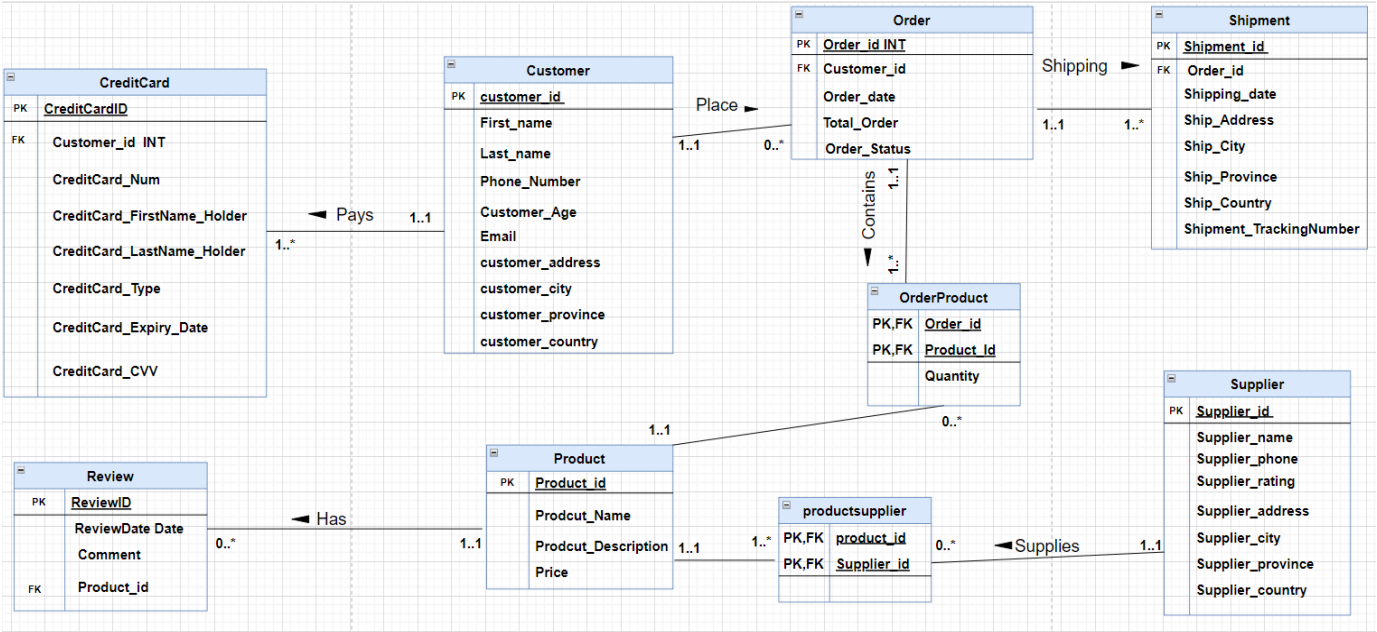
ER Diagram



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 should not matter in which my data is stored, 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**, prodcut _name, Prodcut_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 they already on the 1NF, there are no partial functional dependencies, we can see that all non-prime attributes are fully functionally dependent on the candidate key, so the tables are already in 2NF.

Third Normal Form

The tables they are already on the 2NF, a table is said to be in the 3NF, it should not have transitive dependencies against the primary key. That mean that non-key fields are directly dependent on the primary key
Customer table attributes (First_name, Last_name, phone_number, customer_age, email, customer_address) all depends on the primary key so in another view all depend on that customer, but customer_province however has a transitive dependency on a customer_id through the customer_city and customer_country through the customer_province which is through the customer_city. So, the province and country are transitive dependent on the customer_Id so that's why these two attributes customer_province and customer_country should not belong inside to the customer table, so the better way to solve it, is to bring down this dependency off into their own table. I can link city table to the cityID and the province to the city table, and country to the province table. So, with doing this I will expect reducing a big amount of redundant data.
Again we have the same scenario for the supplier table, the supplier_province and supplier_country attributes has a transitive dependency on the supplier_Id through the supplier_city so they should not belong to the supplier table.
Also, for shipment table, the ship_province and ship_country has a transitive dependency on the shipment_id through the ship_city so they should be removed from the table.

