product can have multiple suppliers and the supplier can be in charge of multiple products, so in this scenario we need to create a bridge table and call it productsupplier that will replace the many-to-many with two one-to-many relationships.
- 3) The review table has been updated, because the product should have a review, not the customer. The relationship was wrong in the original diagram, and a relationship between product and review table been created. We have also added the product\_id foreign key attribute to the review table.

## ER Diagram after the modification



## Task D

### First Normal Form

All rows of the tables are unique with no duplicate row. Every table on my ER diagram has a valid Primary Key that is unique and not null.

Each cell contains only a single value. The order in which my data is stored should not matter. Here is some Information that shows the tables are in the First Normal Form.

## Entities

**customer**(customer\_id, first\_name, last\_name, phone\_number , email, customer\_age, customer\_address, customer\_city, customer\_province, customer\_country)

**creditcard**(creditcard\_id, creditcard\_num, creditcardholder\_firstname, creditcardholder\_lastname, creditcardtype, creditcardExpiryDate, creditcard\_cvv, customer\_id)

**product**(product\_id, product\_name, Product\_description, price)

**productsupplier**(product\_id, supplier\_id)

**suppliers**(supplier\_id, supplier\_name , supplier\_phone, supplier\_rating, supplier\_address, supplier\_city, supplier\_province, supplier\_country)

**orders**(order\_id, order\_date, order\_status, total\_Order, customer\_id)

**shipments**(shipment\_id, shipment\_date, shipment\_TrackingNumber, orderid, ship\_Address, ship\_city, ship\_province, ship\_country)

**orderproduct**(order\_id, product\_id, Quantity)

**Review**(reviewid, reviewdate, comment, product\_id)

## *Second Normal Form*

The tables are already on the 1NF. There are no partial functional dependencies, and as such, we can see that all non-prime attributes in my tables are fully functionally dependent on the primary key. As a result, the tables are already in 2NF.

## *Third Normal Form*

With the tables already on the 2NF, customer table attributes (First\_name, Last\_name, phone\_number, customer\_age, email, customer\_address) are all dependent on the primary key so in another view, they all depend on that customer. However, customer\_province has a transitive dependency on customer\_id through the customer\_city, as well as customer\_country through the customer\_province which has dependency through customer\_city. As a result, the province and country have transitive dependency on the customer\_Id. This is why these two attributes (customer\_province and customer\_country) should not belong inside the customer table. The best way to solve this problem is to put this dependency into its own table. I can link the city table to the cityID and the province to the city table, and country to the province table. Doing this, there will be a reduction in redundant data.

We have the same scenario for the supplier table. The supplier\_province and supplier\_country attributes have a transitive dependency on supplier\_Id through supplier\_city so they should not belong to the supplier table.

Also, for shipment table, the ship\_province and ship\_country have a transitive dependency on the shipment\_id through the ship\_city so they should be removed from the table.

### The modifications are as follows:

- 1) Customer table will be modified to hold customer\_id, first\_name, last\_name, phone\_number, customer\_age, email, customer\_address, and cityId attributes.
- 2) Remove the ship\_city, ship\_province, ship\_country attributes from shipment table and add the cityId foreign key attribute.
- 3) City table has been created, and will store city\_id as the primary key, city\_name and province\_id as foreign key.
- 4) Province table been created, storing province\_id as the primary key, and province\_name, and country\_id as the foreign key.
- 5) Country table been created and will store country\_id as the primary key and country\_name.
- 6) Supplier\_city, supplier\_province and the supplier\_country attributes have been removed from suppliers table and city\_id foreign key has been added.

### Entities

**customer**(customer\_id, first\_name, last\_name, phone\_number, email, customer\_age, customer\_address, cityid)

**creditcard**(creditcard\_id, creditcard\_num, creditcardholder\_firstname, creditcardholder\_lastname, creditcardtype, creditcardExpiryDate, creditcard\_cvv, customer\_id)

**product**(product\_id, product\_name, Product\_description, price)

**productsupplier**(product\_id, supplier\_id)

**suppliers**(supplier\_id, supplier\_name, supplier\_phone, supplier\_rating, supplier\_address, city\_id)

**orders**(order\_id, order\_date, order\_status, total\_Order, customer\_id)

**shipments**(shipment\_id, shipment\_date, shipment\_date, shipment\_TrackingNumber, orderid, ship\_Address, city\_id)

**orderproduct**(order\_id, product\_id, Quantity)

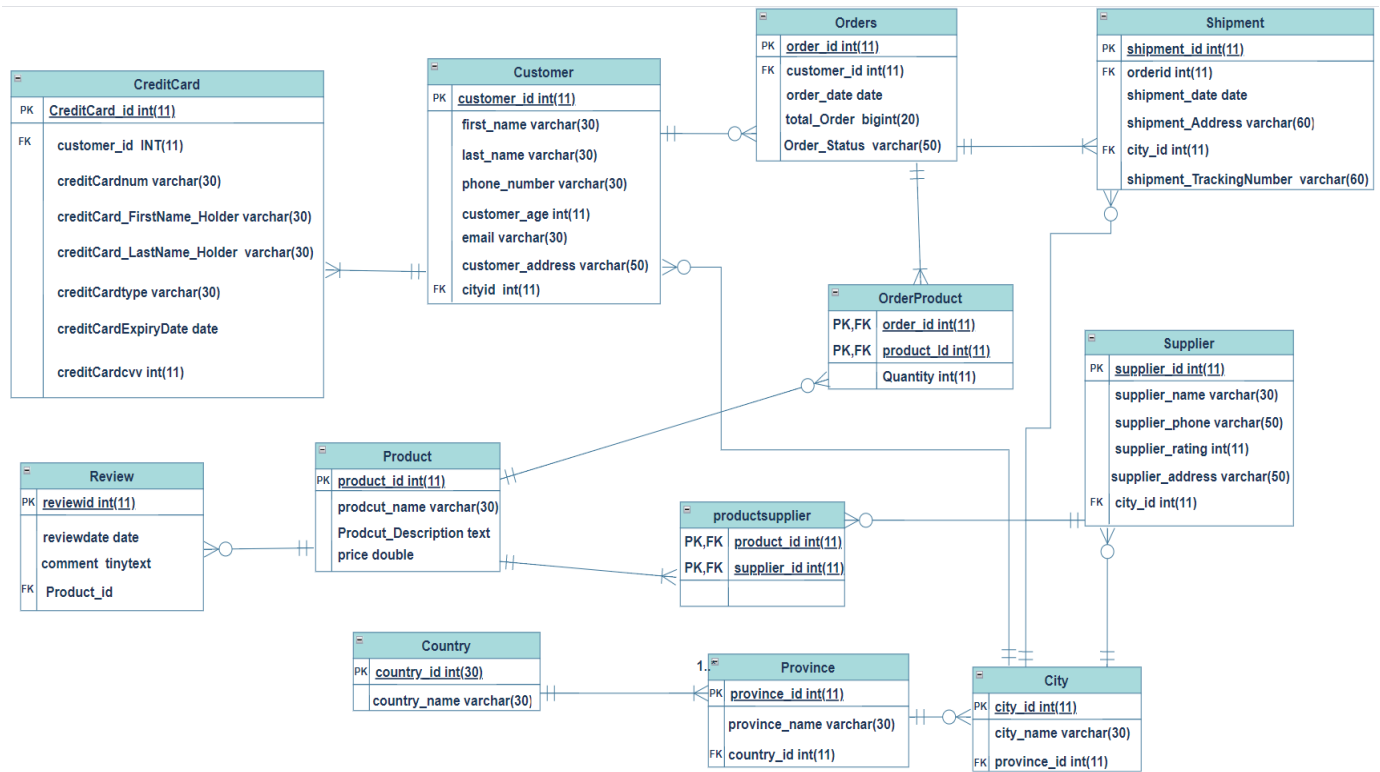
**Review**(reviewid, reviewdate, comment, product\_id)

