



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

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# PHASE 3 PROJECT

**SECD2523 : DATABASE**  
**SECTION 10**

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## **1.0 INTRODUCTION**

In the dynamic realm of the beauty and cosmetics industry, the landscape is continually evolving with technological advancements reshaping how consumers engage with products. Recognizing the escalating demand for a streamlined and user-friendly cosmetic ordering platform, this proposal outlines the strategic implementation of a Cosmetic Online Ordering System. To achieve this, the existing conceptual Entity-Relationship Diagram (ERD) will undergo a transformative process into a Logical ERD. This evolution involves eliminating non-relational features, deriving a relational schema, and normalising the structure up to Boyce-Codd Normal Form (BCNF). The resulting Logical ERD will be presented, and the data dictionary will be updated to accurately reflect the refined data structure. Following this, a meticulous examination will validate the logical model against the system's transaction requirements, ensuring its alignment with practical needs and interface design. This meticulous approach aims to establish the groundwork for an efficient and resilient Cosmetic Online Ordering System that caters to the dynamic needs of the cosmetic industry.

### **Contextualising the Need:**

In an era marked by the fusion of technology and lifestyle, the beauty and cosmetic industry is undergoing a paradigm shift. Consumers increasingly seek the convenience of online platforms for their cosmetic purchases, demanding a seamless and personalised experience. This surge in digital engagement necessitates the development of an advanced Cosmetic Online Ordering System to meet the evolving expectations of consumers and stay ahead in a highly competitive market.

### **Evolution from Conceptual to Logical:**

The proposed Cosmetic Online Ordering System will undergo a transformation from a conceptual Entity-Relationship Diagram (ERD) to a refined Logical ERD. This transformation involves a meticulous process of eliminating non-relational features, constructing a relational schema, and normalising the structure up to BCNF. The objective is to create a logical model that not only represents the intricacies of the cosmetic ordering process but also ensures efficiency, scalability, and adaptability to future enhancements.

### **Illustrating the Logical ERD:**

The resulting Logical ERD will be visually presented, showcasing the intricate relationships between entities, their attributes, and the flow of information within the system. This

comprehensive representation serves as a visual guide for stakeholders, facilitating a clear understanding of the system's architecture and data organization.

#### **Data Dictionary Refinement:**

Simultaneously, the data dictionary will undergo meticulous updates to accurately reflect the refined data structure. This process ensures that each data element is clearly defined, including its type, size, constraints, and relationships with other elements. The refined data dictionary serves as a crucial reference for developers, ensuring consistent and accurate implementation of the system.

#### **Validation against Transaction Requirements:**

The logical model will be subjected to rigorous validation against the system's transaction requirements. This step ensures that the proposed system aligns seamlessly with practical operational needs. By validating the logical model against transactional scenarios, potential discrepancies or shortcomings can be identified and addressed, guaranteeing a system that not only meets theoretical expectations but is also robust in real-world applications.

#### **Interface Design Alignment:**

Beyond transactional validation, the logical model will be scrutinised to ensure alignment with the interface design. The user experience is a critical aspect of any online ordering system, and the logical model must support an intuitive and user-friendly interface. This alignment is crucial for fostering positive user interactions, encouraging customer loyalty, and ensuring the long-term success of the Cosmetic Online Ordering System.

#### **Foundation for Efficiency and Robustness:**

The culmination of these processes establishes a solid foundation for the development of an efficient and robust Cosmetic Online Ordering System. The logical model, validated against transactional requirements and aligned with interface design, ensures that the system is not only technologically sound but also user-centric. This strategic introduction positions the Cosmetic Online Ordering System at the forefront of industry innovation, catering to the dynamic needs of modern consumers and elevating the overall online shopping experience for cosmetic enthusiasts.

## **2.0 OVERVIEW OF PROJECT**

We suggest creating an online ordering system for cosmetics based on the continuous evolution of the beauty and cosmetics business. This innovative concept intends to improve the entire consumer experience by streamlining the cosmetics purchase procedure. We will carefully create a complicated Logical Entity-Relationship Diagram from a conceptual Entity-Relationship Diagram, deduce a complex relational schema, and carefully carry out normalisation. The main outputs are a finely tuned Logical ERD, an improved data dictionary, and a finely tested system that satisfies transactional needs. The project is important because it will fulfil the growing need for an easily navigable online ordering platform for cosmetics, all while being carefully managed by a team of professionals committed to providing a smooth and effective solution. As it aligns itself with the sophisticated expectations of today's clients, the Cosmetic Online Ordering System project is ready to alter the paradigm of cosmetic procurement. This project has a well-defined timeframe and a targeted scope, which will enable it to provide a cutting-edge solution that will improve customers' overall beauty and cosmetics purchasing experience in addition to streamlining the ordering procedure for cosmetics.

