

# Online Payment System Database

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## Objective:

The main objective is to design and implement an Online Payment System that supports an E-Commerce platform that allows customers to purchase products and services through a secure and user-friendly platform. The system will include a database management system to store and manage information related to users, products, orders, shipments, and reviews.

## Description:

The first step in using an Online Payment System is User Registration. When a user registers with the system, they provide personal information, such as their FullName, Email Address, PhoneNumber, Username, Password, Age and is associated with a unique User ID.

Whenever a user initiates a transaction, such as making a payment for an order, the user's UserID is also associated with an unique Transaction ID, and features like Transaction Date and Time, Transaction Amount are also noted. Each Transaction ID is associated with an Order ID , as the products ordered by the user may be from multiple sellers therefore having different Order IDs, and features like Order Status(Confirmed, Preparing, Shipped, Out for Delivery, Returned), Shipping ID , Fee ID, Coupon ID, TotalAmount are noted.

Furthermore, to know the payment method opted by the user, each Transaction ID is also associated with a PaymentMethod (Credit, Debit, UPI, E-Wallet) and Transaction Status (Completed, Failed , Declined).

Additionally, every Order's Shipping ID is associated with the User's Shipping Address which include attributes like Country, State, City, Pin Code, Delivery Area and Shipping Date. Further every Order's Fee ID is associated with a complete breakdown of the Order, which can include details like Order Total, GST, Delivery Fee, Shipping Fee. And the Coupon ID is associated with details of the coupon applied to the order such as Coupon Code, Discount Type, Discounted Amount.

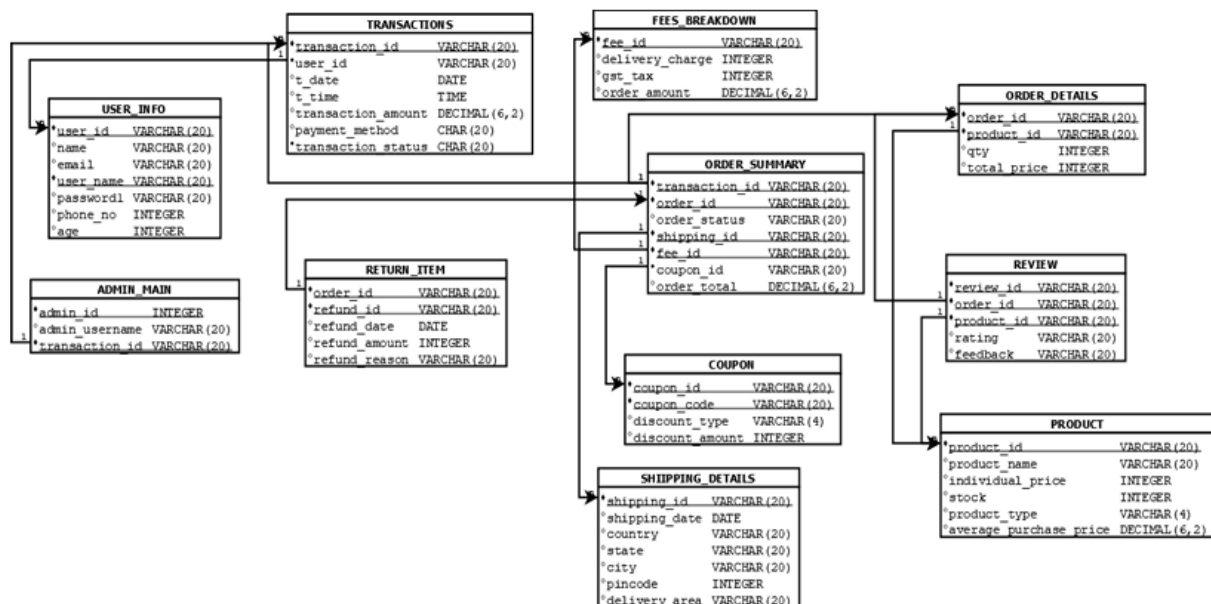
To know more about the Order Details , such as all the product details, we try to associate OrderID with Product ID, Quantity, Total Price respectively. In addition to that if the user wants to know the details such as but not limited to the availability of a particular product , we try to associate Product ID with Product Description which

includes details like Product Name, Stock/Availability, Product Type/Category, Average Purchase Price, Product Rate.