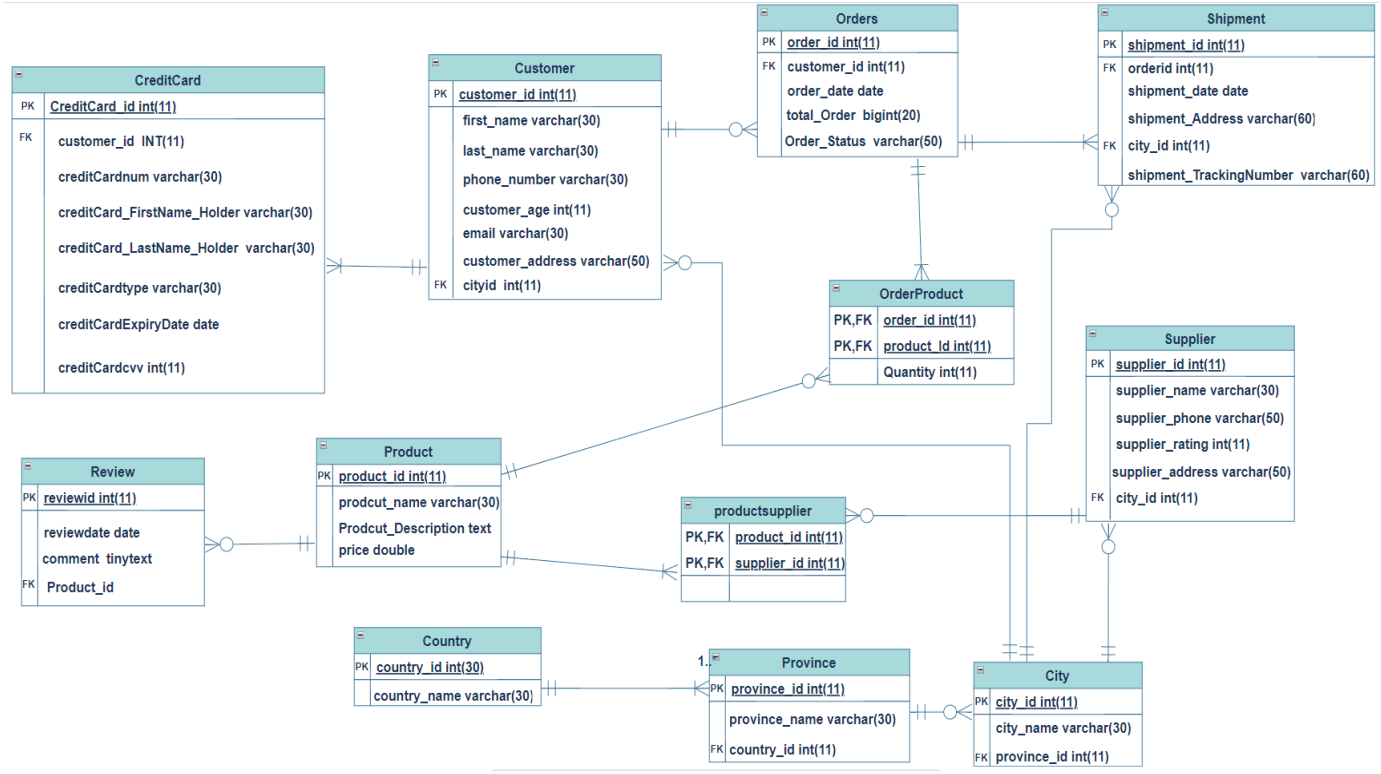
The modifications are as follows:

1) Customer table will be modified to hold only customer_Id, first_name, last_name, phone_number, customer_age, email, customer_address, cityId attributes.
2) Remove the ship_city, ship_province, ship_country attributes from Shipment table and add cityId foreign key attribute.
3) City table been created, it will store city_id as the primary key, city_name and province_id as foreign key.
4) Province table been created, it will store province_id as the primary key, province_name, country_id as the foreign key.
5) Country table been created, it will store country_id as the primary key and country_name.
6) Supplier_city, supplier_province and the supplier _country attributes been removed from suppliers table and city_id foreign key 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**, prodcut _name, Prodcut_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.