### **3.0 DATABASE CONCEPTUAL DESIGN**

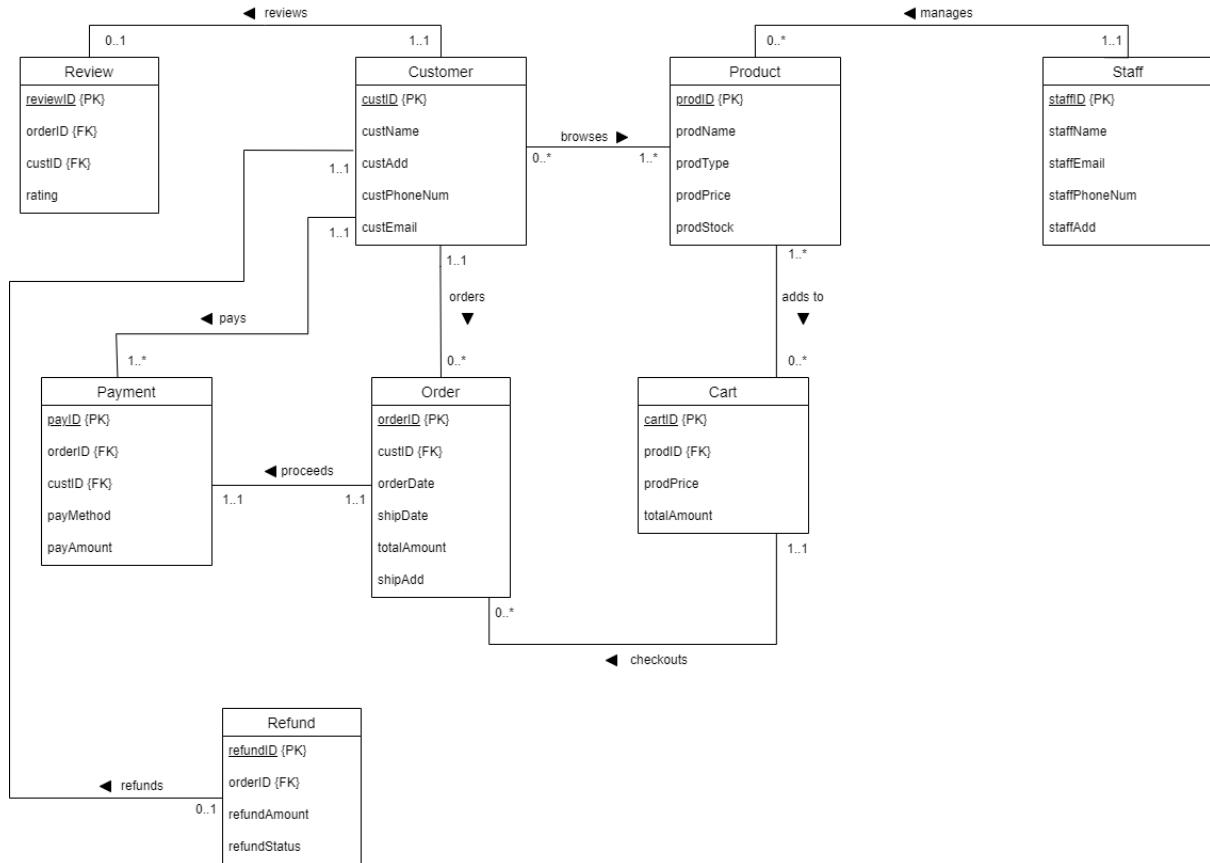
#### **3.1 UPDATED BUSINESS RULE**

1. Maintaining the product descriptions, prices, and images accurately and ensuring they are regularly updated to provide users with reliable information about beauty products.
2. Display only available beauty products and promptly update the inventory by marking items as out of stock when they are depleted, ensuring customers view products that are ready for purchase.
3. Maintain the pricing for beauty products across all channels and platforms, delivering a seamless and reliable shopping experience for users.
4. Clearly present beauty product prices in the local currency and include applicable taxes, fostering transparency and helping customers make informed purchasing decisions.
5. Send immediate order confirmation emails to customers after they place a beauty product order, providing them with details of their purchase and assurance.
6. Allow customers to edit or cancel beauty product orders within a reasonable time frame before shipping, providing flexibility in the purchasing process.
7. Ensure secure payment processing for beauty products using SSL certificates, adhering to industry standards to protect customer financial information.
8. Provide multiple payment options for beauty product purchases, including credit cards, digital wallets, and other popular methods, accommodating various customer preferences.
9. Clearly communicate shipping costs for beauty products before the checkout process, avoiding surprises and allowing users to make informed decisions.
10. Offer various shipping methods for beauty products, along with estimated delivery times, providing customers with choices that suit their needs.
11. Clearly state the return policy for beauty products, including time frames and conditions, to set clear expectations for customers.
12. Process refunds promptly for returned beauty products, ensuring a positive and efficient resolution for customers.
13. Implement robust security measures for customer accounts, including strong password requirements, to safeguard personal information.

14. Allow customers to make beauty product purchases without creating an account, simplifying the checkout process.
15. Ensure promo codes for beauty products are valid and have clear expiration dates, allowing customers to take advantage of discounts.
16. Clearly communicate how discounts for beauty products are applied and calculated, ensuring transparency in pricing.
17. Send timely and relevant email notifications to customers about beauty product order status, promotions, and updates, enhancing customer engagement.
18. Provide easily accessible customer support channels for inquiries and issues related to beauty product purchases, ensuring a responsive and helpful customer service experience.
19. Adhere to all applicable laws and regulations regarding ecommerce, including privacy policies and data protection, to safeguard customer rights and information.
20. Regularly monitor the Im Beauty website performance, track key metrics, and analyse customer behaviour to optimise the user experience continually.
21. Implement systems to track and manage beauty product inventory levels effectively, preventing stockouts and ensuring product availability.
22. Ensure that the Im Beauty website is optimised for various devices, especially mobile phones and tablets, to provide a seamless and responsive user experience.