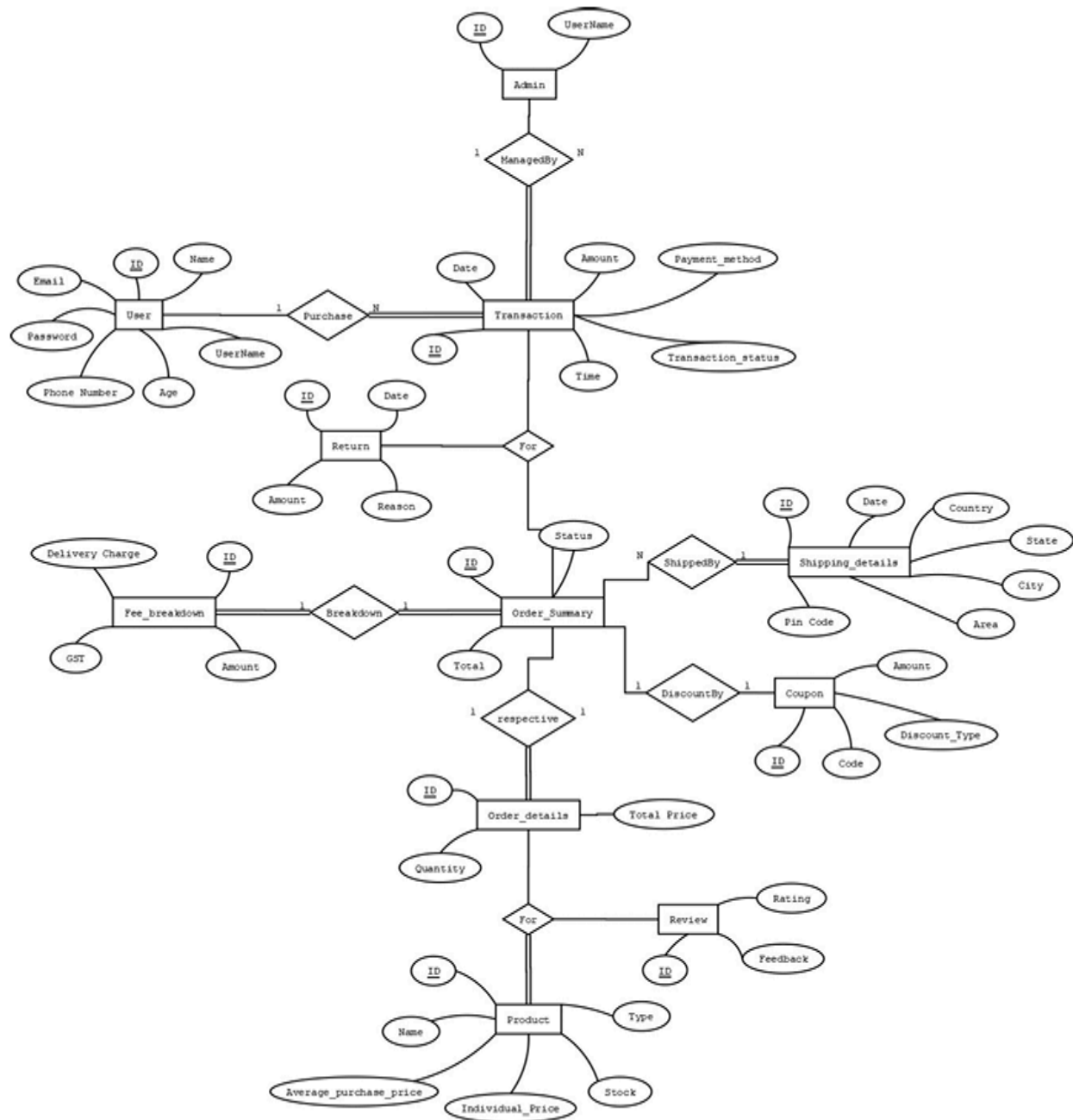
Online payment systems require robust database management systems to handle the large volumes of data so there should be an authority who should administer all these transactions, so we have Admins who have their own Admin ID, Admin Username assigned to monitor multiple Transaction ID and the Order IDs associated with it.