**city**(city\_id, city\_name, province\_id)

**province**(province\_id, province\_name, country\_id)

**country**(country\_id, country\_name)

### ER Diagram after the normalization



## Task E

### DDL Creation Of The Tables:

```

CREATE TABLE country (
  country_id int NOT NULL AUTO_INCREMENT,
  country_name varchar(20) NOT NULL,
  UNIQUE KEY country_id_UNIQUE (country_id),
  PRIMARY KEY (country_id)
);
  
```

```

CREATE TABLE province (
  
```

```
province_id int NOT NULL AUTO_INCREMENT,  
province_name varchar(30) NOT NULL,  
country_id int NOT NULL,  
PRIMARY KEY (province_id),  
UNIQUE KEY province_id_UNIQUE (province_id),  
UNIQUE KEY province_name_UNIQUE (province_name),  
KEY FKProvinceTCountry_idx (country_id),  
CONSTRAINT FKProvinceTCountry FOREIGN KEY (country_id) REFERENCES country  
(country_id)  
);
```

```
CREATE TABLE city (  
city_id int NOT NULL AUTO_INCREMENT,  
city_name varchar(30) NOT NULL,  
province_id int NOT NULL,  
PRIMARY KEY (city_id),  
UNIQUE KEY city_id_UNIQUE (city_id),  
UNIQUE KEY city_name_UNIQUE (city_name),  
KEY FKPrToCity_idx (province_id),  
CONSTRAINT FKPrToCity FOREIGN KEY (province_id) REFERENCES province  
(province_id)  
);
```

```
CREATE TABLE suppliers (  
supplier_id int NOT NULL AUTO_INCREMENT,  
supplier_name varchar(30) NOT NULL,  
supplier_address varchar(50) NOT NULL,  
supplier_phone varchar(50) NOT NULL,  
supplier_rating int DEFAULT NULL,  
city_id int NOT NULL,  
PRIMARY KEY (supplier_id),  
UNIQUE KEY supplier_id_UNIQUE (supplier_id),  
KEY FKSuTCi_idx (city_id),
```

```
CONSTRAINT FSupToCit FOREIGN KEY (city_id) REFERENCES city (city_id)
);
```

```
Create table customer (
  customer_id int NOT NULL AUTO_INCREMENT,
  first_name varchar(30) NOT NULL,
  last_name varchar(30) NOT NULL,
  phone_number varchar(30) NOT NULL,
  email varchar(30) DEFAULT NULL,
  customer_age int NOT NULL CHECK (customer_age<100),
  customer_address varchar(50) DEFAULT NULL,
  city_id int NOT NULL,
  PRIMARY KEY (customer_id),
  UNIQUE KEY customer_id_UNIQUE (customer_id),
  KEY FKCuToC_idx (city_id),
  CONSTRAINT FKCuToC FOREIGN KEY (city_id) REFERENCES city (city_id)
);
```

```
Create table creditcard(
  creditcard_id int NOT NULL AUTO_INCREMENT,
  creditcardnum varchar(30) NOT NULL,
  creditcardholder_firstname varchar(30) DEFAULT NULL,
  creditcardholder_lastname varchar(30) DEFAULT NULL,
  creditcardtype varchar(30) DEFAULT NULL,
  creditcardExpiryDate date NOT NULL,
  creditcardcvv int NOT NULL,
  customer_id int NOT NULL,
  PRIMARY KEY (creditcard_id),
  UNIQUE KEY creditcard_id_UNIQUE (creditcard_id),
  KEY customer_id_idx (customer_id),
```

```
    CONSTRAINT FKcusTCredit FOREIGN KEY (customer_id) REFERENCES customer
(customer_id)
```

```
);
```

```
Create table orders (
```

```
    order_id int NOT NULL AUTO_INCREMENT,
```

```
    order_date date NOT NULL,
```

```
    order_status varchar(50) DEFAULT NULL,
```

```
    total_Order bigint NOT NULL,
```

```
    customer_id int NOT NULL,
```

```
    PRIMARY KEY (order_id),
```

```
    UNIQUE KEY orderid_UNIQUE (order_id),
```

```
    UNIQUE KEY customer_id_UNIQUE (customer_id),
```

```
    KEY FK4Order_idx (customer_id),
```

```
    CONSTRAINT FK4Order FOREIGN KEY (customer_id) REFERENCES customer
(customer_id)
```

```
);
```

```
Create table shipments (
```

```
    shipment_id int NOT NULL AUTO_INCREMENT,
```

```
    shipment_date date NOT NULL,
```

```
    shipment_Address varchar(60) NOT NULL,
```

```
    shipment_TrackingNumber varchar(60) NOT NULL,
```

```
    orderid int NOT NULL,
```

```
    city_id int NOT NULL,
```

```
    PRIMARY KEY (shipment_id),
```

```
    KEY FK5Shipping_idx (orderid),
```

```
    KEY FKShipTCit_idx (city_id),
```

```
    CONSTRAINT FK5Shipping FOREIGN KEY (orderid) REFERENCES orders (order_id),
```

```
    CONSTRAINT FKShiToCity FOREIGN KEY (city_id) REFERENCES city (city_id)
```

```
);
```



```
Create table products (  
    product_id int NOT NULL AUTO_INCREMENT,  
    product_name varchar(30) NOT NULL,  
    product_description text NOT NULL,  
    price double NOT NULL,  
    PRIMARY KEY (product_id),  
    UNIQUE KEY product_name_UNIQUE (product_name),  
    UNIQUE KEY product_id_UNIQUE (product_id)  
);
```

```
Create table productsupplier (  
    product_id int NOT NULL AUTO_INCREMENT,  
    supplier_id int NOT NULL,  
    PRIMARY KEY (product_id),  
    KEY FKProstoSu_idx (supplier_id),  
    CONSTRAINT FKProstoP FOREIGN KEY (product_id) REFERENCES products (product_id),  
    CONSTRAINT FKProstoSu FOREIGN KEY (supplier_id) REFERENCES suppliers (supplier_id)  
);
```

```
CREATE TABLE orderproduct (  
    order_id int NOT NULL AUTO_INCREMENT,  
    product_id int NOT NULL,  
    Quantity int DEFAULT NULL,  
    PRIMARY KEY (order_id,product_id),  
    KEY FK8producttopro_idx (product_id),  
    CONSTRAINT FKProdTord FOREIGN KEY (product_id) REFERENCES products  
(product_id),  
    CONSTRAINT FKOrdToPro FOREIGN KEY (order_id) REFERENCES orders (order_id)  
);
```

```
Create table review (  
    reviewid int NOT NULL AUTO_INCREMENT,  
    reviewdate date NOT NULL,  
    comment text(30) DEFAULT NULL,  
    product_id int NOT NULL,  
    PRIMARY KEY (reviewid),  
    UNIQUE KEY ReviewID_UNIQUE (reviewid),  
    KEY FKReToPro_idx (product_id),  
    CONSTRAINT FKReToPro FOREIGN KEY (product_id) REFERENCES products (product_id)  
);
```

