

Database for ecommerce website:

Database name: ecommerce

```
mysql> use ecommerce;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> show tables;
+-----+
| Tables_in_ecommerce |
+-----+
| Address              |
| Category             |
| Creditcard           |
| Customer             |
| Order_history        |
| Order_payment        |
| Product              |
| Product_in_cart      |
| Product_in_order     |
| Product_supplier     |
| Purchase_order       |
| Shipping_address     |
| Shipping_information |
| Shopping_cart        |
| Sub_category         |
| Supplier             |
+-----+
16 rows in set (0.00 sec)
```

Customer table

```
mysql> desc Customer;
+-----+-----+-----+-----+-----+-----+
| Field                | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| customer_id          | int(11)       | NO   | PRI | NULL    |       |
| first_name           | varchar(30)   | NO   |     | NULL    |       |
| last_name            | varchar(30)   | NO   |     | NULL    |       |
| e_mail               | varchar(30)   | NO   |     | NULL    |       |
| mobile_number        | int(11)       | NO   |     | NULL    |       |
| gender               | varchar(1)    | NO   |     | NULL    |       |
| preferred_shipping_address_id | int(11)       | YES  | MUL | NULL    |       |
| preferred_credit_card_id | int(11)       | YES  | MUL | NULL    |       |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.00 sec)
```

Address table

```
mysql> desc Address;
+-----+-----+-----+-----+-----+-----+
| Field                | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| address_id           | int(11)       | NO   | PRI | NULL    |       |
| address_1            | varchar(50)   | NO   |     | NULL    |       |
| address_2            | varchar(50)   | YES  |     | NULL    |       |
| apt_number           | varchar(10)   | NO   |     | NULL    |       |
| city                 | varchar(20)   | NO   |     | NULL    |       |
| state                | varchar(20)   | NO   |     | NULL    |       |
| zipcode              | varchar(5)    | NO   |     | NULL    |       |
| customer_id          | int(11)       | YES  | MUL | NULL    |       |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.00 sec)
```

Category table

```
mysql> desc Category;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| category_id | int(11)    | NO   | PRI | NULL     |       |
| name        | varchar(20)| NO   |     | NULL     |       |
| description | varchar(50)| NO   |     | NULL     |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

Creditcard table

```
mysql> desc Creditcard;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| CC_id      | int(11)    | NO   | PRI | NULL     |       |
| cc_number   | varchar(16)| NO   |     | NULL     |       |
| expiration_date | date      | NO   |     | NULL     |       |
| cvv_number  | varchar(3) | NO   |     | NULL     |       |
| type       | varchar(20)| NO   |     | NULL     |       |
| customer_id | int(11)    | YES  | MUL | NULL     |       |
| billing_address_id | int(11)  | YES  | MUL | NULL     |       |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)
```

Order_history table

```
mysql> desc Order_history;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| order_history_id | int(11)  | NO   | PRI | NULL     |       |
| customer_id     | int(11)  | YES  | MUL | NULL     |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

Order_payment table:

```
mysql> desc Order_payment;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| payment_id  | int(11)    | NO   | PRI | NULL     |       |
| cc_number   | varchar(16)| NO   |     | NULL     |       |
| expiration_date | date      | NO   |     | NULL     |       |
| cvv_number  | varchar(3) | NO   |     | NULL     |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

Product table:

```
mysql> desc Product;
```

Field	Type	Null	Key	Default	Extra
product_id	int(11)	NO	PRI	NULL	
name	varchar(20)	NO		NULL	
description	varchar(100)	NO		NULL	
price	int(11)	NO		NULL	
stock_count	int(11)	NO		NULL	
picture	blob	YES		NULL	
category_id	int(11)	YES	MUL	NULL	

```
7 rows in set (0.00 sec)
```

Product_in_cart table:

```
mysql> desc Product_in_cart;
```

Field	Type	Null	Key	Default	Extra
cart_id	int(11)	NO	PRI	0	
product_id	int(11)	NO	PRI	0	
quantity	int(11)	NO		NULL	

```
3 rows in set (0.01 sec)
```

Product_in_order table:

```
mysql> desc Product_in_order;
```

Field	Type	Null	Key	Default	Extra
Product_in_order_id	bigint(20) unsigned	NO	PRI	NULL	auto_increment
quantity	int(11)	NO		NULL	
price_when_ordered	int(11)	NO		NULL	
product_name_when_ordered	varchar(30)	NO		NULL	
order_id	int(11)	YES	MUL	NULL	
product_id	int(11)	YES	MUL	NULL	

```
6 rows in set (0.00 sec)
```

Product_supplier table:

```
mysql> desc Product_supplier;
```

Field	Type	Null	Key	Default	Extra
product_supplier_id	int(11)	NO	PRI	NULL	
product_id	int(11)	YES	MUL	NULL	
supplier_id	int(11)	YES	MUL	NULL	
price	int(11)	NO		NULL	
stock_count	int(11)	NO		NULL	

```
5 rows in set (0.00 sec)
```

Purchase_order table:

```
mysql> desc Purchase_order;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| order_id       | int(11)       | NO   | PRI | NULL    |       |
| order_date     | date          | NO   |     | NULL    |       |
| total_price    | int(11)       | NO   |     | NULL    |       |
| order_status   | varchar(20)   | NO   |     | NULL    |       |
| order_payment_id | int(11)      | YES  | MUL | NULL    |       |
| order_history_id | int(11)      | YES  | MUL | NULL    |       |
| tracking_id     | int(11)       | YES  | MUL | NULL    |       |
| shipping_address_id | int(11)    | YES  | MUL | NULL    |       |
| customer_id    | int(11)       | YES  | MUL | NULL    |       |
+-----+-----+-----+-----+-----+-----+
9 rows in set (0.00 sec)
```

Shipping_address table:

```
mysql> desc Shipping_address;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| shipping_address_id | int(11)    | NO   | PRI | NULL    |       |
| address_1       | varchar(50)  | NO   |     | NULL    |       |
| address_2       | varchar(50)  | YES  |     | NULL    |       |
| apt_number      | varchar(10)  | NO   |     | NULL    |       |
| city            | varchar(20)  | NO   |     | NULL    |       |
| state           | varchar(20)  | NO   |     | NULL    |       |
| zipcode         | varchar(5)   | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)
```

Shipping_information table:

```
mysql> desc Shipping_information;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| tracking_id     | int(11)       | NO   | PRI | NULL    |       |
| shipping_company | varchar(30)   | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

Shopping_cart table:

```
mysql> desc Shopping_cart;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| shopping_cart_id | int(11)       | NO   | PRI | NULL    |       |
| customer_id     | int(11)       | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

Sub_category table:

```
mysql> desc Sub_category;
+-----+-----+-----+-----+-----+-----+
| Field          | Type   | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| category_id    | int(11)| YES  |     | NULL    |       |
| parent_category_id | int(11)| YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

Supplier table:

```
mysql> desc Supplier;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| supplier_id    | int(11)       | NO   | PRI | NULL    |       |
| name           | varchar(30)   | NO   |     | NULL    |       |
| address        | varchar(75)   | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

2. Write the corresponding SQL for the scenario

- **Insert categories to ecommerce.Category table:**

```
insert into Category values(1,'Mobile','Wireless electronic mobile phones');
insert into Category values(2,'Lighting','Home lighting products');
insert into Category values(3,'Batteries','Power and batteries');
insert into Category values(4,'Home','Home Products');
insert into Category values(5,'Electronics','Electronic Products');
```

- **Insert Sub_categories relationship into the Sub_categories table:**

```
insert into Sub_category values(2,4);
insert into Sub_category values(3,4);
insert into Sub_category values(1,5);
```

- **Insert products to Product table for sale:**