Another important aspect of this system are the reviews of the product by the users, thereby each review i.e, Review ID is associated with the Order ID and the respective Product ID which also has attributes such but not limited to Rating (on a scale of 1-5) and Feedback. Further we also try to include a Refund Process into this system which has features like Refund ID, Refund Amount, Refund Date, Reason of Refund associated with the Transaction ID.

## Relational Schema:



## ER Diagram:



## Minimal Set of Functional Dependencies:

User ID  $\rightarrow$  Full Name, Email Address, Phone Number, Username, Password, Age,  
Transaction ID

Transaction ID → Transaction Time, Transaction Date, Transaction Amount, Payment Method, Transaction Status, Refund ID, Refund Amount, Refund Date, Reason of Refund, Order ID

Order ID → Order Status, Shipping ID, Fee ID, Coupon ID, Total Amount

Shipping ID → Country, State, City, Pin Code, Delivery Area, Shipping Date

Fee ID → Order Total, GST, Delivery Fee, Shipping Fee

Coupon ID → Coupon Code, Discount Type, Discounted Amount

{Order ID, Product ID} → Quantity, Total Price

Product ID → Product Name, Stock/Availability, Product Type/Category, Average Purchase Price, Product Rate

Admin ID → Admin ID, Username

{Order ID, Product ID, Review ID} → Rating, Feedback

## **CODES:**

### **DDL\_SCRIPT-**

```
CREATE SCHEMA Online_Payment_System;  
SET SEARCH_PATH TO Online_Payment_System;
```

```
CREATE TABLE USER_INFO (  
    user_id varchar(30),  
    name1 varchar(30),  
    email varchar(30),  
    user_name varchar(30) NOT NULL UNIQUE,  
    passwd varchar(30),  
    phone_no integer,  
    age integer,  
    PRIMARY KEY (user_id)  
);
```

```
CREATE TABLE TRANSACTIONS (  
    user_id varchar(30) NOT NULL UNIQUE,  
    transaction_id varchar(30),  
    t_date date,  
    t_time time,  
    amount integer,  
    FOREIGN KEY(user_id) REFERENCES USER_INFO(user_id)
```

```

        ON DELETE SET DEFAULT ON UPDATE CASCADE,
        PRIMARY KEY(transaction_id)
    );

CREATE TABLE ADMIN_MAIN (
    Admin_id integer,
    Admin_username varchar(30),
    transaction_id varchar(30) NOT NULL UNIQUE,
    FOREIGN KEY(transaction_id) REFERENCES TRANSACTIONS(transaction_id)
    ON DELETE CASCADE ON UPDATE CASCADE,
    PRIMARY KEY(Admin_id)
);

CREATE TABLE PAYMENT_METHOD (
    transaction_id varchar(30) NOT NULL UNIQUE,
    method_id varchar(30),
    transaction_status varchar(30),
    FOREIGN KEY(transaction_id) REFERENCES TRANSACTIONS(transaction_id)
    ON DELETE CASCADE ON UPDATE CASCADE
);

CREATE TABLE RETURN_ITEM (
    transaction_id varchar(30) NOT NULL UNIQUE,
    refund_date date,
    refund_amount integer,
    refund_id varchar(30),
    reason_of_refund varchar(30),
    FOREIGN KEY(transaction_id) REFERENCES TRANSACTIONS(transaction_id)
    ON DELETE CASCADE ON UPDATE CASCADE,
    PRIMARY KEY(refund_id)
);

CREATE TABLE FEE_BREAKDOWN (
    fee_id varchar(30),
    delivery_charge integer,
    gst_tax integer,
    order_amount integer,
    PRIMARY KEY(fee_id)
);

