Mini Project : DBMS SCE : Online Shopping Portal

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1] Introduction

In this project we have made an Online Shopping Portal or an E-Commerce Website for suits, shirts and other clothes. We have used XAMPP and MariaDB for the database and for the front-end we have used HTML and CSS. The connection of the database with the front-end is done through PHP.

The purpose of this project is to provide users (client) a seamless online shopping experience , we have implemented a 3NF Database along with maintaining ACID properties to reduce redundancy and data inconsistency. By providing users with options to create a Wishlist, add products to cart and order products easily from the cart, making it more user-friendly. From the perspective of the Administrator , we have also provided options to validate the User data , Update Orders and Products and maintain a history of transactions for future reference.

2] Description of database concept used

- Our database follows all the rules of 3rd Normal Form as explained below:
    - **1NF:** The database holds the rule of atomicity as no field holds more than one value. Each user may have multiple products in their cart, wishlist or orders list, but these are stored separately and not in one record.
    - **2NF:** It also does not contain any partial dependency. For example, the fabrics table and products table are separated so that no partial dependency exists within the products table.
    - **3NF:** Further there is no transitive dependency also.
- The database follows all **ACID** properties of **Atomicity**, **Consistency**, **Isolation** and **Durability**.
- **Triggers:**
  We have used a trigger on insert to cart and wishlist, to check if the product for the same user already exists or not. If it already exists the trigger gives a SIGNAL SQLSTATE to stop the insert. The definition of the trigger is given below,

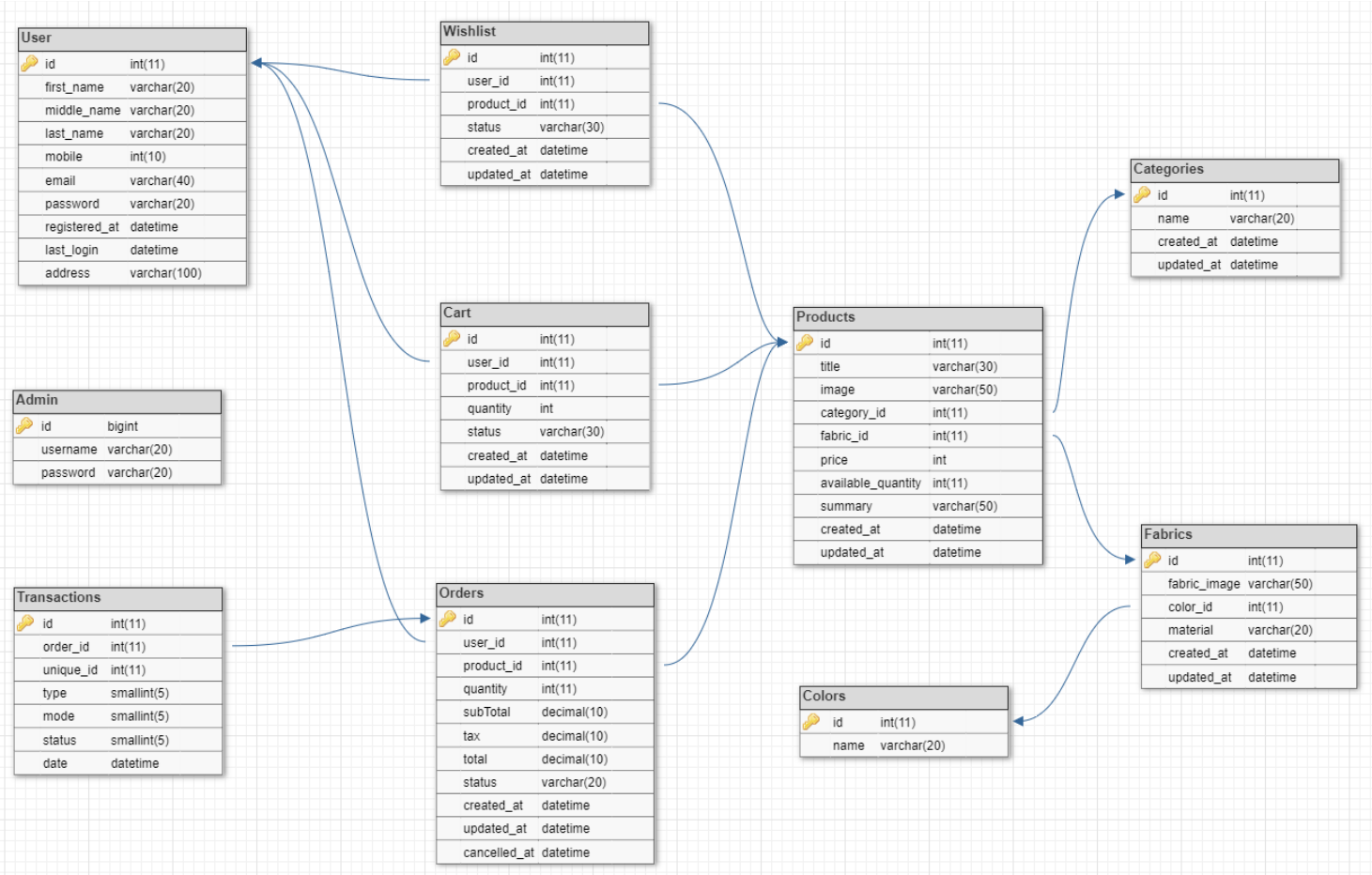
```
create trigger wishlist_insert before insert on wishlist
for each row
begin
if exists(select id from wishlist where user_id=NEW.user_id and
product_id=NEW.product_id) then
signal sqlstate '45000' set message_text="Item already in wishlist";
```

```
    end if;
    end #;
```