```
insert into Product values(1,'iPhone XS','Apple iphone generation 10 model XS',1000,100,null,1);
insert into Product values(2,'Light bulb','Small light bulb',8,10,null,2);
insert into Product values(3,'Box of AA battery','Durasell AA batteries box',20,50,null,3);
```

- **Listing products to the customer:**

Select * from Product;

- **A customer registers an account with the name "Tom Cruise".**

insert into Customer(customer_id,first_name,last_name,e_mail,mobile_number,gender) values (1,'Tom','Cruise','tc@gmail.com','998789876','M')

- **Create Order_history for the customer Tom Cruise**

insert into Order_history values(1,1);

- **Customer adds two addresses to his account:**

insert into Address values(1,'8th street',null,'100','Miami', 'FL', '33312', 1);

insert into Address values(2,'FIU Office bldg, 100th avenue',null,'10','Fort Lauderdale', 'FL', '33312', 1);

- **Setting the customer preferred shipping address as his company address:**

update Customer set preferred_shipping_address_id =2 where customer_id =1;

- **Insert customer credit cards details with preferred home billing address:**

insert into Creditcard values(1,8756473829345678,'2024-10-30',768,'VISA',1, 1);

insert into Creditcard values(2,2345678956437285,'2024-11-20',123,'Mastercard',1,1);

- **Setting the customer preferred credit card:**

update Customer set preferred_credit_card_id =1 where customer_id=1;

- **Creating shopping_cart for the customer :**

insert into Shopping_cart values(10,1);

- **Insert the products added by customer in cart to product_in_cart:**

insert into Product_in_cart values(10,1,1);

insert into Product_in_cart values(10,2,3);

insert into Product_in_cart values(10,3,4);

Customer places an order:

- **The customer preferred shipping address is inserted into the shipping_address table as a copy for the order.**

```
insert into Shipping_address select 1, address_1, address_2, apt_number,city,state,zipcode from Address where address_id=(select preferred_shipping_address_id from Customer where customer_id=(select Customer_id from Shopping_cart where shopping_cart_id=10));
```

- **The customer preferred credit card detail is inserted into order_payment table as a copy for order:**

```
insert into Order_payment select 1, cc_number,expiration_date,ccv_number from Creditcard where cc_id=(select preferred_credit_card_id from Customer where customer_id=(select customer_id from Shopping_cart where Shopping_cart_id=10));
```

- **Customer shipping information is inserted to Shipping_information**

```
insert into Shipping_information values (111,'ABC Shipping Corporation');
```

- **Insert customer order details to Purchase_order:**

```
insert into Purchase_order values (1,'2019-03-31',0,'In Progress',1,1,111,1,1);
```

- **Insert the details of the products in order to Product_in_order:**

```
Insert into Product_in_order(quantity,price_when_ordered,product_name_when_ordered,order_id,product_id) select pic.quantity,p.price,p.name,1,pic.product_id from Product_in_cart pic inner join products p on pic.product_id =p.product_id;
```

- **Update customers total purchase cost to Purchase_order**

```
update Purchase_order set total_price= (select sum(price_when_ordered*quantity) from Product_in_order where order_id=1) where order_id=1;
```

- **Products in shopping cart is cleared:**

```
delete from Product_in_cart where cart_id=10;
```

- **The Stock count is updated in Product table:**

```
update Product p inner join Product_in_order pio on (p.product_id=pio.product_id) set
p.stock_count=p.stock_count-pio.quantity where pio.order_id=1;
```

End order Placing

Customer changes the order (scenario where customer update the cart)

- **When the customer removes an item from the order, updating the Stock count only if the order status is not completed before removing the item**