```

```
CREATE TABLE COUPON (  
    coupon_id varchar(30),  
    coupon_code varchar(30) NOT NULL UNIQUE,  
    discount_type varchar(4),  
    discount_amount integer,  
    PRIMARY KEY(coupon_id)  
);
```

```
CREATE TABLE SHIPPING_DETAILS (  
    shipping_id varchar(30),  
    shipping_date date,  
    country varchar(30),  
    state1 varchar(30),  
    city varchar(30),  
    pincode integer,  
    delivery_area varchar(30),  
    PRIMARY KEY(shipping_id)  
);
```

```
CREATE TABLE PRODUCT (  
    product_id varchar(30),  
    product_name varchar(30),  
    product_rate integer,  
    stock integer,  
    product_type varchar(10),  
    average_purchaseprice integer,  
    PRIMARY KEY(product_id)  
);
```

```
CREATE TABLE ORDER_DETAILS (  
    order_id varchar(30),  
    product_id varchar(30) NOT NULL UNIQUE,  
    qty integer,  
    total_price integer,  
    FOREIGN KEY(product_id) REFERENCES PRODUCT(product_id)  
    ON DELETE CASCADE ON UPDATE CASCADE,  
    PRIMARY KEY(order_id)  
);
```

```
CREATE TABLE REVIEW (  

```

```

review_id varchar(30),
order_id varchar(30) NOT NULL UNIQUE,
product_id varchar(30) NOT NULL UNIQUE,
rating varchar(30),
feedback varchar(30),
FOREIGN KEY(order_id) REFERENCES ORDER_DETAILS(order_id)
ON DELETE CASCADE ON UPDATE CASCADE,
FOREIGN KEY(product_id) REFERENCES PRODUCT(product_id)
ON DELETE CASCADE ON UPDATE CASCADE,
PRIMARY KEY(review_id)
);

CREATE TABLE ORDER_ITEM (
    transaction_id varchar(30) NOT NULL UNIQUE,
    order_id varchar(30) NOT NULL UNIQUE,
    order_status varchar(30),
    shipping_id varchar(30) NOT NULL UNIQUE,
    fee_id varchar(30) NOT NULL UNIQUE,
    coupon_id varchar(30),
    order_total integer,
    FOREIGN KEY(transaction_id) REFERENCES TRANSACTIONS(transaction_id)
    ON DELETE CASCADE ON UPDATE CASCADE,
    FOREIGN KEY(order_id) REFERENCES ORDER_DETAILS(order_id)
    ON DELETE CASCADE ON UPDATE CASCADE,
    FOREIGN KEY(shipping_id) REFERENCES SHIPPING_DETAILS(shipping_id)
    ON DELETE CASCADE ON UPDATE CASCADE,
    FOREIGN KEY(fee_id) REFERENCES FEE_BREAKDOWN(fee_id)
    ON DELETE CASCADE ON UPDATE CASCADE,
    FOREIGN KEY(coupon_id) REFERENCES COUPON(coupon_id)
    ON DELETE CASCADE ON UPDATE CASCADE
);