### 3.2 CONCEPTUAL ERD

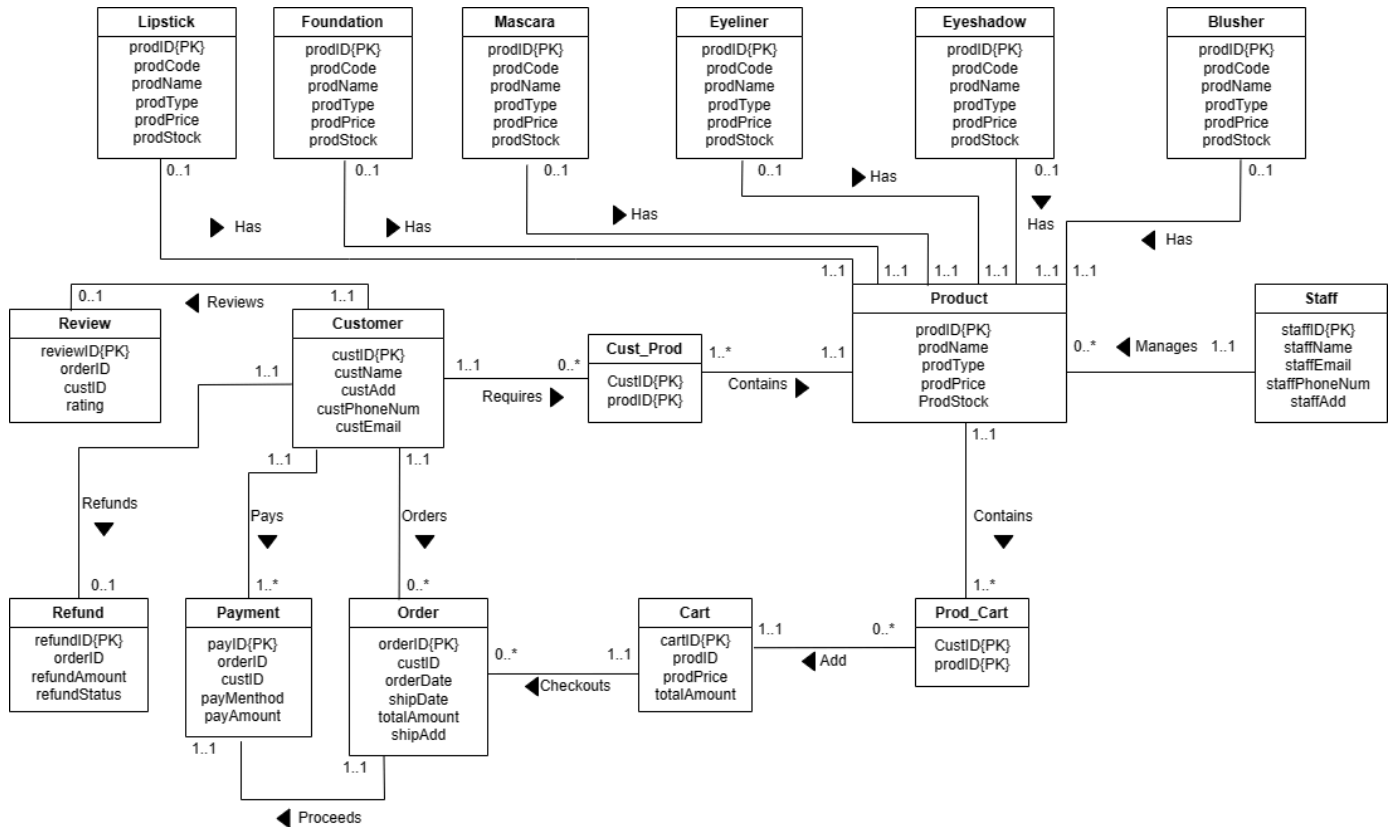
#### IM BEAUTY ERD





## 4.0 DB Logical Design

### 4.1 Logical ERD



## 4.2 Updated Data Dictionary

### 4.2.1 Description of Entity

Entity	Description	Occurrence
Lipstick	Type of cosmetic product	-Customer adds a lipstick to the shopping cart -Customer purchases a lipstick
Foundation	Type of cosmetic product	-Customer adds a foundation to the shopping cart -Customer purchases a foundation
Mascara	Type of cosmetic product	-Customer adds a mascara to the shopping cart -Customer purchases a mascara
Eyeliner	Type of cosmetic product	-Customer adds a eyeliner to the shopping cart -Customer purchases a eyeliner
Eyeshadow	Type of cosmetic product	-Customer adds a eyeshadow to the shopping cart -Customer purchases a eyeshadow
Blusher	Type of cosmetic product	-Customer adds a blusher to the shopping cart -Customer purchases a blusher
Review	Feedback or evaluation on a product	Customer submits a review for a product
Customer	Holds customer information	-Customer give a review -Customer request a refund -Customer makes order

		payment -Customer places an order
Cust_Prod	Customer's purchase history	Customer purchases a product
Product	Cosmetic product's information	Staff updates the cosmetic product inventory
Staff	Holds staff information	Staff manages the product inventory
Refund	Holds refund's transaction	Customers request a refund for a purchased product.
Payment	Holds payment's transaction	Customer makes a payment for an order
Order	Customer's information order	-Customer places an order -Order proceed into payment
Cart	Customer's information cart	-Customer adds products to shopping cart -Customer proceed the check out order item at shopping cart
Prod_Cart	Product in the customer's cart	-Customer adds products to shopping cart -The cart contains of customer's product order

#### 4.2.2 Description of relationship

Entity	Multiplicity	Relationship	Multiplicity	Entity
Customer	1..1	Reviews	0..1	Review
	1..1	Refunds	0..1	Refund
	1..1	Pays	1..*	Payment
	1..1	Orders	0..*	Order
	1..1	Requires	0..*	Cust_Prod
Order	1..1	Proceeds	1..1	Payment
Product	1..1	Has	0..1	Lipstick
	1..1	Has	0..1	Foundation
	1..1	Has	0..1	Mascara
	1..1	Has	0..1	Eyeliners
	1..1	Has	0..1	Eyeshadow
	1..1	Has	0..1	Blusher
	1..1	Contains	1..*	Prod_Cart
Staff	1..1	Manages	0..*	Product
Prod_Cart	0..*	Add	1..1	Cart
Cart	1..1	Checkouts	0..*	Order
Cust_Prod	1..*	Contains	1..1	Product

### 4.2.3 Description of Attributes

Entity	Attributes	Description	Data Type	Null	Multi-Valued
Customer	custID {PK}	Uniquely identify a customer {PK}	VARCHAR2(10)	NO	NO
	custName	Name of customer	VARCHAR2(50)	NO	NO
	custAdd	Address of customer	VARCHAR2(50)	NO	NO
	custPhoneNum	Phone number of customer	VARCHAR2(15)	NO	NO
	custEmail	Email of customer	VARCHAR2(50)	NO	NO
Review	reviewID {PK}	Uniquely identify review by customer {PK}	VARCHAR2(10)	NO	NO
	orderID	Unique identifier for an order	VARCHAR2(10)	NO	NO
	custID	Unique identifier for each customer	VARCHAR2(10)	NO	NO
	rating	Rating associated with a product.	VARCHAR2(1000)	NO	NO
Cust_Prod	custID {PK}	Uniquely identify a customer {PK}	VARCHAR2(10)	NO	NO
	prodID {PK}	Unique identifies each product {PK}	VARCHAR2(10)	NO	NO
Product	prodID {PK}	Unique identifies each product {PK}	VARCHAR2(10)	NO	NO
	prodName	The name of product	VARCHAR2(50)	NO	NO
	prodType	Type / categories of product	VARCHAR2(10)	NO	NO
	prodPrice	The price associated with a product	NUMBER (7,2)	NO	NO
	prodStock	Quantity of the product available in stock	VARCHAR2(1000)	NO	NO
	staffID {PK}	Uniquely identifies each staff member. {PK}	VARCHAR2(10)	NO	NO

Staff	staffName	The name of a staff member	VARCHAR2(50)	NO	NO
	staffEmail	Email address of a staff member	VARCHAR2(50)	NO	NO
	staffPhoneNumber	Phone number of a staff member	VARCHAR2(15)	NO	NO
	staffAdd	Address of a staff member.	VARCHAR2(50)	NO	NO
Lipstick	prodID {PK}	Unique identifies each product {PK}	VARCHAR2(10)	NO	NO
	prodCode	A code associated with a product	VARCHAR2(10)	NO	NO
	prodName	Name of the product	VARCHAR2(50)	NO	NO

	prodType	Type / categories of a product	VARCHAR2(10)	NO	NO
	prodPrice	The price associated with a product	NUMBER(7,2)	NO	NO
	prodStock	Quantity of the product available in stock	VARCHAR2(1000)	NO	NO
Foundation	prodID {PK}	Unique identifies each product {PK}	VARCHAR2(10)	NO	NO
	prodCode	A code associated with a product	VARCHAR2(10)	NO	NO
	prodName	Name of the product	VARCHAR2(50)	NO	NO
	prodType	Type / categories of a product	VARCHAR2(10)	NO	NO
	prodPrice	The price associated with a product	NUMBER(7,2)	NO	NO
	prodStock	Quantity of the product available in stock	VARCHAR2(1000)	NO	NO
	prodID {PK}	Unique identifies each product {PK}	VARCHAR2(10)	NO	NO
	prodCode	A code associated with a product	VARCHAR2(10)	NO	NO