- **PL/SQL Procedures:**
  We have implemented a procedure named place_order for placing an order. The procedure moves all the items present in the cart to the Orders table and deletes them from the Cart table. We have implemented a cursor to loop over all items in the cart for the specific user_id passed in the argument of the procedure. It also decreases the available_quantity of the products as per the order. If it finds that the quantity of products ordered are not available, it rolls back the insert and delete commands on the Order and Cart tables respectively. The definition of the procedure is given below,

```
CREATE PROCEDURE `place_order` (IN `p_uid` INT)
BEGIN
   declare v_id int;
   declare uid int;
   declare pid int;
   declare quan int;
   declare finished int DEFAULT 0;
   declare cur cursor for (select id, user_id, product_id, quantity from cart
      where user_id=p_uid and status="added");
   declare continue handler for not found set finished=1;
   open cur;
   label1:LOOP
      fetch cur into v_id, uid, pid, quan;
      if finished=1 then leave label1;
      end if;
      insert into orders (user_id, product_id, quantity, subTotal, tax, total,
         status, created_at) values (uid, pid, quan, (select price from products
         where id=pid)*quan, (select price from products where id=pid)*0.1,
         1.1*(select price from products where id=pid), "in process", now());
      delete from cart where id=v_id;
      if (select available_quantity from products where id=pid) < quan THEN
         ROLLBACK;
      else
         update products set available_quantity=(select available_quantity from
         products where id=pid)-quan where id=pid;
         COMMIT;
      end if;
   end loop label1;
   close cur;
END$$
```

- The database design that we have used is represented in the image below:



3] Software used and backend database

- **PHP** : Used PHP to connect the frontend pages with the database. Used the PDO object to connect with the required database and to execute queries. Also the **data validation** and then binding those parameters to the query is done through PHP.
- **XAMPP** : Used to **host our project** locally and also to use PhpMyAdmin for managing the database easily.
- **MariaDB** : The database system we XAMPP offers is MariaDB on which we have made our database.
- **SQL** : We have used **SQL DDL and DML commands** for creating the database, querying, inserting, deleting and updating data from the database; and also to define the **procedures** and **triggers**. We have run these commands through the **PDO object of PHP.**
- **HTML/CSS** : We have used HTML and CSS for creating the pages of our website (**frontend**)

4] Screenshots of our website:

Our website consists of pages like Login, Register, Products, Cart, Wishlist, Orders for the User; and Login, Register, View/Modify Products, View/Modify Orders pages for the Admin.