*DML Insertion the Test Data:*

```
INSERT INTO country ( country_name)  
VALUES ('Canada'),  
      ('USA');
```

```
INSERT INTO province(province_name,country_id)  
VALUES ('Quebec ',1),  
      ('Ontario',1),  
      ('British Colombia',1),  
      ('Alberta',1),  
      ('Manitoba',1),  
      ('New Brunswick',1),  
      ('Nova Scotia',1),  
      ('PE',1),  
      ('Saskatchewan',1),  
      ('Yukon',1),  
      ('New York',3);
```

```
INSERT INTO city (city_name, province_id)
```

```
VALUES ( 'Montreal', '1'),  
        ( 'Toronto', '2'),  
        ( 'Gatineau', '1'),  
        ( 'Quebec city', '1'),  
        ( 'Vancouver', '3'),  
        ( 'Winnipeg', '5'),  
        ( 'Ottawa', '2'),  
        ( 'Calgary', '4'),  
        ( 'Regina', '9'),  
        ( 'Moncton', '6'),  
        ( 'Dartmouth', '7'),  
        ( 'New York', '11'),  
        ( 'Sherbrooke', '1'),  
        ( 'Trois rivières', '1');
```

```
Insert into suppliers (supplier_name, supplier_address, supplier_phone,supplier_rating,city_id )
```

```
VALUES ('Microsoft','2000 McGill College Ave H3A 3H3','5148465800',5,1),  
        ('Sony','550 Madison Avenue 10010','2128336800',5,12),  
        ('Nintendo','2925 Virtual Way Suite 150 V5M 4X5','18002553700',4,5);
```

```
Insert into customer (first_name, last_name, phone_number, email, customer_age,  
customer_address, cityid)
```

```
VALUES ('Ali','morabih', '5147542702', 'alimora2695@gmail.com', 30, '301-84 churchill j4v3l8',  
'1'),  
        ('shannon','Mcconnal', '8888887666', 'shannon.2@gmail.com', 25, '301-84 churchill j4v3l8', '1'),  
        ('Karim','Jo-Ann', '9980987878', 'JoAnn@hotmail.com', 30, '2100 saint catherine j4v3l1', '1'),
```

('Alex','Quinterro', '8766788888', 'Alex@hotmail.com', 18, '123 saint jean j2v3l2', '1'),  
 ('George','Leblanc', '9899879999', 'George@hotmail.com', 21, '129 brossard j9v5l1', '3'),  
 ('Fall','Etienne', '4566788877', 'fallj@hotmail.com', 20, '98 rue peel H3S2R3', '1'),  
 ('Sabrina','Martel', '4356789653', 'Sabrinaj@hotmail.com', 25, '2387 Boulevard saint laurent H6S2R1', '1'),  
 ('Christina','koko', '987456739', 'Christinaj@hotmail.com', 22, '7643 Boulevard saint sauveur H8T2R3', '14'),  
 ('Nita','Sonia', '6577899898', 'Nita@hotmail.com', 34, '1234 Linton aven H3S2R1', '3'),  
 ('Melanie','sauve', '767777777', 'Melanie@hotmail.com', 29, '9898 saint remi boul M2t4BF', '2'),  
 ('Jeremi','Depuis', '9898989899', 'jeremi@hotmail.com', 27, '43 saint brossard H8S2F4', '1'),  
 ('Tim','Frost', '4566788877', 'tim@hotmail.com', 24, '9898 rue peel H4S2T7', '3'),  
 ('bourque','jacques', '4356789653', 'bourque@hotmail.com', 23, '768 rue brodeur H2W2R1', '13'),  
 ('Sofia','hernandez', '987456739', 'Sofia@hotmail.com', 21, '1233 McGill avenue H1G2R1', '13');

Insert into creditcard(creditcardnum, creditcardholder\_firstname, creditcardholder\_lastname,  
 creditcardtype , creditcardExpiryDate, creditcardcvv, customer\_id)

VALUES ( '4567765445671111', 'Ali', 'Morabih', 'visa', '2024-09-09', 654, 1),  
 ('4567765445677654', 'shannon', 'Mcconnal', 'visa', '2024-09-09', 654, 2),  
 ('5567765445687888', 'Karim', 'Jo-Ann', 'mastercard', '2027-09-09', 654, 3),  
 ('5567765445999999', 'Alex', 'Quinterro', 'mastercard', '2028-08-09', 654, 4),  
 ('4567765888888888', 'George', 'Leblanc', 'visa', '2026-08-08', 654, 5),  
 ('4567769875677654', 'Fall', 'Etienne', 'visa', '2026-04-09', 654, 6),  
 ('4500000045677654', 'Sabrina', 'Martel', 'visa', '2023-04-05', 654, 7),  
 ('5567765445677654', 'Christina', 'koko', 'americanexpress', '2023-09-09', 654, 8),  
 ('4567765445671111', 'Nita', 'Sonia', 'visa', '2025-04-09', 123, 9),  
 ('4567765445677654', 'Melanie', 'sauve', 'visa', '2026-04-09', 664, 10),  
 ('5567765445687888', 'Jeremi', 'Depuis', 'mastercard', '2024-04-09', 674, 11),  
 ('5567765445999999', 'Tim', 'Frost', 'mastercard', '2023-07-09', 653, 12),  
 ('4567765888888888', 'bourque', 'jacques', 'visa', '2024-07-08', 124, 13),

('4567769875677654', 'Sofia', 'hernandez', 'visa', '2027-06-09', 124, 14);