```

## **INSERT -**

```

INSERT INTO user_info (user_id, name1, email, user_name, password1, phone_no,
age)
VALUES

```

```
('UX1', 'Aditi Gupta', 'aditi.gupta@example.com', 'aditigupta', 'mypassword',  
'1237456890', 25),  
( 'UX2', 'Arjun Singh', 'arjun.singh@example.com', 'arjunsingh', 'mypassword123',  
'9876543210', 30),  
( 'UX3', 'Divya Patel', 'divya.patel@example.com', 'divyapatel', 'password1',  
'5551234567', 35),  
( 'UX4', 'Kunal Sharma', 'kunal.sharma@example.com', 'kunalsharma', 'password2',  
'5559876543', 42),  
( 'UX5', 'Neha Shah', 'neha.shah@example.com', 'nehashah', 'password3',  
'5555555555', 20),  
( 'UX6', 'Rahul Desai', 'rahul.desai@example.com', 'rahuldesai', 'password4',  
'5551112222', 28),  
( 'UX7', 'Priya Joshi', 'priya.joshi@example.com', 'priyajoshi', 'password5', '5554443333',  
45),  
( 'UX8', 'Vikram Singhanian', 'vikram.singhanian@example.com', 'vikramsinghanian',  
'password6', '5557778888', 31),  
( 'UX9', 'Swati Gupta', 'swati.gupta@example.com', 'swatigupta', 'password7',  
'5551990000', 39),  
( 'UX10', 'Amit Patel', 'amit.patel@example.com', 'amitpatel', 'password8', '5552223333',  
26);
```

```
INSERT INTO transactions (user_id, transaction_id, t_date, t_time, t_amount,  
payment_method, transaction_status)  
VALUES  
( 'UX1', 'TRX001', '2023-04-20', '14:30:00', 1329.17, 'Credit Card', 'Success'),  
( 'UX1', 'TRX002', '2023-04-21', '10:15:00', 1525.71, 'Debit Card', 'Success'),  
( 'UX2', 'TRX003', '2023-04-21', '12:00:00', 2181.09, 'PayPal', 'Pending'),  
( 'UX2', 'TRX004', '2023-04-20', '16:45:00', 560.95, 'Credit Card', 'Success'),  
( 'UX3', 'TRX005', '2023-04-19', '11:30:00', 1658.03, 'Debit Card', 'Failed');
```

```
INSERT INTO admin_info (admin_id, admin_username, transaction_id)  
VALUES  
(1, 'admin1', 'TRX001'),  
(1, 'admin1', 'TRX002'),  
(2, 'admin2', 'TRX003'),  
(2, 'admin2', 'TRX004'),  
(3, 'admin3', 'TRX005');
```



```
INSERT INTO return_item (order_id, refund_id, refund_date, refund_amount, refund_reason)
```

```
VALUES
```

```
('ORD001', 'RF001', '2023-04-22', 145.95, 'Wrong Item'),  
( 'ORD002', 'RF002', '2023-04-23', 76.88, 'Defective Item'),  
( 'ORD007', 'RF003', '2023-04-24', 660.47, 'Not as Described'),  
( 'ORD013', 'RF004', '2023-04-25', 1173.36, 'Change of Mind');
```

```
INSERT INTO fee_breakdown (fee_id, delivery_charge, gst_tax, order_amount)
```

```
VALUES
```

```
('FEE001', 6.90, 7.09, 141.97),  
( 'FEE002', 7.90, 3.99, 79.99),  
( 'FEE003', 8.90, 52.49, 1049.94),  
( 'FEE004', 5.99, 44.99, 899.99),  
( 'FEE005', 1.99, 14.99, 299.98),  
( 'FEE006', 2.90, 56.49, 1129.97),  
( 'FEE007', 4.00, 31.49, 629.98),  
( 'FEE008', 11.50, 17.49, 349.96),  
( 'FEE009', 4.20, 57.49, 1149.98),  
( 'FEE010', 0.99, 22.49, 449.96),  
( 'FEE011', 2.50, 3.99, 79.99),  
( 'FEE012', 4.00, 1.04, 20.99),  
( 'FEE013', 6.90, 56.49, 1129.97),  
( 'FEE014', 3.99, 12.49, 249.99),  
( 'FEE015', 1.00, 11.04, 220.98);
```

```
INSERT INTO coupon (coupon_id, coupon_code, discount_type, discount_amount)
```

```
VALUES
```

```
('CPN001', 'SALE10', 'percentage', 10.00),  
( 'CPN002', 'NEWUSER15', 'percentage', 15.00),  
( 'CPN003', 'FREESHIP', 'flat', 5.00),  
( 'CPN004', 'BULK20', 'percentage', 20.00),  
( 'CPN005', 'FIRSTBUY', 'flat', 10.00),  
( 'CPN006', 'BOGO', 'free', 1),  
( 'CPN007', 'FABFIVE', 'flat', 5.00),  
( 'CPN008', 'SUMMER20', 'percentage', 20.00),  
( 'CPN009', 'HALFOFF', 'percentage', 50.00),  
( 'CPN010', '10OFF100', 'conditional', 10.00);
```

```

INSERT INTO shipping_details (shipping_id, shipping_date, country, state1, city,
pincode, delivery_area)
VALUES
('SHIP001', '2022-01-01', 'India', 'Karnataka', 'Bengaluru', '560001', 'MG Road'),
('SHIP002', '2022-01-02', 'India', 'Tamil Nadu', 'Chennai', '600001', 'Mount Road'),
('SHIP003', '2022-01-03', 'India', 'Kerala', 'Thiruvananthapuram', '695001', 'Pattom'),
('SHIP004', '2022-01-04', 'India', 'West Bengal', 'Kolkata', '700001', 'Esplanade'),
('SHIP005', '2022-01-05', 'India', 'Rajasthan', 'Jaipur', '302001', 'MI Road'),
('SHIP006', '2022-01-06', 'India', 'Uttar Pradesh', 'Lucknow', '226001', 'Hazratganj'),
('SHIP007', '2022-01-07', 'India', 'Punjab', 'Amritsar', '143001', 'Hall Bazaar'),
('SHIP008', '2022-01-08', 'India', 'Assam', 'Guwahati', '781001', 'Pan Bazaar'),
('SHIP009', '2022-01-09', 'India', 'Telangana', 'Hyderabad', '500001', 'Abids'),
('SHIP010', '2022-01-10', 'India', 'Gujarat', 'Ahmedabad', '380001', 'Ashram Road'),
('SHIP011', '2022-01-11', 'India', 'Maharashtra', 'Mumbai', '400001', 'Fort'),
('SHIP012', '2022-01-12', 'India', 'Uttar Pradesh', 'Agra', '282001', 'Sanjay Place'),
('SHIP013', '2022-01-13', 'India', 'Karnataka', 'Mangalore', '575001', 'Hampankatta'),
('SHIP014', '2022-01-14', 'India', 'Haryana', 'Gurugram', '122001', 'MG Road'),
('SHIP015', '2022-01-15', 'India', 'Gujarat', 'Vadodara', '390001', 'Sayajigunj');