User:

Login

Email: Enter email

Password: Enter Password

login Not yet a Member? Register

Admin login

Register

First name: Enter first name

middle name: Enter middle name

last name: Enter last name

Email: Enter Email

Password: Enter Password

Phone: optional

Register Already a user? Login Here

localhost/dbms_sce/product.php

Shopify Products Wishlist Cart Orders Logout

Products

Light Blue Icon Twill Suit

Category: Suits
fabric: Lanificio Zignone
price: Rs.6450
quantity: 5

Add to cart

Add to wishlist

Red Wool Flannel Suit

Category: Suits
fabric: Guabello
price: Rs.7500
quantity: 3

Add to cart

Add to wishlist

Cream Twill Flannel Suit

Category: Suits
fabric: Marzotto
price: Rs.5500
quantity: 4

Add to cart

Add to wishlist

Grey Brushed Flannel Suit

Category: Suits
fabric: Reda
price: Rs.8000
quantity: 3

Add to cart

Add to wishlist

localhost/dbms_sce/wishlist.php

Shopify Products Wishlist Cart Orders Logout

Wishlist

Light Blue Icon Twill Trousers

Fabric by Lanificio Zignone

₹ 1650

Remove

Add to Cart

localhost/dbms_sce/cart.php

Shopify Products Wishlist Cart Orders Logout

Cart

Red Wool Flannel Suit

Fabric by Guabello

Quantity: - 2 +

₹ 7500

Remove

Light Grey Cotton Shirt

Fabric by Albini

Quantity: - 1 +

₹ 1550

Remove

Light Blue Icon Twill Suit

Fabric by Lanificio Zignone

Quantity: - 1 +

₹ 6450

Remove

Sr No	Price	Quantity	Tax	Total
1	7500	2	1500	16500
2	1550	1	155	1705
3	6450	1	645	7095