Insert into orders (order\_date, order\_status, total\_Order, customer\_id)

VALUES ('2022-01-02', 'Progress', 802, 1),

('2020-01-12', 'Cancelled', 600, 2),

('2021-06-22', 'completed', 550, 3),

('2021-01-22', 'Completed', 440, 4),

('2021-06-12', 'Cancelled', 520, 5),

('2022-01-22', 'Completed', 850, 6),

('2022-03-12', 'Completed', 520, 7),

('2022-07-01', 'Waiting for payment', 1200, 8),

('2021-04-12', 'Completed', 880, 9),

('2020-09-12', 'Completed', 1250, 10),

('2021-01-23', 'Completed', 1520, 11),

('2021-02-11', 'Completed', 528, 12),

('2021-04-13', 'Completed', 973, 13),

('2022-01-12', 'Completed', 789, 14);

Insert into shipments (shipment\_date, shipment\_Address, shipment\_TrackingNumber, orderid, city\_id)

VALUES ('2022-01-21', '301-84 churchill j4v3l8', '92226766666664', 1, 1),

('2022-01-22', '301-84 churchill j4v3l8', '98776766666664', 2, 1),

('2021-06-30', '196 Rue Brodeur j4v3l1', '98333333366222', 3, 1),

('2021-01-30', '123 saint jean j2v3l2', '11112222222222', 4, 1),

('2021-06-22', '129 brossard j9v5l1', '12568766666664', 5, 3),

('2022-01-31', '98 rue peel H3S2R3', '33328766666664', 6, 1),

('2022-03-22', '2387 Boulevard saint laurent H6S2R1', '11111766666664', 7, 1),

('2022-07-11', '7643 Boulevard saint sauveur H8T2R3', '22276766666664', 8, 14),

('2021-04-21', '344 Boul rene levesque H2R2S4', '12345766666664', 9, 1),

('2020-09-22', '9898 boul saint remi M2t4BF', '12533336666664', 10, 2),

```

('2021-02-03', '43 saint brossard H8S2F4','45321444444444',11,1),
('2021-02-21', '9898 rue peel H4S2T7','33344444444444',12,3),
('2021-04-23', '768 rue brodeur H2W2R1', '11116766666664',13,13),
('2022-01-22', ' 1233 McGill ave H1G2R1', '22222766666664', 14,13);

```

Insert into products (product\_name, product\_description, price)

```

VALUES ('Play Station 5', 'The latest Sony PlayStation introduced in November 2020. Powered
by an eight-core AMD Zen 2 CPU and custom AMD Radeon GPU', 1000),

```

```

('xbox series x', 'The Xbox Series X has higher-end hardware and supports higher
display resolutions (up to 8K resolution), along with higher frame rates and real-time ray tracing;
it also has a high-speed solid-state drive (SSD) to reduce loading times.', 800),

```

```

('nintendo switch', 'The Nintendo Switch is a hybrid video game console, consisting of a
console unit, a dock, and two Joy-Con controllers. Although it is a hybrid console, Nintendo
classifies it as "a home console that you can take with you on the go"', 400);

```

Insert into productsupplier (product\_id, supplier\_id)

```

VALUES ('1', '2'),

```

```

('2', '1'),

```

```

('3', '3');

```

Insert into orderproduct (product\_id, Quantity)

```

VALUES

```

```

(2, 1),

```

```

(3, 1),

```

```

(1, 2),

```

```

(2, 1),

```

```

(3, 2),

```

```

(3, 1),

```

```

(2, 1),

```

(1, 1),  
(3, 3),  
(3, 2),  
(3, 2),  
(2, 1),  
(2, 2),  
(3, 1);

Insert into review (reviewdate, comment , product\_id)

VALUES

( '2021-01-02','The Sony PS5 is an amazing game console, Good product with reasonable price ', 1),

( '2021-02-01', 'A great improvement over my older Xbox One S. prodcut well design & faster, easy to use it ', 2),

( '2021-03-01', 'Nintendo did a good job to design the interface ', 3);

#### Task F

#### Test Report Query 1:

The first report should show the total customers that bought the Nintendo Switch and product\_name, supplier\_name, supplier\_rating, order\_date between 2021/01/01 & 2021/06/01 and completed the order.

Total Customer: 2

product\_name: Nintendo Switch

supplier\_name: Nintendo

supplier\_rating: 4

The table below shows the testing steps that been taken for the first query report