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_nam_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 FKPStoSu_idx (supplier_id),
  CONSTRAINT FKProsToP FOREIGN KEY (product_id) REFERENCES products (product_id),
  CONSTRAINT FKPStoSu 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 of Test Data:

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

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

```
INSERT INTO city (city_name, province_id) VALUES ( 'Montreal', '1');
INSERT INTO city (city_name, province_id) VALUES ( 'Torronto', '2');
INSERT INTO city (city_name, province_id) VALUES ( 'Gatineau', '1');
INSERT INTO city (city_name, province_id) VALUES ( 'Quebec city', '1');
INSERT INTO city (city_name, province_id) VALUES ( 'Vancouver', '3');
INSERT INTO city (city_name, province_id) VALUES ( 'Winnipeg', '5');
INSERT INTO city (city_name, province_id) VALUES ( 'Ottawa', '2');
INSERT INTO city (city_name, province_id) VALUES ( 'Calgary', '4');
INSERT INTO city (city_name, province_id) VALUES ( 'Regina', '9');
INSERT INTO city (city_name, province_id) VALUES ( 'Moncton', '6');
INSERT INTO city (city_name, province_id) VALUES ( 'Dartmouth', '7');
INSERT INTO city (city_name, province_id) VALUES ( 'New York', '11');
INSERT INTO city (city_name, province_id) VALUES ( 'Sherbrooke', '1');
INSERT INTO city (city_name, province_id) VALUES ( 'Trois rivieres', '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);
Insert into suppliers (supplier_name, supplier_address, supplier_phone,supplier_rating,city_id )
values ('Sony','550 Madison Avenue 10010','2128336800',5,12);
Insert into suppliers (supplier_name, supplier_address, supplier_phone,supplier_rating,city_id )
values ('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');
Insert into customer (first_name, last_name, phone_number, email, customer_age,
customer_address, cityid) VALUES ('shannon','Mcconnal', '8888887666',
'shannon.2@gmail.com', 25, '301-84 churchill j4v3l8', '1');
```

Insert into customer (first_name, last_name, phone_number, email, customer_age, customer_address, cityid) VALUES ('Karim','Jo-Ann', '9980987878', 'JoAnn@hotmail.com', 30,'2100 saint catherine j4v3l1', '1');

Insert into customer (first_name, last_name, phone_number, email, customer_age, customer_address, cityid) VALUES ('Alex','Quinterro', '8766788888', 'Alex@hotmail.com', 18, '123 saint jean j2v3l2', '1');

Insert into customer (first_name, last_name, phone_number, email, customer_age, customer_address, cityid) VALUES ('George','Leblanc', '9899879999', 'George@hotmail.com', 21, '129 brossard j9v5l1', '3');

Insert into customer (first_name, last_name, phone_number, email, customer_age, customer_address, cityid) VALUES ('Fall','Etienne', '4566788877', 'fallj@hotmail.com', 20, '98 rue peel H3S2R3', '1');

Insert into customer (first_name, last_name, phone_number, email, customer_age, customer_address, cityid) VALUES ('Sabrina','Martel', '4356789653', 'Sabrinaj@hotmail.com', 25, '2387 Boulvard saint laurent H6S2R1', '1');

Insert into customer (first_name, last_name, phone_number, email, customer_age, customer_address, cityid) VALUES ('Christina','koko', '987456739', 'Christinaj@hotmail.com', 22, '7643 Boulvard saint sauveur H8T2R3', '14');

Insert into customer (first_name, last_name, phone_number, email, customer_age, customer_address, cityid) VALUES ('Nita','Sonia', '6577899898', 'Nita@hotmail.com', 34, '1234 Linton aven H3S2R1', '3');

Insert into customer (first_name, last_name, phone_number, email, customer_age, customer_address, cityid) VALUES ('Melanie','sauve', '767777777', 'Melanie@hotmail.com', 29, '9898 saint remi boul M2t4BF', '2');

Insert into customer (first_name, last_name, phone_number, email, customer_age, customer_address, cityid) VALUES ('Jeremi','Depuis', '9898989899', 'jeremi@hotmail.com', 27, '43 saint brossard H8S2F4', '1');

Insert into customer (first_name, last_name, phone_number, email, customer_age, customer_address, cityid) VALUES ('Tim','Frost', '4566788877', 'tim@hotmail.com', 24, '9898 rue peel H4S2T7', '3');