```
update Product p inner join Product_in_order pio on(p.product_id=pio.product_id) inner join
Purchase_order po on(po.order_id=pio.order_id) set p.stock_count =
p.stock_count+pio.quantity where pio.order_id=1 and pio.product_id=1 and po.order_status
!='Completed';
```

- **Deleting iphone from the order, when the customer removed it from the order**
delete from Product_in_order where order_id=1 and product_id=1;
- **Updating the total cost in purchase order details, since the customer removed an item from the order**

```
update Purchase_order set total_price=(select sum(price_when_ordered* quantity) from
Product_in_order where order_id=1) where order_id=1;
```

Customer views order details page

- **Displaying the order's status, date, credit card used (including card number, expiration month/year), and shipping/billing address (including the street, city, state and zip code)**

Select

```
po.order_status,po.order_date,op.cc_number,op.expiration_date,sa.address_1,sa.address_2,sa.
apt_number,sa.city,sa.state,sa.zipcode from Purchase_order po inner join Shipping_address sa
on po.shipping_address_id=sa.shipping_address_id inner join Order_payment op on
po.order_payment_id=op.payment_id where po.order_id=1
```

```
mysql> select po.order_status,po.order_date,op.cc_number,op.expiration_date,sa.address_1,sa.address_2,sa.apt_number,sa.city,sa.state,sa.zipcode from
-> Purchase_order po inner join Shipping_address sa on po.shipping_address_id=sa.shipping_address_id inner join Order_payment op on po.order_payment_id=op.payment_id where po.order_id=1;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| order_status | order_date | cc_number | expiration_date | address_1 | address_2 | apt_number | city | state | zipcode |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| In Progress | 2019-03-31 | 8756473829345678 | 2024-10-30 | FIU Office bldg, 100th avenue | NULL | 10 | Fort Lauderdale | FL | 33312 |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.03 sec)
```

- **Displaying the list of items in the order (including the item's name, count and unit price)**

```
select pio.product_name_when_ordered as item_name,pio.quantity,
pio.price_when_ordereit_price from Purchase_order po inner join Product_in_order pio on
po.order_id=pio.order_id where po.order_id=1;
```



```
mysql> mysql> select pio.product_name_when_ordered as item_name, pio.quantity, pio.price_when_ordered as item_price from Purchase_order po inner join Product_in_order pio on po.order_id=pio.order_id where po.order_id=1;
```

item_name	quantity	unit_price
Light bulb	3	8
Box of AA battery	4	20

2 rows in set (0.00 sec)

- **Displaying the calculated total amount of the order**

select total_price from Purchase_order where order_id=1;

```
mysql> select total_price from Purchase_order where order_id=1;
```

total_price
104

1 row in set (0.00 sec)

- **Updating the order status of the customer in Purchase_order**
update Purchase_order set order_status='Completed' where order_id=1;

- **Administator Update the Light Bulb price to 10\$**
Update Product set price=10 where name='Light bulb';

```
mysql> select * from Product;
```

product_id	name	description	price	stock_count	picture	category_id
1	iPhone XS	Apple iphone generation 10 model XS	1000	100	NULL	1
2	Light bulb	Small light bulb	8	7	NULL	2
3	Box of AA battery	Durasell AA batteries box	20	46	NULL	3

3 rows in set (0.00 sec)

```
mysql> update Product set price=10 where name='Light bulb';
Query OK, 1 row affected (0.00 sec)
Rows matched: 1 Changed: 1 Warnings: 0
```

```
mysql> select * from Product;
```

product_id	name	description	price	stock_count	picture	category_id
1	iPhone XS	Apple iphone generation 10 model XS	1000	100	NULL	1
2	Light bulb	Small light bulb	10	7	NULL	2
3	Box of AA battery	Durasell AA batteries box	20	46	NULL	3

3 rows in set (0.00 sec)

- **Customer views order details page**

```
select po.order_status,po.order_date,op.cc_number,op.expiration_date,
sa.address_1,sa.address_2,sa.apt_number,sa.city,sa.state,sa.zipcode from Purchase_order po
inner join Shipping_address sa on po.shipping_address_id=sa.shipping_address_id inner join
Order_payment op on po.order_payment_id=op.payment_id where po.order_id=1;
```