Mascara	prodName	Name of the product	VARCHAR2(50)	NO	NO
	prodType	Type / categories of a product	VARCHAR2(10)	NO	NO
	prodPrice	The price associated with a product	NUMBER(7,2)	NO	NO
	prodStock	Quantity of the product available in stock	VARCHAR2(1000)	NO	NO
Eyeliner	prodID{PK}	Unique identifies each product {PK}	VARCHAR2(10)	NO	NO
	prodCode	A code associated with a product	VARCHAR2(10)	NO	NO
	prodName	Name of the product	VARCHAR2(50)	NO	NO
	prodType	Type / categories of a product	VARCHAR2(10)	NO	NO
	prodPrice	The price associated with a product	NUMBER(7,2)	NO	NO
	prodStock	Quantity of the product available in stock	VARCHAR2(1000)	NO	NO
Eyeshadow	prodID{PK}	Unique identifies each product {PK}	VARCHAR2(10)	NO	NO
	prodCode	A code associated with a product	VARCHAR2(10)	NO	NO
	prodName	Name of the product	VARCHAR2(50)	NO	NO
	prodType	Type / categories of a product	VARCHAR2(10)	NO	NO
	prodPrice	The price associated with a product	NUMBER(7,2)	NO	NO
		Quantity of the product available in stock	VARCHAR2(1000)	NO	NO

	prodStock				
	prodID{PK}	Unique identifies each product {PK}	VARCHAR2(10)	NO	NO
	prodCode	A code associated with a	VARCHAR2(10)	NO	NO

Blusher		product			
	prodName	Name of the product	VARCHAR2(50)	NO	NO
	prodType	Type / categories of a product	VARCHAR2(10)	NO	NO
	prodPrice	The price associated with a product	NUMBER(7,2)	NO	NO
	prodStock	Quantity of the product available in stock	VARCHAR2(1000)	NO	NO
Refund	refundID {PK}	Uniquely identifies each refund transaction {PK}	VARCHAR2(10)	NO	NO
	orderId	Establishes a relationship with the order entity.	VARCHAR2(10)	NO	NO
	refundAmount	The amount refunded in the transaction.	NUMBER(7,2)	NO	NO
	refundStatus	Status of refund like pending , processed / completed.	VARCHAR2(15)	NO	NO
Payment	payID {PK}	Uniquely identifies each payment transaction {PK}	VARCHAR2(10)	NO	NO
	orderId	Established a relationship with the order entity.	VARCHAR2(10)	NO	NO
	custID	Established a relationship with the customer entity.	VARCHAR2(10)	NO	NO
	payMethod	The method that is used for a payment like credit card / cash.	VARCHAR2(20)	NO	NO
	payAmount	The amount paid in the transaction.	NUMBER(7,2)	NO	NO
Order	orderId {PK}	Uniquely identifies each order {PK}	VARCHAR2(10)	NO	NO
	custID	Established a relationship with a customer entity.	VARCHAR2(10)	NO	NO
	orderDate	The date when the order was placed	DATE	NO	NO



	shipDate	The date when the order was shipped	DATE	NO	NO
	totalAmount	The total amount for the order.	NUMBER(7,2)	NO	NO
	shipAdd	The shipping address for the order	VARCHAR2(1000)	NO	NO
Cart	cartID {PK}	Uniquely identifies each shopping cart. {PK}	VARCHAR2(10)	NO	NO
	prodID	Associated with the shopping cart.	VARCHAR2(10)	NO	NO
	prodPrice	The price of the product	NUMBER(7,2)	NO	NO
	totalAmount	The total amount associated with the shopping cart.	NUMBER(7,2)	NO	NO
Prod_Cart	custID {PK}	Uniquely identifies each customer {PK}	VARCHAR2(10)	NO	NO
	prodID {PK}	Uniquely identifies each product {PK}	VARCHAR2(10)	NO	NO

### 4.3 Normalization

#### 1. Lipstick

Lipstick(prodID, prodCode, prodName, prodType, prodPrice, prodStock)

**1NF, 2NF, 3NF & BCNF**

Lipstick(prodID, prodCode, prodName, prodType, prodPrice, prodStock)

#### 2. Foundation

Foundation(prodID, prodCode, prodName, prodType, prodPrice, prodStock)

**1NF, 2NF, 3NF & BCNF**

Lipstick(prodID, prodCode, prodName, prodType, prodPrice, prodStock)

#### 3. Mascara

Mascara(prodID, prodCode, prodName, prodType, prodPrice, prodStock)

**1NF, 2NF, 3NF & BCNF**

Lipstick(prodID, prodCode, prodName, prodType, prodPrice, prodStock)

#### 4. Eyeliner

Eyeliner(prodID, prodCode, prodName, prodType, prodPrice, prodStock)

**1NF, 2NF, 3NF & BCNF**

Eyeliner(prodID, prodCode, prodName, prodType, prodPrice, prodStock)

#### 5. Eyeshadow

Eyeshadow(prodID, prodCode, prodName, prodType, prodPrice, prodStock)

**1NF, 2NF, 3NF & BCNF**

Eyeshadow(prodID, prodCode, prodName, prodType, prodPrice, prodStock)

## 6. Blush

Blush(prodID, prodCode, prodName, prodType, prodPrice, prodStock)

**1NF, 2NF, 3NF & BCNF**

Blush(prodID, prodCode, prodName, prodType, prodPrice, prodStock)

## 7. Review

Review(reviewID, orderID, custID, prodID, rating)

**FD1: reviewID → orderID, custID, prodID, rating**

**FD2: custID → custName, custAdd, custPhoneNum, custEmail**

**FD3: prodID → prodName, prodType, prodPrice, prodStock**

**1NF & 2NF**

Review(reviewID, orderID, custID, prodID, rating)

**3NF & BCNF**

Review(reviewID, orderID, custID, prodID, rating)

Customer(custID, custName, custAdd, custPhoneNum, custEmail)

Product(prodID, prodName, prodType, prodPrice, prodStock)

## 8. Customer

Customer(custID, custName, custAdd, custPhoneNum, custEmail)

**FD1: custID → custName, custAdd, custPhoneNum, custEmail**

**1NF, 2NF, 3NF & BCNF**

Customer(custID, custName, custAdd, custPhoneNum, custEmail)

## 9. Cust\_prod

Cust\_Prod(custID, prodID)

**FD1: (custID, prodID) → null**

**1NF, 2NF, 3NF, and BCNF:**

Cust\_Prod(custID, prodID)

## 10. Product

Product(prodID, prodName, prodType, prodPrice, prodStock, prodCategory, prodImage)

**FD1: prodID → prodName, prodType, prodPrice, prodStock, prodCategory, prodImage**

**1NF, 2NF, 3NF, and BCNF:**

Product(prodID, prodName, prodType, prodPrice, prodStock, prodCategory, prodImage)

## 11. Staff

Staff(staffID, staffName, staffEmail, staffPhoneNum, staffAdd)

**FD1: staffID → staffName, staffEmail, staffPhoneNum, staffAdd**

**1NF, 2NF, 3NF, and BCNF:**

Staff(staffID, staffName, staffEmail, staffPhoneNum, staffAdd)

## 12. Refund

Refund(refundID(PK), orderID, custID, refundAmount, refundStatus)

**FD1: refundID → orderID, custID, refundAmount, refundStatus**

**1NF, 2NF, 3NF, and BCNF:**

Refund(refundID(PK), orderID, custID, refundAmount, refundStatus)

### 13. Payment

Payment(paymentID(PK), orderID, custID, payMethod, payAmount)