```

```

INSERT INTO product (product_id, product_name, product_rate, stock, product_type,
average_purchase_price)
VALUES
('P001', 'T-Shirt', 20.99, 100, 'Clothing', 22.50),
('P002', 'Jeans', 49.99, 50, 'Clothing', 55.00),
('P003', 'Sneakers', 79.99, 25, 'Footwear', 85.00),
('P004', 'Running Shoes', 99.99, 20, 'Footwear', 110.00),
('P005', 'Smartphone', 599.99, 30, 'Electronics', 650.00),
('P006', 'Tablet', 399.99, 15, 'Electronics', 425.00),
('P007', 'Laptop', 899.99, 10, 'Electronics', 950.00),
('P008', 'Dress Shirt', 39.99, 75, 'Clothing', 42.50),
('P009', 'Sweater', 49.99, 50, 'Clothing', 52.50),
('P010', 'Winter Jacket', 149.99, 30, 'Clothing', 160.00),
('P011', 'Leather Shoes', 129.99, 20, 'Footwear', 140.00),
('P012', 'Sandals', 29.99, 40, 'Footwear', 32.50),
('P013', 'Smartwatch', 199.99, 25, 'Electronics', 210.00),
('P014', 'Wireless Headphones', 149.99, 35, 'Electronics', 160.00),
('P015', 'Desktop Computer', 899.99, 10, 'Electronics', 950.00),
('P016', 'Gaming Console', 499.99, 15, 'Electronics', 550.00),
('P017', 'Wireless Router', 79.99, 25, 'Electronics', 85.00),

```

('P018', 'DBMS TextBook', 249.99, 25, 'Books', 285.00);

INSERT INTO order\_details (order\_id, product\_id, qty, total\_price)  
VALUES

('ORD001', 'P001', 2, 41.98),  
('ORD001', 'P004', 1, 99.99),  
('ORD002', 'P003', 1, 79.99),  
('ORD003', 'P002', 3, 149.97),  
('ORD003', 'P005', 1, 99.99),  
('ORD003', 'P006', 2, 799.98),  
('ORD004', 'P007', 1, 899.99),  
('ORD005', 'P010', 2, 299.98),  
('ORD006', 'P012', 1, 29.99),  
('ORD006', 'P013', 1, 199.99),  
('ORD006', 'P015', 1, 899.99),  
('ORD007', 'P011', 1, 129.99),  
('ORD007', 'P016', 1, 499.99),  
('ORD008', 'P008', 1, 39.99),  
('ORD008', 'P014', 1, 149.99),  
('ORD008', 'P017', 2, 159.98),  
('ORD009', 'P007', 1, 899.99),  
('ORD009', 'P018', 1, 249.99),  
('ORD010', 'P004', 3, 299.97),  
('ORD010', 'P014', 1, 149.99),  
('ORD011', 'P003', 1, 79.99),  
('ORD012', 'P001', 1, 20.99),  
('ORD013', 'P011', 1, 129.99),  
('ORD013', 'P016', 2, 999.98),  
('ORD014', 'P018', 1, 249.99),  
('ORD015', 'P013', 1, 199.99),  
('ORD015', 'P001', 1, 20.99);