Total: ₹ 25300

Place Order

localhost/dbms_sce/orders.php

Shopify Products Wishlist Cart Orders Logout

Orders

Light Grey Cotton Shirt

Fabric by Albini

Quantity: 1

₹ 1705

IN PROCESS

Cancel Order

Red Wool Flannel Suit

Fabric by Guabello

Quantity: 2

₹ 8250

DELIVERED

Light Blue Icon Twill Suit

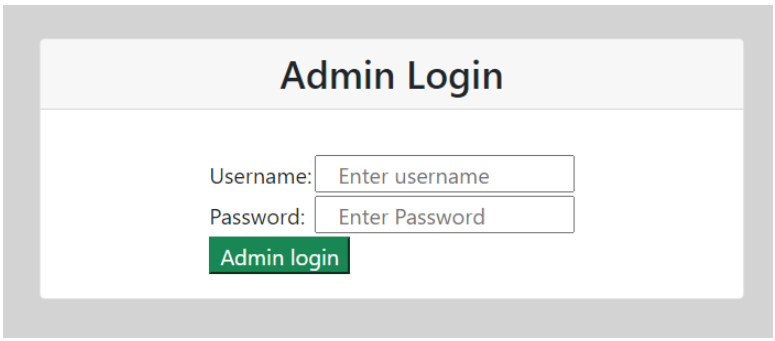
Fabric by Lanificio Zignone

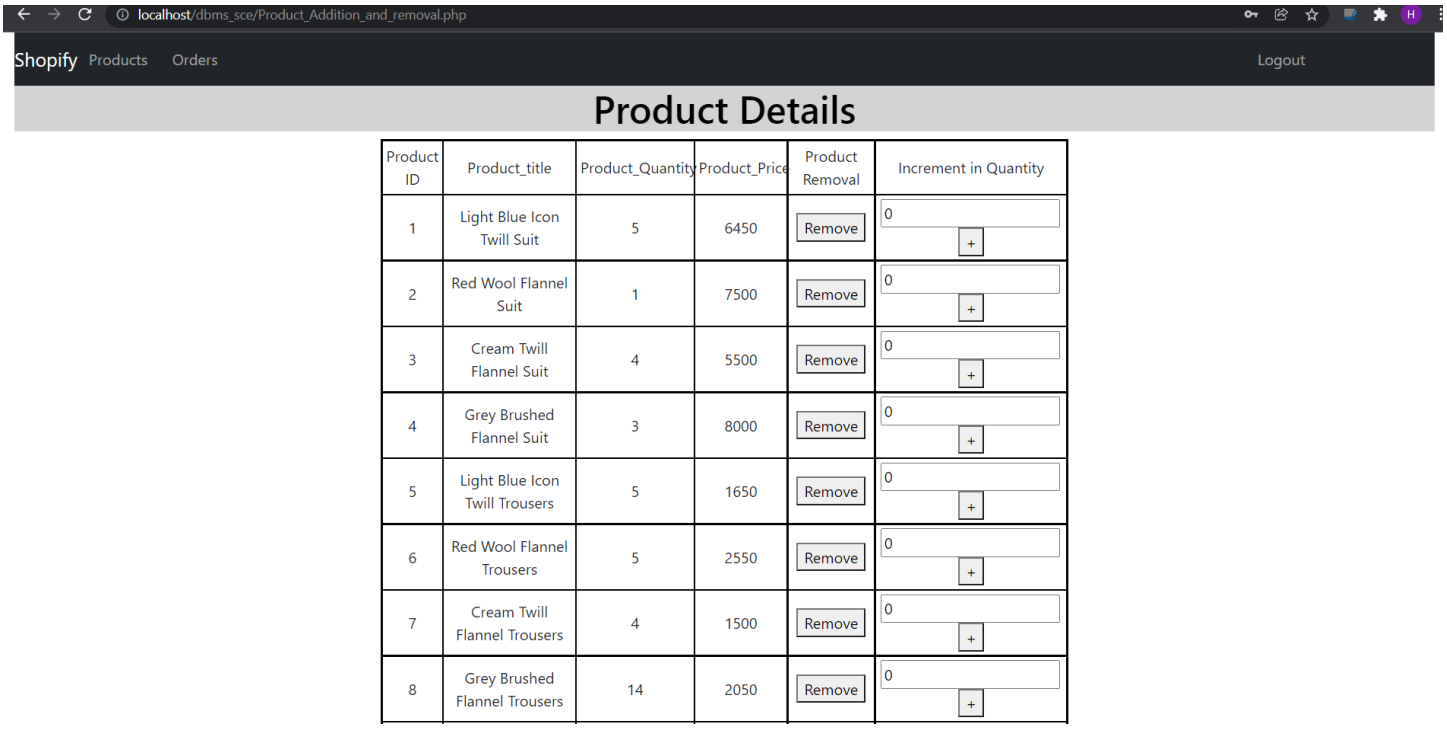
Quantity: 1

₹ 7095

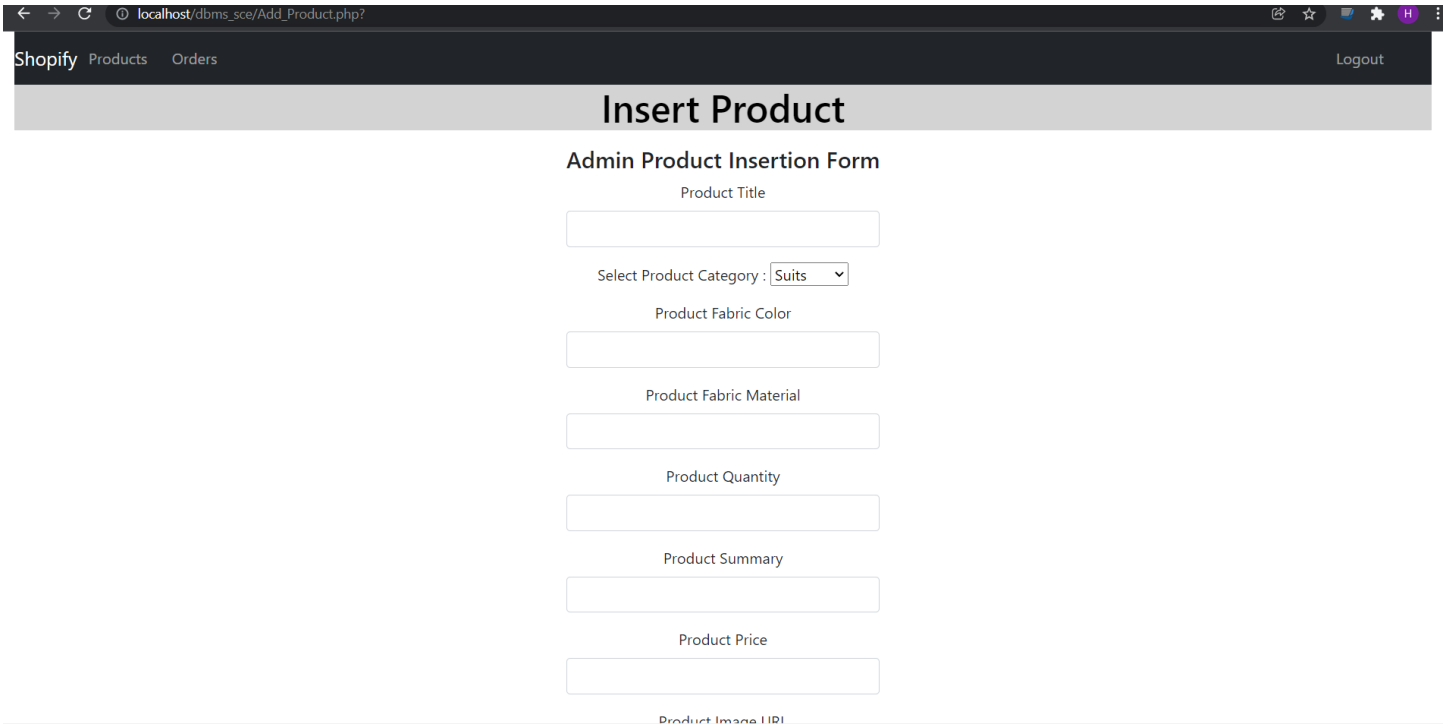
CANCELLED

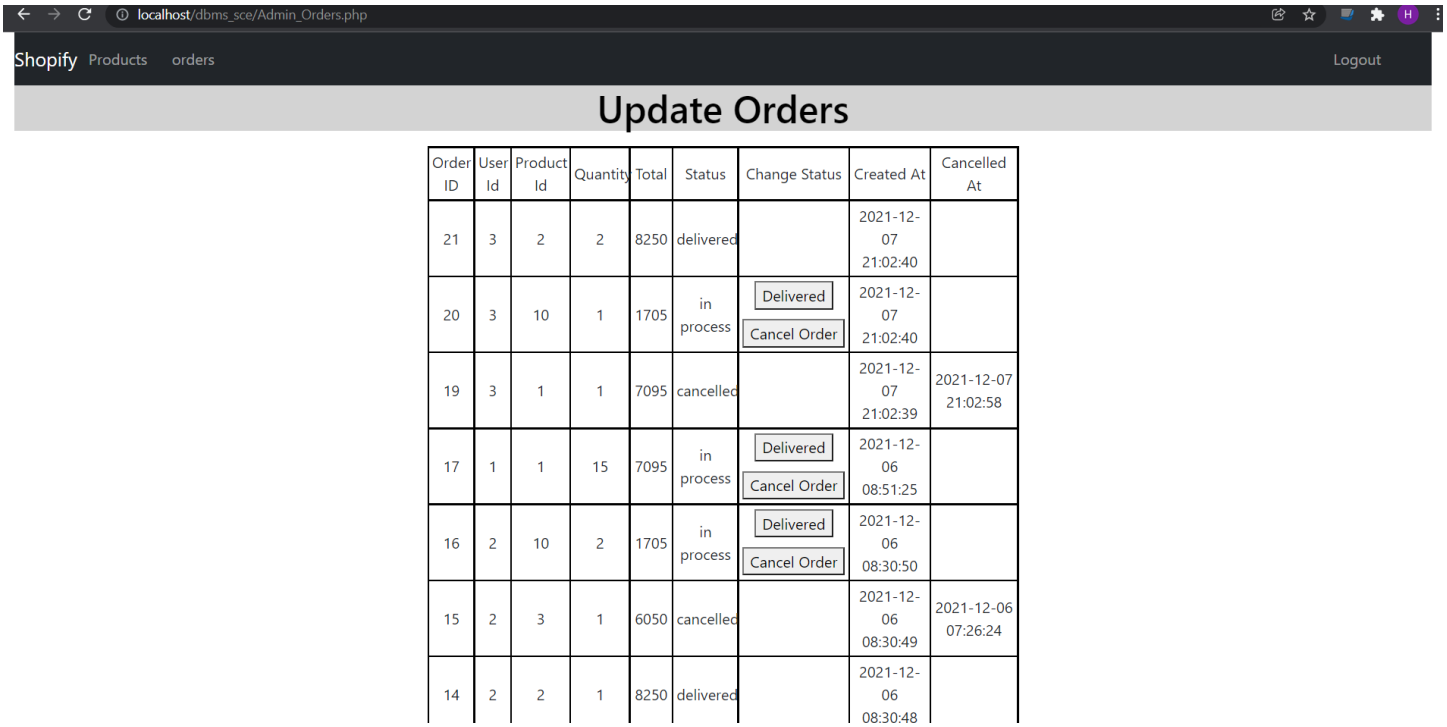
Admin:





Product ID	Product_title	Product_Quantity	Product_Price	Product Removal	Increment in Quantity
1	Light Blue Icon Twill Suit	5	6450	Remove	0 +
2	Red Wool Flannel Suit	1	7500	Remove	0 +
3	Cream Twill Flannel Suit	4	5500	Remove	0 +
4	Grey Brushed Flannel Suit	3	8000	Remove	0 +
5	Light Blue Icon Twill Trousers	5	1650	Remove	0 +
6	Red Wool Flannel Trousers	5	2550	Remove	0 +
7	Cream Twill Flannel Trousers	4	1500	Remove	0 +
8	Grey Brushed Flannel Trousers	14	2050	Remove	0 +





Order ID	User Id	Product Id	Quantity	Total	Status	Change Status	Created At	Cancelled At
21	3	2	2	8250	delivered		2021-12-07 21:02:40	
20	3	10	1	1705	in process	Delivered Cancel Order	2021-12-07 21:02:40	
19	3	1	1	7095	cancelled		2021-12-07 21:02:39	2021-12-07 21:02:58
17	1	1	15	7095	in process	Delivered Cancel Order	2021-12-06 08:51:25	
16	2	10	2	1705	in process	Delivered Cancel Order	2021-12-06 08:30:50	
15	2	3	1	6050	cancelled		2021-12-06 08:30:49	2021-12-06 07:26:24
14	2	2	1	8250	delivered		2021-12-06 08:30:48	

5] Reference:

- https://www.w3schools.com/php/
- https://www.javatpoint.com/xampp
- https://www.w3schools.com/sql/sql_stored_procedures.asp