**FD1: paymentID  $\rightarrow$  orderID, custID, payMethod, payAmount**

**1NF, 2NF, 3NF, and BCNF:**

Payment(paymentID(PK), orderID, custID, payMethod, payAmount)

### 14. Order

Order(orderID(PK), custID, orderDate, totalAmount, shipAdd, shipDate)

**FD1: orderID  $\rightarrow$  custID, orderDate, totalAmount, shipAdd, shipDate**

**1NF, 2NF, 3NF, and BCNF:**

Order(orderID(PK), custID, orderDate, totalAmount, shipAdd, shipDate)

### 15. Cart

Cart(cartID(PK), prodID, prodQty, totalAmount)

**FD1: cartID  $\rightarrow$  prodID, prodQty, totalAmount**

**1NF, 2NF, 3NF, and BCNF:**

Cart(cartID(PK), prodID, prodQty, totalAmount)

### 16. Prod\_cart

Prod\_Cart(CustID(PK), prodID(PK))

**FD1: CustID  $\rightarrow$  prodID**

**FD2: prodID  $\rightarrow$  CustID**

**1NF, 2NF, 3NF, and BCNF:**

Prod\_Cart(CustID(PK), prodID(PK))

## 5.0 RELATIONAL DB SCHEMAS

Staff (staffID, staffName, staffEmail, staffPhoneNum, staffAdd)

Customer (custID, custName, custEmail, custPhoneNum, custAdd)

Product (prodID, prodName, prodType, prodPrice, prodStock, prodCode)

Cart (cartID, prodID, prodPrice, totalAmount)

Order (orderID, custID, orderDate, shipDate, totalAmount, shipAdd)

Payment (payID, orderID, custID, payMethod, payAmount)

Refund (refundID, orderID, refundAmount, refundStatus)

Review (reviewID, prodID, custID, rating)

Staff

staffID	staffName	staffEmail	staffPhoneNum	staffAdd
---------	-----------	------------	---------------	----------

Customer

custID	custName	custEmail	custPhoneNum	custAdd
--------	----------	-----------	--------------	---------

Product

prodID	prodName	prodType	prodPrice	prodStock	prodCode
--------	----------	----------	-----------	-----------	----------

## Cart

cartID	prodID	prodPrice	totalAmount
--------	--------	-----------	-------------

## Order

orderID	custID	orderDate	shipDate	totalAmount	shipAdd
---------	--------	-----------	----------	-------------	---------

## Payment

payID	orderID	custID	payMethod	payAmount
-------	---------	--------	-----------	-----------

## Refund

refundID	orderID	refundAmount	refundStatus
----------	---------	--------------	--------------

## Review

reviewID	prodID	custID	rating
----------	--------	--------	--------

## 6.0 SQL STATEMENTS (DDL & DML)

### Data Definition Language (DDL)

```
CREATE TABLE STAFF (  
    STAFFID VARCHAR2(5) PRIMARY KEY,  
    STAFFNAME VARCHAR2(50) NOT NULL,  
    STAFFEMAIL VARCHAR2(50) NOT NULL,  
    STAFFPHONENUM VARCHAR2(15) NOT NULL,  
    STAFFADD VARCHAR2(50)  
);
```

```
CREATE TABLE CUSTOMER (  
    CUSTID VARCHAR2(10) PRIMARY KEY,  
    CUSTNAME VARCHAR2(50) NOT NULL,  
    CUSTEMAIL VARCHAR2(50) NOT NULL,  
    CUSTPHONENUM VARCHAR2(15) NOT NULL,  
    CUSTADD VARCHAR2(100) NOT NULL  
);
```

```
CREATE TABLE PRODUCT (  
    PRODID VARCHAR2(10) PRIMARY KEY,  
    PRODNAME VARCHAR2(50) NOT NULL,  
    PRODTYPE VARCHAR2(10),  
    PRODPRICE NUMBER(7,2) NOT NULL,  
    PRODSTOCK VARCHAR2(1000) NOT NULL,  
    PRODCODE VARCHAR2(10) NOT NULL  
);
```



```
CREATE TABLE CART (  
    ORDERID VARCHAR2(10) PRIMARY KEY,  
    CUSTID VARCHAR2(10) NOT NULL,  
    ORDERDATE DATE NOT NULL,  
    SHIPDATE DATE NOT NULL,  
    TOTALAMOUNT NUMBER(7,2) NOT NULL,  
    SHIPADD VARCHAR2(50)  
);
```

```
CREATE TABLE ORDERS (  
    ORDERID VARCHAR2(10) PRIMARY KEY,  
    CUSTID VARCHAR2(10) NOT NULL,  
    ORDERDATE DATE NOT NULL,  
    SHIPDATE DATE NOT NULL,  
    TOTALAMOUNT NUMBER(7,2) NOT NULL,  
    SHIPADD VARCHAR2(1000) NOT NULL  
);
```

```
CREATE TABLE PAYMENT (  
    PAYID VARCHAR2(10) PRIMARY KEY,  
    ORDERID VARCHAR2(10) NOT NULL,  
    CUSTID VARCHAR2(10) NOT NULL,  
    PAYMETHOD VARCHAR2(20) NOT NULL,  
    PAYAMOUNT NUMBER(7,2) NOT NULL  
);
```

```
CREATE TABLE REFUND (  
    REFUNDID VARCHAR2(10) PRIMARY KEY,  
    ORDERID VARCHAR2(10) NOT NULL,  
    REFUNDAMOUNT NUMBER(7,2) NOT NULL,  
    REFUNDSTATUS VARCHAR2(15) NOT NULL  
);
```

```
CREATE TABLE REVIEW (  
    REVIEWID VARCHAR2(10) PRIMARY KEY,  
    PRODID VARCHAR2(10) NOT NULL,  
    CUSTID VARCHAR2(10) NOT NULL,  
    RATING VARCHAR2(1000) NOT NULL  
);
```

### Data Manipulation Language (DML)

INSERT INTO STAFF

VALUES ('IB001', 'Zulaikha Arshad', 'zuzu13@gmail.com', '0175682563', 'Kampung Sungai Baru');

INSERT INTO STAFF

VALUES ('IB002', 'Iman Qurni', 'arman07@gmail.com', '0173273911', 'Taman Kasturi Jaya');

INSERT INTO STAFF

VALUES ('IB010', 'Lim Kook Jin', 'cumi\_imu@yahoo.com', '011720036199', 'Kampung Berjaya');

INSERT INTO STAFF

VALUES ('IB025', 'Qaisara Rusli', 'qq4u@gmail.com', '0142631142', 'Flat Titiwangsa Aman');

INSERT INTO STAFF

VALUES ('IB003', 'Hasif Sulaiman', 'sulaiman123@gmail.com', '0198756298', 'Kampung Putra');

INSERT INTO CUSTOMER

VALUES ('CIB0000023', 'Sharifah Naura', 'sharnau@yahoo.com', '0198357829', 'Taman Selayang 02100 Perlis');