INSERT INTO review (review\_id, order\_id, product\_id, rating, feedback)  
VALUES

('R001', 'ORD001', 'P001', 4.5, 'Great product, arrived on time.'),  
('R002', 'ORD002', 'P003', 3.0, 'Product was okay, delivery was slow.'),  
('R003', 'ORD003', 'P005', 5.0, 'Absolutely love this product!'),  
('R004', 'ORD003', 'P006', 4.0, 'Product was as described, delivery was on time.'),  
('R005', 'ORD005', 'P010', 5.0, 'Amazing product, great value for money.'),

('R006', 'ORD007', 'P016', 3.5, 'Product was good but overpriced.'),  
 ('R007', 'ORD008', 'P008', 4.0, 'Happy with the product, arrived on time.'),  
 ('R008', 'ORD008', 'P017', 4.5, 'Great value for money, product exceeded my expectations.'),  
 ('R009', 'ORD010', 'P004', 4.0, 'Product was good, but delivery was delayed.'),  
 ('R010', 'ORD011', 'P003', 5.0, 'Excellent product, exceeded my expectations.'),  
 ('R011', 'ORD010', 'P014', 2.5, 'Product was not as described, disappointed with the purchase.'),  
 ('R012', 'ORD013', 'P016', 3.5, 'Product was okay, delivery could have been faster.'),  
 ('R013', 'ORD013', 'P011', 4.5, 'Great product, arrived on time.'),  
 ('R014', 'ORD014', 'P018', 5.0, 'Absolutely love this product!'),  
 ('R015', 'ORD015', 'P013', 4.0, 'Product was as described, happy with the purchase.'),  
 ('R016', 'ORD015', 'P001', 3.0, 'Product was okay, not the best value for money. ');

INSERT INTO ORDER\_SUMMARY (transaction\_id, order\_id, order\_status, shipping\_id,  
 fee\_id, coupon\_id, order\_total)

VALUES

('TRX001', 'ORD001', 'Processing', 'SHIP001', 'FEE001', 'CPN001', 145.96),  
 ('TRX001', 'ORD002', 'Shipped', 'SHIP002', 'FEE002', 'CPN002', 76.88),  
 ('TRX001', 'ORD003', 'Delivered', 'SHIP003', 'FEE003', 'CPN003', 1106.33),  
 ('TRX002', 'ORD004', 'Processing', 'SHIP004', 'FEE004', 'CPN004', 930.97),  
 ('TRX002', 'ORD005', 'Shipped', 'SHIP005', 'FEE005', 'CPN005', 306.96),  
 ('TRX002', 'ORD006', 'Delivered', 'SHIP006', 'FEE006', 'CPN006', 594.68 ),  
 ('TRX003', 'ORD007', 'Processing', 'SHIP007', 'FEE007', 'CPN007', 660.47),  
 ('TRX003', 'ORD008', 'Shipped', 'SHIP008', 'FEE008', 'CPN008', 358.95),  
 ('TRX003', 'ORD009', 'Delivered', 'SHIP009', 'FEE009', 'CPN009', 1161.67),  
 ('TRX004', 'ORD010', 'Processing', 'SHIP010', 'FEE010', 'CPN010', 463.44),  
 ('TRX004', 'ORD011', 'Shipped', 'SHIP011', 'FEE011', 'CPN003', 81.48),  
 ('TRX004', 'ORD012', 'Delivered', 'SHIP012', 'FEE012', 'CPN005', 16.03),  
 ('TRX005', 'ORD013', 'Processing', 'SHIP013', 'FEE013', 'CPN008', 1173.36),  
 ('TRX005', 'ORD014', 'Shipped', 'SHIP014', 'FEE014', 'CPN005', 261.47),  
 ('TRX005', 'ORD015', 'Delivered', 'SHIP015', 'FEE015', 'CPN005', 223.02);