```
mysql> select po.order_status,po.order_date,op.cc_number,op.expiration_date,
-> sa.address_1,sa.address_2,sa.apt_number,sa.city,sa.state,sa.zipcode from Purchase_order po
-> inner join Shipping_address sa on po.shipping_address_id=sa.shipping_address_id
-> inner join Order_payment op on po.order_payment_id=op.payment_id where po.order_id=1;
```

order_status	order_date	cc_number	expiration_date	address_1	address_2	apt_number	city	state	zipcode
Completed	2019-03-31	8756473829345678	2024-10-30	FIU Office bldg, 100th avenue	NULL	10	Fort Lauderdale	FL	33312

1 row in set (0.00 sec)

- **Displaying the list of items in the order (including the item's name, count and unit price) from the Order history**

```
select pio.product_name_when_ordered as item_name,pio.quantity, pio.price_when_ordered
as unit_price from Purchase_order po inner join Product_in_order pio on
po.order_id=pio.order_id where po.order_id=1;
```

```
mysql> select pio.product_name_when_ordered as item_name,pio.quantity,
-> pio.price_when_ordered as unit_price from Purchase_order po inner join
-> Product_in_order pio on po.order_id=pio.order_id where po.order_id=1;
```

item_name	quantity	unit_price
Light bulb	3	8
Box of AA battery	4	20

2 rows in set (0.00 sec)

- **Displaying the total price of the order of the customer in Purchase_order from the Order history**

```
Select total_price from Purchase_order where order_id=1;
```

```
mysql> select total_price from Purchase_order where order_id=1;
```

total_price
104

1 row in set (0.00 sec)

- Commit

After the price update, if the customer checks the order he placed a long time ago, will he be able to see the same total amount as before? Explain why.

Yes, he will be able to see same total amount as before. This happens because administrator changed the product price in product table and details about customers old order are being retrieved from purchase_order and Product_in_order table.

Changed the price of small light bulb to 10000

```
mysql> Update Product set price=10 where name='Light bulb';
Query OK, 0 rows affected (0.00 sec)
Rows matched: 1  Changed: 0  Warnings: 0

mysql> select * from Product;
+-----+-----+-----+-----+-----+-----+
| product_id | name          | description          | price | stock_count | picture | category_id |
+-----+-----+-----+-----+-----+-----+
| 1 | iPhone XS | Apple iphone generation 10 model XS | 1000 | 100 | NULL | 1 |
| 2 | Light bulb | Small light bulb | 10 | 7 | NULL | 2 |
| 3 | Box of AA battery | Durasell AA batteries box | 20 | 46 | NULL | 3 |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> Update Product set price=10000 where name='Light bulb';
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from Product;
+-----+-----+-----+-----+-----+-----+
| product_id | name          | description          | price | stock_count | picture | category_id |
+-----+-----+-----+-----+-----+-----+
| 1 | iPhone XS | Apple iphone generation 10 model XS | 1000 | 100 | NULL | 1 |
| 2 | Light bulb | Small light bulb | 10000 | 7 | NULL | 2 |
| 3 | Box of AA battery | Durasell AA batteries box | 20 | 46 | NULL | 3 |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

Output after changing the price:

```
mysql> select pio.product_name_when_ordered as item_name, pio.quantity, pio.price_when_ordered as unit_price from Purchase_order po inner join Product_in_order pio on po.order_id=pio.order_id where po.order_id=1;
+-----+-----+-----+
| item_name | quantity | unit_price |
+-----+-----+-----+
| Light bulb | 3 | 8 |
| Box of AA battery | 4 | 20 |
+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> Select total_price from Purchase_order where order_id=1;
+-----+
| total_price |
+-----+
| 104 |
+-----+
1 row in set (0.00 sec)
```