INSERT INTO CUSTOMER

VALUES ('CIB0000027', 'Nurin Arisha Rhaudah', 'nara256@yahoo.com', '01702739374', 'Flat Saujana Indah 05100 Alor Setar');

INSERT INTO CUSTOMER

VALUES ('CIB0000143', 'Ainnur Maisara', 'mamaii@gmail.com', '01177258363', 'Taman Teknologi 14200 Pulau Pinang');

INSERT INTO CUSTOMER

VALUES ('CIB0000033', 'Afiq Hazim', 'afqhz02@yahoo.com', '0136829754', 'Kampung Sepakat 17200 Kelantan');

INSERT INTO CUSTOMER

VALUES ('CIB0000045', 'Nur Husnina', 'husnina.nur@yahoo.com', '0179203567', 'kampung Bersatu 21300 Terengganu');

INSERT INTO CUSTOMER

VALUES ('CIB0000078', 'Tharehney', 'thrhny@yahoo.com', '01682936883', 'Taman Indah 27150 Pahang');

INSERT INTO CUSTOMER

VALUES ('CIB0000004', 'Muhammad Umar', '45ramu@yahoo.com', '0119269023', 'Taman Mekar 31600 Perak');

INSERT INTO CUSTOMER

VALUES ('CIB0000201', 'Ku Tajuddin', 'kudin\_me@gmail.com', '0127629364', 'Kampung Permai 4500 Selangor');

INSERT INTO CUSTOMER

VALUES ('CIB0000007', 'Irdina Imani', 'imanina22@yahoo.com', '0163844037', 'Apartment Seri 50000 Kuala Lumpur');

INSERT INTO CUSTOMER

VALUES ('CIB0000034', 'Baek Yi Jin', 'byj2521@yahoo.com', '0157293562', 'Flat haji Kassim 71050 Negeri Sembilan');

```
INSERT INTO PRODUCT
VALUES ('PIB0002002', 'Maybelline', 'Lipstick', 30.00, '155', '05');
INSERT INTO PRODUCT
VALUES ('PIB0002003', 'Revlon', 'Blush', 25.50, '120', '03');
INSERT INTO PRODUCT
VALUES ('PIB0002004', 'Silkygirl', 'Eyeliner', 28.75, '180', '02');
INSERT INTO PRODUCT
VALUES ('PIB0002005', 'Wardah', 'Foundation', 34.99, '200', '08');
INSERT INTO PRODUCT
VALUES ('PIB0002006', 'Rimmel', 'Mascara', 18.50, '90', '10');
INSERT INTO PRODUCT
VALUES ('PIB0002007', 'Maybelline', 'Eyeshadow', 42.00, '150', '12');
```

INSERT INTO CART

VALUES ('CIB0007893', 'PIB0002002', TO\_DATE('25-Dec-2023 17:01:00', 'DD-Mon-YYYY HH24:MI:SS'), TO\_DATE('26-Dec-2023 08:05:00', 'DD-Mon-YYYY HH24:MI:SS'), 30.00, 'Taman Selayang 02100 Perlis');

INSERT INTO CART

VALUES ('CIB0007894', 'PIB0002003', TO\_DATE('27-Dec-2023 10:30:00', 'DD-Mon-YYYY HH24:MI:SS'), TO\_DATE('28-Dec-2023 09:15:00', 'DD-Mon-YYYY HH24:MI:SS'), 25.50, 'Jalan Merdeka 03200 Selangor');

INSERT INTO CART

VALUES ('CIB0007895', 'PIB0002004', TO\_DATE('29-Dec-2023 14:45:00', 'DD-Mon-YYYY HH24:MI:SS'), TO\_DATE('30-Dec-2023 11:20:00', 'DD-Mon-YYYY HH24:MI:SS'), 28.75, 'Lorong Indah 01100 Penang');

INSERT INTO CART

VALUES ('CIB0007896', 'PIB0002005', TO\_DATE('31-Dec-2023 18:00:00', 'DD-Mon-YYYY HH24:MI:SS'), TO\_DATE('01-Jan-2024 08:30:00', 'DD-Mon-YYYY HH24:MI:SS'), 34.99, 'Jalan Bahagia 04100 Kelantan');

INSERT INTO CART

VALUES ('CIB0007897', 'PIB0002006', TO\_DATE('02-Jan-2024 12:15:00', 'DD-Mon-YYYY HH24:MI:SS'), TO\_DATE('03-Jan-2024 07:45:00', 'DD-Mon-YYYY HH24:MI:SS'), 18.50, 'Jalan Seri 02200 Terengganu');

INSERT INTO CART

VALUES ('CIB0007898', 'PIB0002007', TO\_DATE('04-Jan-2024 16:30:00', 'DD-Mon-YYYY HH24:MI:SS'), TO\_DATE('05-Jan-2024 10:10:00', 'DD-Mon-YYYY HH24:MI:SS'), 42.00, 'Lebuhraya Ria 05100 Perak');

INSERT INTO ORDERS

VALUES ('OIB2001081', 'CIB0000023', TO\_DATE('25-Dec-2023 17:01:00', 'DD-Mon-YYYY HH24:MI:SS'), TO\_DATE('26-Dec-2023 08:05:00', 'DD-Mon-YYYY HH24:MI:SS'), 30.00, 'Taman Selayang 02100 Perlis');

INSERT INTO ORDERS

VALUES ('OIB2001082', 'CIB0000024', TO\_DATE('27-Dec-2023 10:30:00', 'DD-Mon-YYYY HH24:MI:SS'), TO\_DATE('28-Dec-2023 09:15:00', 'DD-Mon-YYYY HH24:MI:SS'), 25.50, 'Jalan Merdeka 03200 Selangor');

INSERT INTO ORDERS

VALUES ('OIB2001083', 'CIB0000025', TO\_DATE('29-Dec-2023 14:45:00', 'DD-Mon-YYYY HH24:MI:SS'), TO\_DATE('30-Dec-2023 11:20:00', 'DD-Mon-YYYY HH24:MI:SS'), 28.75, 'Lorong Indah 01100 Penang');

INSERT INTO ORDERS

VALUES ('OIB2001084', 'CIB0000026', TO\_DATE('31-Dec-2023 18:00:00', 'DD-Mon-YYYY HH24:MI:SS'), TO\_DATE('01-Jan-2024 08:30:00', 'DD-Mon-YYYY HH24:MI:SS'), 34.99, 'Jalan Bahagia 04100 Kelantan');

INSERT INTO ORDERS

VALUES ('OIB2001085', 'CIB0000027', TO\_DATE('02-Jan-2024 12:15:00', 'DD-Mon-YYYY HH24:MI:SS'), TO\_DATE('03-Jan-2024 07:45:00', 'DD-Mon-YYYY HH24:MI:SS'), 18.50, 'Jalan Seri 02200 Terengganu');