Requirement	Test Script	Result																																			
Display all the test Data	SELECT count(first_name) as Total_Customer, product_name, supplier_name, order_status, supplier_rating from customer cu INNER JOIN orders ord on ord.customer_id = cu.customer_id INNER JOIN shipments shi on ord.order_id = shi.orderid INNER JOIN orderproduct orp ON orp.order_id = ord.order_id INNER JOIN products prd on prd.product_id = orp.product_id INNER JOIN productsupplier prs ON prs.product_id = prd.product_id INNER JOIN suppliers sup ON sup.supplier_id = prs.supplier_id GROUP BY product_name, order_status, supplier_name, supplier_rating;	<table><tr><th>Total_Customer</th><th>product_name</th><th>supplier_name</th><th>order_status</th><th>supplier_rating</th></tr><tr><td>2</td><td>nintendo switch</td><td>Nintendo</td><td>Cancelled</td><td>4</td></tr><tr><td>5</td><td>nintendo switch</td><td>Nintendo</td><td>Completed</td><td>4</td></tr><tr><td>1</td><td>Play Station 5</td><td>Sony</td><td>completed</td><td>5</td></tr><tr><td>1</td><td>Play Station 5</td><td>Sony</td><td>Waiting for payment</td><td>5</td></tr><tr><td>4</td><td>xbox series x</td><td>Microsoft</td><td>Completed</td><td>5</td></tr><tr><td>1</td><td>xbox series x</td><td>Microsoft</td><td>Progress</td><td>5</td></tr></table>	Total_Customer	product_name	supplier_name	order_status	supplier_rating	2	nintendo switch	Nintendo	Cancelled	4	5	nintendo switch	Nintendo	Completed	4	1	Play Station 5	Sony	completed	5	1	Play Station 5	Sony	Waiting for payment	5	4	xbox series x	Microsoft	Completed	5	1	xbox series x	Microsoft	Progress	5
Total_Customer	product_name	supplier_name	order_status	supplier_rating																																	
2	nintendo switch	Nintendo	Cancelled	4																																	
5	nintendo switch	Nintendo	Completed	4																																	
1	Play Station 5	Sony	completed	5																																	
1	Play Station 5	Sony	Waiting for payment	5																																	
4	xbox series x	Microsoft	Completed	5																																	
1	xbox series x	Microsoft	Progress	5																																	
Filter by order status <b>completed</b>	SELECT count(first_name) as Total_Customer, product_name, supplier_name, order_status, supplier_rating from customer cu INNER JOIN orders ord on ord.customer_id = cu.customer_id INNER JOIN shipments shi on ord.order_id = shi.orderid INNER JOIN orderproduct orp ON orp.order_id = ord.order_id INNER JOIN products prd on prd.product_id = orp.product_id INNER JOIN productsupplier prs ON prs.product_id = prd.product_id INNER JOIN suppliers sup ON sup.supplier_id = prs.supplier_id where order_status = 'completed' GROUP BY product_name, order_status, supplier_name, supplier_rating;	<table><tr><th>Total_Customer</th><th>product_name</th><th>supplier_name</th><th>order_status</th><th>supplier_rating</th></tr><tr><td>5</td><td>nintendo switch</td><td>Nintendo</td><td>Completed</td><td>4</td></tr><tr><td>1</td><td>Play Station 5</td><td>Sony</td><td>completed</td><td>5</td></tr><tr><td>4</td><td>xbox series x</td><td>Microsoft</td><td>Completed</td><td>5</td></tr></table>	Total_Customer	product_name	supplier_name	order_status	supplier_rating	5	nintendo switch	Nintendo	Completed	4	1	Play Station 5	Sony	completed	5	4	xbox series x	Microsoft	Completed	5															
Total_Customer	product_name	supplier_name	order_status	supplier_rating																																	
5	nintendo switch	Nintendo	Completed	4																																	
1	Play Station 5	Sony	completed	5																																	
4	xbox series x	Microsoft	Completed	5																																	
Filter by the date <b>'2021/01/01' &amp; '2021/06/01'</b>	SELECT count(first_name) as Total_Customer, product_name, supplier_name, order_status, supplier_rating from customer cu INNER JOIN orders ord on ord.customer_id = cu.customer_id INNER JOIN shipments shi on ord.order_id = shi.orderid INNER JOIN orderproduct orp ON orp.order_id = ord.order_id INNER JOIN products prd on prd.product_id = orp.product_id INNER JOIN productsupplier prs ON prs.product_id = prd.product_id INNER JOIN suppliers sup ON sup.supplier_id = prs.supplier_id where order_status = 'completed' and order_date between '2021/01/01' and '2021/06/01' GROUP BY product_name, order_status, supplier_name, supplier_rating;	<table><tr><th>Total_Customer</th><th>product_name</th><th>supplier_name</th><th>order_status</th><th>supplier_rating</th></tr><tr><td>2</td><td>nintendo switch</td><td>Nintendo</td><td>Completed</td><td>4</td></tr><tr><td>3</td><td>xbox series x</td><td>Microsoft</td><td>Completed</td><td>5</td></tr></table>	Total_Customer	product_name	supplier_name	order_status	supplier_rating	2	nintendo switch	Nintendo	Completed	4	3	xbox series x	Microsoft	Completed	5																				
Total_Customer	product_name	supplier_name	order_status	supplier_rating																																	
2	nintendo switch	Nintendo	Completed	4																																	
3	xbox series x	Microsoft	Completed	5																																	
Filter by the name of the product ( <b>Nintendo switch</b> )	SELECT count(first_name) as Total_Customer, product_name, supplier_name, order_status, supplier_rating from customer cu INNER JOIN orders ord on ord.customer_id = cu.customer_id INNER JOIN shipments shi on ord.order_id = shi.orderid	<table><tr><th>Total_Customer</th><th>product_name</th><th>supplier_name</th><th>order_status</th><th>supplier_rating</th></tr><tr><td>2</td><td>nintendo switch</td><td>Nintendo</td><td>Completed</td><td>4</td></tr></table>	Total_Customer	product_name	supplier_name	order_status	supplier_rating	2	nintendo switch	Nintendo	Completed	4																									
Total_Customer	product_name	supplier_name	order_status	supplier_rating																																	
2	nintendo switch	Nintendo	Completed	4																																	



```

INNER JOIN orderproduct orp ON
orp.order_id = ord.order_id
INNER JOIN products prd on prd.product_id
= orp.product_id
INNER JOIN productsupplier prs ON
prs.product_id = prd.product_id
INNER JOIN suppliers sup ON
sup.supplier_id = prs.supplier_id
where product_name = 'nintendo switch'
and order_status = 'completed'
and order_date between '2021/01/01' and
'2021/06/01'
GROUP BY product_name, order_status,
supplier_name, supplier_rating;

```

### Report Query 1:

```

SELECT count(first_name) as Total_Customer, product_name, supplier_name, order_status,
supplier_rating from customer cu
INNER JOIN orders ord on ord.customer_id = cu.customer_id
INNER JOIN shipments shi on ord.order_id = shi.orderid
INNER JOIN orderproduct orp ON orp.order_id = ord.order_id
INNER JOIN products prd on prd.product_id = orp.product_id
INNER JOIN productsupplier prs ON prs.product_id = prd.product_id
INNER JOIN suppliers sup ON sup.supplier_id = prs.supplier_id
where product_name = 'nintendo switch'
and order_status = 'completed'
and order_date between '2021/01/01' and '2021/06/01'
GROUP BY product_name, order_status, supplier_name, supplier_rating;

```

```

soc-web-liv-10.napier.ac.uk - PuTTY
| world |
+-----+
19 rows in set (0.000 sec)

MariaDB [40522091]> SELECT count(first_name) as Total_Customer, product_name, s
upplier_name, order_status, supplier_rating from customer cu
-> INNER JOIN orders ord on ord.customer_id = cu.customer_id
-> INNER JOIN shipments shi on ord.order_id = shi.orderid
-> INNER JOIN orderproduct orp ON orp.order_id = ord.order_id
-> INNER JOIN products prd on prd.product_id = orp.product_id
-> INNER JOIN productsupplier prs ON prs.product_id = prd.product_id
-> INNER JOIN suppliers sup ON sup.supplier_id = prs.supplier_id
-> where product name = 'nintendo switch'
-> and order_status = 'completed'
-> and order_date between '2021/01/01' and '2021/06/01'
-> GROUP BY product_name, order_status, supplier_name, supplier_rating;
+-----+-----+-----+-----+-----+
| Total_Customer | product_name | supplier_name | order_status | supplier_rating |
+-----+-----+-----+-----+-----+
| 2 | nintendo switch | Nintendo | Completed | 4 |
+-----+-----+-----+-----+-----+
1 row in set (0.249 sec)

MariaDB [40522091]>

```

### Test Report Query 2:

The second report should show the average customers' age from the City of Montreal who purchase the Xbox series x video console with order status completed.

average age customer: 21.5  
city: Montreal  
order\_status : Completed  
product\_Name : Xbox series x  
supplier\_Name : Microsoft  
supplier\_Rating : 5