Insert into customer (first_name, last_name, phone_number, email, customer_age, customer_address, cityid) VALUES ('bourque','jacques', '4356789653', 'bourque@hotmail.com', 23, '768 rue brodeur H2W2R1', '13');

Insert into customer (first_name, last_name, phone_number, email, customer_age, customer_address, cityid) VALUES ('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', 'americainexpress', '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 Boulvard saint laurent H6S2R1', '11111766666664', 7,1),

('2022-07-11', '7643 Boulvard 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);

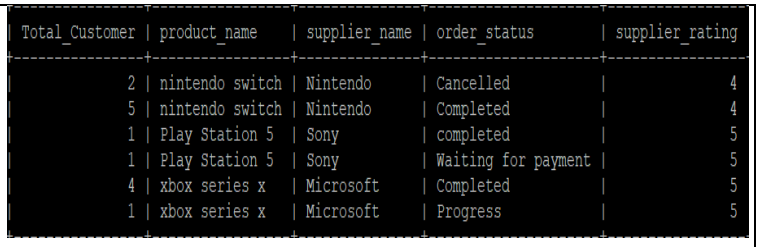
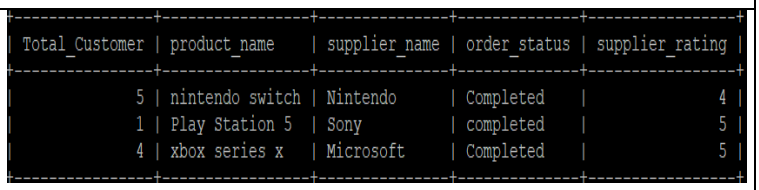
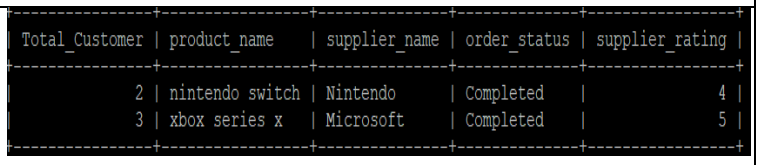
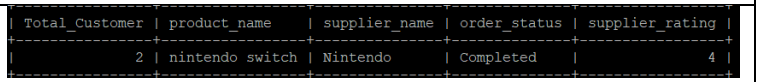
Test Report Query 1:

The first report should show the total customers that bought the Nintendo Switch, product_name, supplier_name, supplier_rating, order_date between 2021/01/01 & 2021/06/01 and completed.

The first query must return one row with the information bellow
Total Customer: 2
product_name: Nintendo Switch
supplier_name: Nintendo
supplier_rating: 4