INSERT INTO ORDERS

VALUES ('OIB2001086', 'CIB0000028', TO\_DATE('04-Jan-2024 16:30:00', 'DD-Mon-YYYY HH24:MI:SS'), TO\_DATE('05-Jan-2024 10:10:00', 'DD-Mon-YYYY HH24:MI:SS'), 42.00, 'Lebuhraya Ria 05100 Perak');

```
INSERT INTO PAYMENT
VALUES ('PY00027819', 'OIB2001081', 'CIB0000023', 'Online Banking', 30.00);
INSERT INTO PAYMENT
VALUES ('PY00027820', 'OIB2001082', 'CIB0000024', 'Online Banking', 25.50);
INSERT INTO PAYMENT
VALUES ('PY00027821', 'OIB2001083', 'CIB0000025', 'Online Banking', 28.75);
INSERT INTO PAYMENT
VALUES ('PY00027822', 'OIB2001084', 'CIB0000026', 'Online Banking', 34.99);
INSERT INTO PAYMENT
VALUES ('PY00027823', 'OIB2001085', 'CIB0000027', 'Online Banking', 18.50);
INSERT INTO PAYMENT
VALUES ('PY00027824', 'OIB2001086', 'CIB0000028', 'Online Banking', 42.00);
```



```
INSERT INTO REFUND
VALUES ('RF00829102', 'OIB2839160', 25.50, 'SUCCESS');
INSERT INTO REFUND
VALUES ('RF00829103', 'OIB2001082', 28.75, 'PROCESSING');
INSERT INTO REFUND
VALUES ('RF00829104', 'OIB2001083', 34.99, 'PENDING');
INSERT INTO REFUND
VALUES ('RF00829105', 'OIB2001084', 18.50, 'REJECTED');
```

INSERT INTO REVIEW

VALUES ('RE00067190', 'PIB0001008', 'CIB0000079', 'Hai korang, korang kena beli dengan seller ni sebab barang diorang semua authentic');

INSERT INTO REVIEW

VALUES ('RE00067191', 'PIB0002002', 'CIB0000023', 'Great product! I love the color and texture.');

INSERT INTO REVIEW

VALUES ('RE00067192', 'PIB0002003', 'CIB0000024', 'Fast delivery and excellent customer service.');

INSERT INTO REVIEW

VALUES ('RE00067193', 'PIB0002004', 'CIB0000025', 'The quality is outstanding, worth every penny!');

## 6.1 TEST QUERY

### 1. View Staff Information

```
SELECT *  
  
FROM STAFF;
```

STAFFID	STAFFNAME	STAFFEMAIL	STAFFPHONENUM	STAFFADD
IB001	Zulaikha Arshad	zuzu13@gmail.com	0175682563	Kampung Sungai Baru
IB002	Iman Qurni	arman07@gmail.com	0173273911	Taman Kasturi Jaya
IB010	Lim Kook Jin	cumi_imu@yahoo.com	011720036199	Kampung Berjaya
IB025	Qaisara Rusli	qq4u@gmail.com	0142631142	Flat Titiwangsa Aman
IB003	Hasif Sulaiman	sulaiman123@gmail.com	0198756298	Kampung Putra

### 2. View Customer Information

```
SELECT *  
  
FROM CUSTOMER;
```

CUSTID	CUSTNAME	CUSTEMAIL	CUSTPHONENUM	CUSTADD
CIB0000023	Sharifah Naura	sharrnau@yahoo.com	0198357829	Taman Selayang 02100 Perlis
CIB0000027	Nurin Arisha Rhaudah	nara256@yahoo.com	01702739374	Flat Saujana Indah 05100 Alor Setar
CIB0000143	Ainnur Maisara	mamail@gmail.com	01177258363	Taman Teknologi 14200 Pulau Pinang
CIB0000033	Afiq Hazim	afqhm02@yahoo.com	0136829754	Kampung Sepakat 17200 Kelantan
CIB0000045	Nur Husnina	husnina.nur@yahoo.com	0179203567	kampung Bersatu 21300 Terengganu
CIB0000078	Tharehney	thrhny@yahoo.com	01682936883	Taman Indah 27150 Pahang
CIB0000004	Muhammad Umar	45ramu@yahoo.com	0119269023	Taman Mekar 31600 Perak
CIB0000201	Ku Tajuddin	kudin_me@gmail.com	0127629364	Kampung Permai 4500 Selangor
CIB0000007	Irdina Imani	imanina22@yahoo.com	0163844037	Apartment Seri 50000 Kuala Lumpur
CIB0000034	Baek Yi Jin	byj2521@yahoo.com	0157293562	Flat haji Kassim 71050 Negeri Sembilan

### 3. Delete One Customer's Data

```
DELETE FROM CUSTOMER  
WHERE CUSTID = 'CIB0000201';
```

CUSTID	CUSTNAME	CUSTEMAIL	CUSTPHONENUM	CUSTADD
CIB0000023	Sharifah Naura	sharrnau@yahoo.com	0198357829	Taman Selayang 02100 Perlis
CIB0000027	Nurin Arisha Rhaudah	nara256@yahoo.com	01702739374	Flat Saujana Indah 05100 Alor Setar
CIB0000143	Ainnur Maisara	mamaii@gmail.com	01177258363	Taman Teknologi 14200 Pulau Pinang
CIB0000033	Afiq Hazim	afqhz02@yahoo.com	0136829754	Kampung Sepakat 17200 Kelantan
CIB0000045	Nur Husnina	husnina.nur@yahoo.com	0179203567	kampung Bersatu 21300 Terengganu
CIB0000078	Tharehney	thrhny@yahoo.com	01682936883	Taman Indah 27150 Pahang
CIB0000004	Muhammad Umar	45ramu@yahoo.com	0119269023	Taman Mekar 31600 Perak
CIB0000007	Irdina Imani	imanina22@yahoo.com	0163844037	Apartment Seri 50000 Kuala Lumpur
CIB0000034	Baek Yi Jin	byj2521@yahoo.com	0157293562	Flat haji Kassim 71050 Negeri Sembilan

### 4. View Product Information

```
SELECT *  
FROM PRODUCT;
```

PRODID	PRODNAME	PRODTYPE	PRODPRICE	PRODSTOCK	PRODCODE
PIB0002002	Maybelline	Lipstick	30	155	05
PIB0002003	Revlon	Blush	25.5	120	03
PIB0002004	Silkygirl	Eyeliners	28.75	180	02
PIB0002005	Wardah	Foundation	34.99	200	08
PIB0002006	Rimmel	Mascara	18.5	90	10
PIB0002007	Maybelline	Eyeshadow	42	150	12

## 5. View Product That Starts With 'E'

```
SELECT *  
FROM PRODUCT  
WHERE PRODTYPE LIKE 'E%';
```

PRODID	PRODNAME	PRODTYPE	PRODPRICE	PRODSTOCK	PRODCODE
PIB0002004	Silkygirl	Eyelineer	28.75	180	02
PIB0002007	Maybelline	Eyeshadow	42	150	12