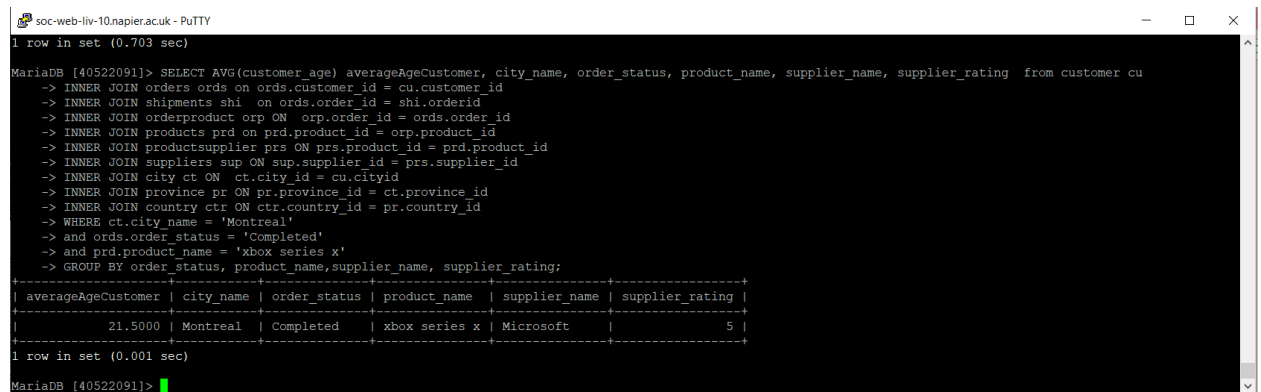
The table below shows the testing steps for the second query