The table below shows the testing steps for the first query report

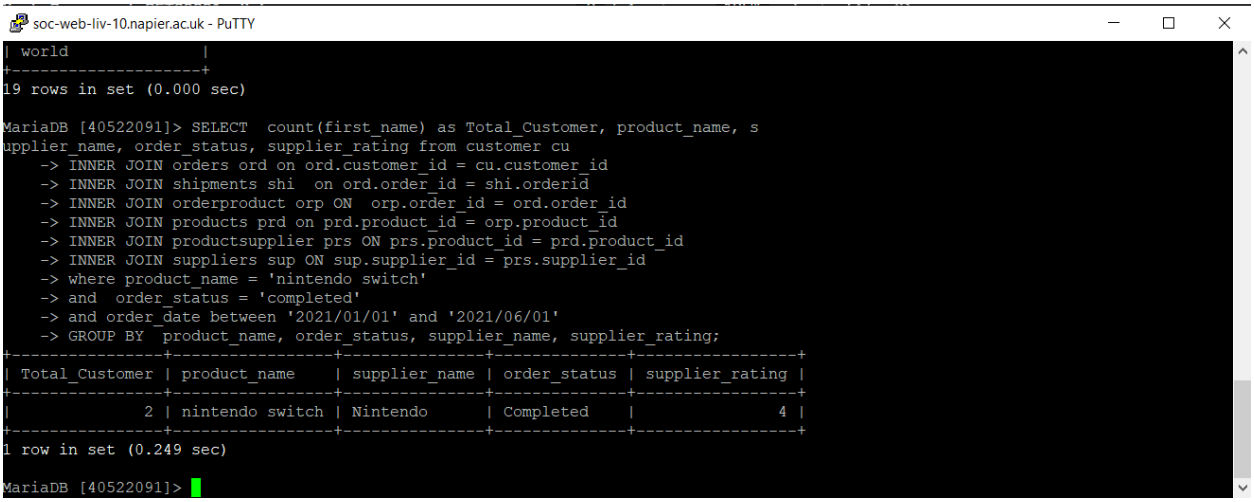
Requirement	Test Script	Result

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;	 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
Order by **completed** status	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;	 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 **'2021/01/01' & '2021/06/01'**	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;	 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 (**Nintendo switch)**	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	 Total_Customer | product_name | supplier_name | order_status | supplier_rating 2 | nintendo switch | Nintendo | Completed | 4

	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;
```



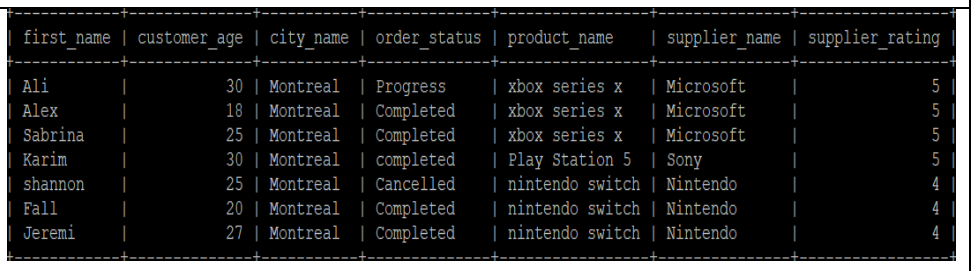
Test Report Query 2:

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.

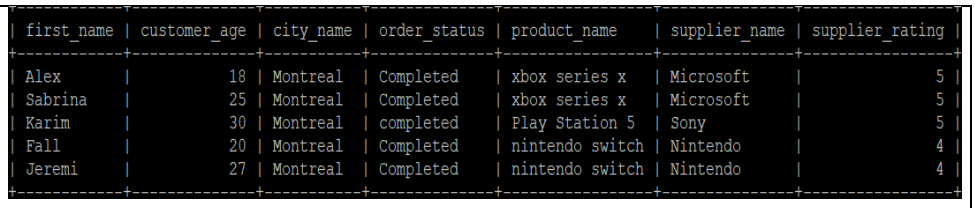
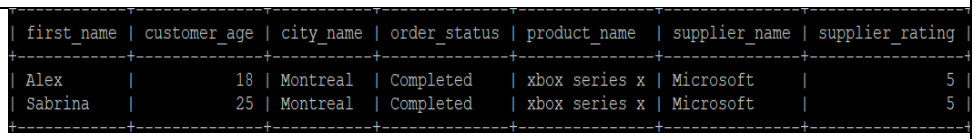
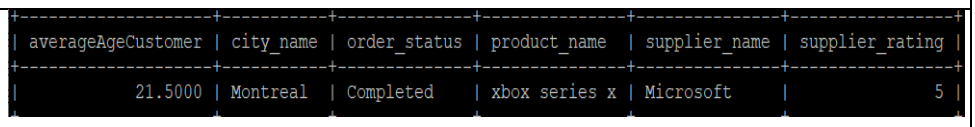
The first query must return one row with the information below

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 scond 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;	
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';	

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

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 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';	 +------------+--------------+-----------+--------------+-----------------+---------------+-----------------+ | 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 | +------------+--------------+-----------+--------------+-----------------+---------------+-----------------+
Filter by product name **Xbox serie x**	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';	 +------------+--------------+-----------+--------------+---------------+---------------+-----------------+ | 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	 +--------------------+-----------+--------------+---------------+---------------+-----------------+ | averageAgeCustomer | city_name | order_status | product_name | supplier_name | supplier_rating | +--------------------+-----------+--------------+---------------+---------------+-----------------+ | 21.5000 | Montreal | Completed | xbox series x | Microsoft | 5 | +--------------------+-----------+--------------+---------------+---------------+-----------------+

	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;	

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;