## 6. View Cart Information

```
SELECT *  
FROM CART;
```

ORDERID	CUSTID	ORDERDATE	SHIPDATE	TOTALAMOUNT	SHIPADD
CIB0007893	PIB0002002	25-DEC-23	26-DEC-23	30	Taman Selayang 02100 Perlis
CIB0007894	PIB0002003	27-DEC-23	28-DEC-23	25.5	Jalan Merdeka 03200 Selangor
CIB0007895	PIB0002004	29-DEC-23	30-DEC-23	28.75	Lorong Indah 01100 Penang
CIB0007896	PIB0002005	31-DEC-23	01-JAN-24	34.99	Jalan Bahagia 04100 Kelantan
CIB0007897	PIB0002006	02-JAN-24	03-JAN-24	18.5	Jalan Seri 02200 Terengganu
CIB0007898	PIB0002007	04-JAN-24	05-JAN-24	42	Lebuhraya Ria 05100 Perak

## 7. View Orders Information

```
SELECT *  
  
FROM ORDERS;
```

ORDERID	CUSTID	ORDERDATE	SHIPDATE	TOTALAMOUNT	SHIPADD
OIB2001081	CIB0000023	25-DEC-23	26-DEC-23	30	Taman Selayang 02100 Perlis
OIB2001082	CIB0000024	27-DEC-23	28-DEC-23	25.5	Jalan Merdeka 03200 Selangor
OIB2001083	CIB0000025	29-DEC-23	30-DEC-23	28.75	Lorong Indah 01100 Penang
OIB2001084	CIB0000026	31-DEC-23	01-JAN-24	34.99	Jalan Bahagia 04100 Kelantan
OIB2001085	CIB0000027	02-JAN-24	03-JAN-24	18.5	Jalan Seri 02200 Terengganu
OIB2001086	CIB0000028	04-JAN-24	05-JAN-24	42	Lebuhraya Ria 05100 Perak

## 8. View Orders On 2024

```
SELECT *  
  
FROM ORDERS  
  
WHERE ORDERDATE >= TO_DATE('01-Jan-2024', 'DD-Mon-YYYY')  
AND ORDERDATE < TO_DATE('01-Jan-2025', 'DD-Mon-YYYY');
```

ORDERID	CUSTID	ORDERDATE	SHIPDATE	TOTALAMOUNT	SHIPADD
OIB2001085	CIB0000027	02-JAN-24	03-JAN-24	18.5	Jalan Seri 02200 Terengganu
OIB2001086	CIB0000028	04-JAN-24	05-JAN-24	42	Lebuhraya Ria 05100 Perak

## 9. View Payment Information

```
SELECT *  
  
FROM PAYMENT;
```

PAYID	ORDERID	CUSTID	PAYMETHOD	PAYAMOUNT
PY00027819	OIB2001081	CIB0000023	Online Banking	30
PY00027820	OIB2001082	CIB0000024	Online Banking	25.5
PY00027821	OIB2001083	CIB0000025	Online Banking	28.75
PY00027822	OIB2001084	CIB0000026	Online Banking	34.99
PY00027823	OIB2001085	CIB0000027	Online Banking	18.5
PY00027824	OIB2001086	CIB0000028	Online Banking	42

## 10. View Payment via Online Banking

```
SELECT *  
  
FROM PAYMENT  
  
WHERE PAYMETHOD = 'Online Banking';
```

PAYID	ORDERID	CUSTID	PAYMETHOD	PAYAMOUNT
PY00027819	OIB2001081	CIB0000023	Online Banking	30
PY00027820	OIB2001082	CIB0000024	Online Banking	25.5
PY00027821	OIB2001083	CIB0000025	Online Banking	28.75
PY00027822	OIB2001084	CIB0000026	Online Banking	34.99
PY00027823	OIB2001085	CIB0000027	Online Banking	18.5
PY00027824	OIB2001086	CIB0000028	Online Banking	42

### 11. View Refund Information

```
SELECT REFUNDID, ORDERID, REFUNDAMOUNT, REFUNDSTATUS  
FROM REFUND;
```

REFUNDID	ORDERID	REFUNDAMOUNT	REFUNDSTATUS
RF00829102	OIB2839160	25.5	SUCCESS
RF00829103	OIB2001082	28.75	PROCESSING
RF00829104	OIB2001083	34.99	PENDING
RF00829105	OIB2001084	18.5	REJECTED

### 12. Success Refund

```
SELECT *  
FROM REFUND  
WHERE REFUNDSTATUS = 'SUCCESS';
```

REFUNDID	ORDERID	REFUNDAMOUNT	REFUNDSTATUS
RF00829102	OIB2839160	25.5	SUCCESS

### 13. View Review Information

```
SELECT REVIEWID, PROPID, CUSTID, RATING  
FROM REVIEW;
```

REVIEWID	PROPID	CUSTID	RATING
RE00067190	PIB0001008	CIB0000079	Hai korang, korang kena beli dengan seller ni sebab barang diorang semua authentic
RE00067191	PIB0002002	CIB0000023	Great product! I love the color and texture.
RE00067192	PIB0002003	CIB0000024	Fast delivery and excellent customer service.
RE00067193	PIB0002004	CIB0000025	The quality is outstanding, worth every penny!



#### 14. View Review from One Customer

```
SELECT *  
FROM REVIEW  
WHERE CUSTID = 'CIB0000023';
```

REVIEWID	PRODID	CUSTID	RATING
RE00067191	PIB0002002	CIB0000023	Great product! I love the color and texture.

#### 15. Delete One Review's Data

```
DELETE FROM REVIEW  
WHERE REVIEWID = 'RE00067192';
```

REVIEWID	PRODID	CUSTID	RATING
RE00067190	PIB0001008	CIB0000079	Hai korang, korang kena beli dengan seller ni sebab barang diorang semua authentic
RE00067191	PIB0002002	CIB0000023	Great product! I love the color and texture.
RE00067193	PIB0002004	CIB0000025	The quality is outstanding, worth every penny!

#### 16. Update Product Name

```
UPDATE PRODUCT  
SET PRODNAME = 'Emina'  
WHERE PRODID = 'PIB0002003';
```

PRODID	PRODNAME	PRODTYPE	PRODPRICE	PRODSTOCK	PRODCODE
PIB0002002	Maybelline	Lipstick	30	155	05
PIB0002003	Emina	Blush	25.5	120	03
PIB0002004	Silkygirl	Eyeliners	28.75	180	02
PIB0002005	Wardah	Foundation	34.99	200	08
PIB0002006	Rimmel	Mascara	18.5	90	10
PIB0002007	Maybelline	Eyeshadow	42	150	12

## **7.0 SUMMARY**

As a conclusion, Phase 3 of this project focuses on creating a relational schema, optimising a conceptual Entity-Relationship Diagram, and completing normalisation. Three main deliverables are a validated system that satisfies the transaction criteria, an updated data dictionary, and the finished Logical ERD. With an emphasis on usability and ease of use, this project aims to provide a modernised online ordering system for cosmetics. The project, which has a dedicated staff, seeks to provide a modern, effective solution that meets the changing needs of consumers in the cosmetics sector.