Requirement	Test script	Result																																																																																																									
Display all the orders	SELECT first_name, customer_age, city_name, order_status, product_name, supplier_name, supplier_rating from customer cu INNER JOIN orders ords on ords.customer_id = cu.customer_id INNER JOIN shipments shi on ords.order_id = shi.orderid INNER JOIN orderproduct orp ON orp.order_id = ords.order_id INNER JOIN products prd on prd.product_id = orp.product_id INNER JOIN productsupplier prs ON prs.product_id = prd.product_id INNER JOIN suppliers sup ON sup.supplier_id = prs.supplier_id INNER JOIN city ct ON ct.city_id = cu.cityid INNER JOIN province pr ON pr.province_id = ct.province_id INNER JOIN country ctr ON ctr.country_id = pr.country_id;	<table><tr><th>first_name</th><th>customer_age</th><th>city_name</th><th>order_status</th><th>product_name</th><th>supplier_name</th><th>supplier_rating</th></tr><tr><td>Ali</td><td>30</td><td>Montreal</td><td>Progress</td><td>xbox series x</td><td>Microsoft</td><td></td></tr><tr><td>Alex</td><td>18</td><td>Montreal</td><td>Completed</td><td>xbox series x</td><td>Microsoft</td><td></td></tr><tr><td>Sabrina</td><td>25</td><td>Montreal</td><td>Completed</td><td>xbox series x</td><td>Microsoft</td><td></td></tr><tr><td>Tim</td><td>24</td><td>Gatineau</td><td>Completed</td><td>xbox series x</td><td>Microsoft</td><td></td></tr><tr><td>bourque</td><td>23</td><td>Sherbrooke</td><td>Completed</td><td>xbox series x</td><td>Microsoft</td><td></td></tr><tr><td>Karim</td><td>30</td><td>Montreal</td><td>completed</td><td>Play Station 5</td><td>Sony</td><td></td></tr><tr><td>Christina</td><td>22</td><td>Trois rivières</td><td>Waiting for payment</td><td>Play Station 5</td><td>Sony</td><td></td></tr><tr><td>shannon</td><td>25</td><td>Montreal</td><td>Cancelled</td><td>nintendo switch</td><td>Nintendo</td><td></td></tr><tr><td>Fall</td><td>20</td><td>Montreal</td><td>Completed</td><td>nintendo switch</td><td>Nintendo</td><td></td></tr><tr><td>Jeremi</td><td>27</td><td>Montreal</td><td>Completed</td><td>nintendo switch</td><td>Nintendo</td><td></td></tr><tr><td>George</td><td>21</td><td>Gatineau</td><td>Cancelled</td><td>nintendo switch</td><td>Nintendo</td><td></td></tr><tr><td>Nita</td><td>34</td><td>Gatineau</td><td>Completed</td><td>nintendo switch</td><td>Nintendo</td><td></td></tr><tr><td>Sofia</td><td>21</td><td>Sherbrooke</td><td>Completed</td><td>nintendo switch</td><td>Nintendo</td><td></td></tr><tr><td>Melanie</td><td>29</td><td>Toronto</td><td>Completed</td><td>nintendo switch</td><td>Nintendo</td><td></td></tr></table>	first_name	customer_age	city_name	order_status	product_name	supplier_name	supplier_rating	Ali	30	Montreal	Progress	xbox series x	Microsoft		Alex	18	Montreal	Completed	xbox series x	Microsoft		Sabrina	25	Montreal	Completed	xbox series x	Microsoft		Tim	24	Gatineau	Completed	xbox series x	Microsoft		bourque	23	Sherbrooke	Completed	xbox series x	Microsoft		Karim	30	Montreal	completed	Play Station 5	Sony		Christina	22	Trois rivières	Waiting for payment	Play Station 5	Sony		shannon	25	Montreal	Cancelled	nintendo switch	Nintendo		Fall	20	Montreal	Completed	nintendo switch	Nintendo		Jeremi	27	Montreal	Completed	nintendo switch	Nintendo		George	21	Gatineau	Cancelled	nintendo switch	Nintendo		Nita	34	Gatineau	Completed	nintendo switch	Nintendo		Sofia	21	Sherbrooke	Completed	nintendo switch	Nintendo		Melanie	29	Toronto	Completed	nintendo switch	Nintendo	
first_name	customer_age	city_name	order_status	product_name	supplier_name	supplier_rating																																																																																																					
Ali	30	Montreal	Progress	xbox series x	Microsoft																																																																																																						
Alex	18	Montreal	Completed	xbox series x	Microsoft																																																																																																						
Sabrina	25	Montreal	Completed	xbox series x	Microsoft																																																																																																						
Tim	24	Gatineau	Completed	xbox series x	Microsoft																																																																																																						
bourque	23	Sherbrooke	Completed	xbox series x	Microsoft																																																																																																						
Karim	30	Montreal	completed	Play Station 5	Sony																																																																																																						
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shannon	25	Montreal	Cancelled	nintendo switch	Nintendo																																																																																																						
Fall	20	Montreal	Completed	nintendo switch	Nintendo																																																																																																						
Jeremi	27	Montreal	Completed	nintendo switch	Nintendo																																																																																																						
George	21	Gatineau	Cancelled	nintendo switch	Nintendo																																																																																																						
Nita	34	Gatineau	Completed	nintendo switch	Nintendo																																																																																																						
Sofia	21	Sherbrooke	Completed	nintendo switch	Nintendo																																																																																																						
Melanie	29	Toronto	Completed	nintendo switch	Nintendo																																																																																																						
Filter by Montreal City	SELECT first_name, customer_age, city_name, order_status, product_name, supplier_name, supplier_rating from customer cu INNER JOIN orders ords on ords.customer_id = cu.customer_id INNER JOIN shipments shi on ords.order_id = shi.orderid INNER JOIN orderproduct orp ON orp.order_id = ords.order_id INNER JOIN products prd on prd.product_id = orp.product_id INNER JOIN productsupplier prs ON prs.product_id = prd.product_id INNER JOIN suppliers sup ON sup.supplier_id = prs.supplier_id INNER JOIN city ct ON ct.city_id = cu.cityid INNER JOIN province pr ON pr.province_id = ct.province_id INNER JOIN country ctr ON ctr.country_id = pr.country_id WHERE ct.city_name = 'Montreal';	<table><tr><th>first_name</th><th>customer_age</th><th>city_name</th><th>order_status</th><th>product_name</th><th>supplier_name</th><th>supplier_rating</th></tr><tr><td>Ali</td><td>30</td><td>Montreal</td><td>Progress</td><td>xbox series x</td><td>Microsoft</td><td>5</td></tr><tr><td>Alex</td><td>18</td><td>Montreal</td><td>Completed</td><td>xbox series x</td><td>Microsoft</td><td>5</td></tr><tr><td>Sabrina</td><td>25</td><td>Montreal</td><td>Completed</td><td>xbox series x</td><td>Microsoft</td><td>5</td></tr><tr><td>Karim</td><td>30</td><td>Montreal</td><td>completed</td><td>Play Station 5</td><td>Sony</td><td>5</td></tr><tr><td>shannon</td><td>25</td><td>Montreal</td><td>Cancelled</td><td>nintendo switch</td><td>Nintendo</td><td>4</td></tr><tr><td>Fall</td><td>20</td><td>Montreal</td><td>Completed</td><td>nintendo switch</td><td>Nintendo</td><td>4</td></tr><tr><td>Jeremi</td><td>27</td><td>Montreal</td><td>Completed</td><td>nintendo switch</td><td>Nintendo</td><td>4</td></tr></table>	first_name	customer_age	city_name	order_status	product_name	supplier_name	supplier_rating	Ali	30	Montreal	Progress	xbox series x	Microsoft	5	Alex	18	Montreal	Completed	xbox series x	Microsoft	5	Sabrina	25	Montreal	Completed	xbox series x	Microsoft	5	Karim	30	Montreal	completed	Play Station 5	Sony	5	shannon	25	Montreal	Cancelled	nintendo switch	Nintendo	4	Fall	20	Montreal	Completed	nintendo switch	Nintendo	4	Jeremi	27	Montreal	Completed	nintendo switch	Nintendo	4																																																	
first_name	customer_age	city_name	order_status	product_name	supplier_name	supplier_rating																																																																																																					
Ali	30	Montreal	Progress	xbox series x	Microsoft	5																																																																																																					
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shannon	25	Montreal	Cancelled	nintendo switch	Nintendo	4																																																																																																					
Fall	20	Montreal	Completed	nintendo switch	Nintendo	4																																																																																																					
Jeremi	27	Montreal	Completed	nintendo switch	Nintendo	4																																																																																																					
Filter by order status completed	SELECT first_name, customer_age, city_name, order_status, product_name, supplier_name, supplier_rating from customer cu INNER JOIN orders ords on ords.customer_id = cu.customer_id INNER JOIN shipments shi on ords.order_id = shi.orderid INNER JOIN orderproduct orp ON orp.order_id = ords.order_id	<table><tr><th>first_name</th><th>customer_age</th><th>city_name</th><th>order_status</th><th>product_name</th><th>supplier_name</th><th>supplier_rating</th></tr><tr><td>Alex</td><td>18</td><td>Montreal</td><td>Completed</td><td>xbox series x</td><td>Microsoft</td><td>5</td></tr><tr><td>Sabrina</td><td>25</td><td>Montreal</td><td>Completed</td><td>xbox series x</td><td>Microsoft</td><td>5</td></tr><tr><td>Karim</td><td>30</td><td>Montreal</td><td>completed</td><td>Play Station 5</td><td>Sony</td><td>5</td></tr><tr><td>Fall</td><td>20</td><td>Montreal</td><td>Completed</td><td>nintendo switch</td><td>Nintendo</td><td>4</td></tr><tr><td>Jeremi</td><td>27</td><td>Montreal</td><td>Completed</td><td>nintendo switch</td><td>Nintendo</td><td>4</td></tr></table>	first_name	customer_age	city_name	order_status	product_name	supplier_name	supplier_rating	Alex	18	Montreal	Completed	xbox series x	Microsoft	5	Sabrina	25	Montreal	Completed	xbox series x	Microsoft	5	Karim	30	Montreal	completed	Play Station 5	Sony	5	Fall	20	Montreal	Completed	nintendo switch	Nintendo	4	Jeremi	27	Montreal	Completed	nintendo switch	Nintendo	4																																																															
first_name	customer_age	city_name	order_status	product_name	supplier_name	supplier_rating																																																																																																					
Alex	18	Montreal	Completed	xbox series x	Microsoft	5																																																																																																					
Sabrina	25	Montreal	Completed	xbox series x	Microsoft	5																																																																																																					
Karim	30	Montreal	completed	Play Station 5	Sony	5																																																																																																					
Fall	20	Montreal	Completed	nintendo switch	Nintendo	4																																																																																																					
Jeremi	27	Montreal	Completed	nintendo switch	Nintendo	4																																																																																																					

	INNER JOIN products prd on prd.product_id = orp.product_id INNER JOIN productsupplier prs ON prs.product_id = prd.product_id INNER JOIN suppliers sup ON sup.supplier_id = prs.supplier_id INNER JOIN city ct ON ct.city_id = cu.cityid INNER JOIN province pr ON pr.province_id = ct.province_id INNER JOIN country ctr ON ctr.country_id = pr.country_id WHERE ct.city_name = 'Montreal' and ords.order_status = 'Completed';																						
Filter by product name <b>Xbox serie x</b>	SELECT first_name, customer_age, city_name, order_status, product_name, supplier_name, supplier_rating from customer cu INNER JOIN orders ords on ords.customer_id = cu.customer_id INNER JOIN shipments shi on ords.order_id = shi.orderid INNER JOIN orderproduct orp ON orp.order_id = ords.order_id INNER JOIN products prd on prd.product_id = orp.product_id INNER JOIN productsupplier prs ON prs.product_id = prd.product_id INNER JOIN suppliers sup ON sup.supplier_id = prs.supplier_id INNER JOIN city ct ON ct.city_id = cu.cityid INNER JOIN province pr ON pr.province_id = ct.province_id INNER JOIN country ctr ON ctr.country_id = pr.country_id WHERE ct.city_name = 'Montreal' and ords.order_status = 'Completed' and prd.product_name = 'xbox series x';	<table><tr><th>first_name</th><th>customer_age</th><th>city_name</th><th>order_status</th><th>product_name</th><th>supplier_name</th><th>supplier_rating</th></tr><tr><td>Alex</td><td>18</td><td>Montreal</td><td>Completed</td><td>xbox series x</td><td>Microsoft</td><td>5</td></tr><tr><td>Sabrina</td><td>25</td><td>Montreal</td><td>Completed</td><td>xbox series x</td><td>Microsoft</td><td>5</td></tr></table>	first_name	customer_age	city_name	order_status	product_name	supplier_name	supplier_rating	Alex	18	Montreal	Completed	xbox series x	Microsoft	5	Sabrina	25	Montreal	Completed	xbox series x	Microsoft	5
first_name	customer_age	city_name	order_status	product_name	supplier_name	supplier_rating																	
Alex	18	Montreal	Completed	xbox series x	Microsoft	5																	
Sabrina	25	Montreal	Completed	xbox series x	Microsoft	5																	
Calculate the customer average age	SELECT AVG(customer_age) averageAgeCustomer, city_name, order_status, product_name, supplier_name, supplier_rating from customer cu INNER JOIN orders ords on ords.customer_id = cu.customer_id INNER JOIN shipments shi on ords.order_id = shi.orderid INNER JOIN orderproduct orp ON orp.order_id = ords.order_id INNER JOIN products prd on prd.product_id = orp.product_id INNER JOIN productsupplier prs ON prs.product_id = prd.product_id INNER JOIN suppliers sup ON sup.supplier_id = prs.supplier_id INNER JOIN city ct ON ct.city_id = cu.cityid INNER JOIN province pr ON pr.province_id = ct.province_id INNER JOIN country ctr ON ctr.country_id = pr.country_id WHERE ct.city_name = 'Montreal' and ords.order_status = 'Completed' and prd.product_name = 'xbox series x' GROUP BY order_status, product_name,supplier_name, supplier_rating;	<table><tr><th>averageAgeCustomer</th><th>city_name</th><th>order_status</th><th>product_name</th><th>supplier_name</th><th>supplier_rating</th></tr><tr><td>21.5000</td><td>Montreal</td><td>Completed</td><td>xbox series x</td><td>Microsoft</td><td>5</td></tr></table>	averageAgeCustomer	city_name	order_status	product_name	supplier_name	supplier_rating	21.5000	Montreal	Completed	xbox series x	Microsoft	5									
averageAgeCustomer	city_name	order_status	product_name	supplier_name	supplier_rating																		
21.5000	Montreal	Completed	xbox series x	Microsoft	5																		

## Report Query 2:

```
SELECT AVG(customer_age) averageAgeCustomer, city_name, order_status, product_name,
supplier_name, supplier_rating from customer cu
INNER JOIN orders ords on ords.customer_id = cu.customer_id
INNER JOIN shipments shi on ords.order_id = shi.orderid
INNER JOIN orderproduct orp ON orp.order_id = ords.order_id
INNER JOIN products prd on prd.product_id = orp.product_id
INNER JOIN productsupplier prs ON prs.product_id = prd.product_id
INNER JOIN suppliers sup ON sup.supplier_id = prs.supplier_id
INNER JOIN city ct ON ct.city_id = cu.cityid
INNER JOIN province pr ON pr.province_id = ct.province_id
INNER JOIN country ctr ON ctr.country_id = pr.country_id
WHERE ct.city_name = 'Montreal'
and ords.order_status = 'Completed'
and prd.product_name = 'xbox series x'
GROUP BY order_status, product_name, supplier_name, supplier_rating;
```



```
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1 row in set (0.703 sec)

MariaDB [40522091]> SELECT AVG(customer_age) averageAgeCustomer, city_name, order_status, product_name, supplier_name, supplier_rating from customer cu
-> INNER JOIN orders ords on ords.customer_id = cu.customer_id
-> INNER JOIN shipments shi on ords.order_id = shi.orderid
-> INNER JOIN orderproduct orp ON orp.order_id = ords.order_id
-> INNER JOIN products prd on prd.product_id = orp.product_id
-> INNER JOIN productsupplier prs ON prs.product_id = prd.product_id
-> INNER JOIN suppliers sup ON sup.supplier_id = prs.supplier_id
-> INNER JOIN city ct ON ct.city_id = cu.cityid
-> INNER JOIN province pr ON pr.province_id = ct.province_id
-> INNER JOIN country ctr ON ctr.country_id = pr.country_id
-> WHERE ct.city_name = 'Montreal'
-> and ords.order_status = 'Completed'
-> and prd.product_name = 'xbox series x'
-> GROUP BY order_status, product_name, supplier_name, supplier_rating;
+-----+-----+-----+-----+-----+-----+
| averageAgeCustomer | city_name | order_status | product_name | supplier_name | supplier_rating |
+-----+-----+-----+-----+-----+-----+
| 21.5000 | Montreal | Completed | xbox series x | Microsoft | 5 |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.001 sec)

MariaDB [40522091]>
```

## References:

'The latest Sony PlayStation introduced in November 2020. Powered by an eight-core AMD Zen 2 CPU and custom AMD Radeon GPU'

Link:

[https://www.pcmag.com/encyclopedia/term/ps5#:~:text=\(PlayStation%20PS5\)%20The%20latest%20Sony,the%20PS4%20and%20PS4%20Pro](https://www.pcmag.com/encyclopedia/term/ps5#:~:text=(PlayStation%20PS5)%20The%20latest%20Sony,the%20PS4%20and%20PS4%20Pro)

'Nintendo switch', 'The Nintendo Switch is a hybrid video game console, consisting of a console unit, a dock, and two Joy-Con controllers. Although it is a hybrid console, Nintendo classifies it as "a home console that you can take with you on the go"'

Link:[https://en.wikipedia.org/wiki/Nintendo\\_Switch#:~:text=its%20life%20cycle%22.-Hardware,with%20you%20on%20the%20go%22](https://en.wikipedia.org/wiki/Nintendo_Switch#:~:text=its%20life%20cycle%22.-Hardware,with%20you%20on%20the%20go%22)

'The Xbox Series X has higher-end hardware and supports higher display resolutions (up to 8K resolution), along with higher frame rates and real-time ray tracing; it also has a high-speed solid-state drive (SSD) to reduce loading times'

Link: [https://en.wikipedia.org/wiki/Xbox\\_Series\\_X\\_and\\_Series\\_S](https://en.wikipedia.org/wiki/Xbox_Series_X_and_Series_S)