UNIVERSITI TEKNOLOGI MALAYSIA

SEMESTER 1, SESSION 2023/2024

PROJECT PHASE 2

SECD2523 : DATABASE

SECTION 10

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1.0 INTRODUCTION

The online cosmetic ordering system proves to be a sophisticated solution that caters to the changing needs of beauty enthusiasts in a time when convenience is of the essence and digital transformation is constantly changing consumer experiences. This system offers consumers an easy-to-use platform to browse, choose, and buy a wide range of cosmetic products from the comfort of their homes by seamlessly fusing technology and business.

In order to provide a pleasurable consumer experience, this Digital Cosmetic Emporium provides an online cosmetic ordering system that synchronizes a harmonious symphony of procedures. By utilizing e-commerce, the system ensures efficiency, accuracy, and transparency at every stage of the process, from product selection to doorstep delivery.

The extensive network of contacts between customers, the online cosmetic ordering system, payment gateways, inventory management, and the shipping system is mapped out in a Data Flow Diagram (DFD), which acts as a visual roadmap. This paper reveals the inner workings of the to-be system, showing how data moves smoothly and synchronizes many procedures to successfully fulfill cosmetic requests.
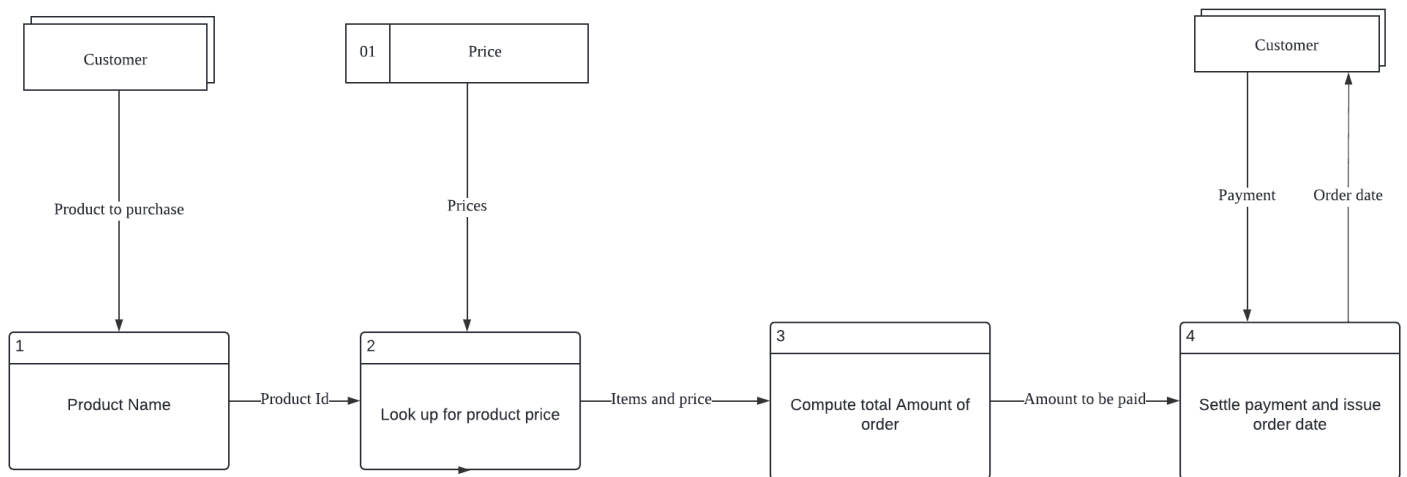
We take a tour of the customer's selection process as we go into the DFD, seeing how safe payment methods are integrated, inventory levels are carefully monitored, and shipping logistics are expertly planned. This sophisticated solution guarantees that the Digital Cosmetic Emporium runs precisely and nimbly while also improving the user experience and optimizing backend operations.

We examine each layer of the DFD in the following sections, breaking down the procedures that go into making the online cosmetic buying system work as a whole. This DFD highlights the core of an innovative, customer-centric online cosmetic ordering system that is poised to alter the beauty retail landscape, from the customer's initial encounter with the platform to the backend procedures controlling inventory and logistics.

2.0 DFD (to-be)

LOGICAL DFD

LOGICAL DFD

| | Customer | | | 01 | Price | |

Product to purchase

Prices

Payment   Order date

| 1 | | 2 | | 3 | | 4 |

Product Name —Product Id→ Look up for product price —Items and price→ Compute total Amount of order —Amount to be paid→ Settle payment and issue order date

3.0 DATA & TRANSACTION REQUIREMENT

3.1 PROPOSED BUSINESS RULE

1. Ensure that product descriptions, prices, and images are accurate and up-to-date.

2. Display only products that are in stock and remove or mark items as out of stock when inventory is depleted.

3. Maintain consistent pricing across all channels and platforms.

4. Clearly display prices in the local currency and include taxes if applicable.

5. Send an immediate confirmation email to customers after they place an order.

6. Allow customers to edit or cancel orders within a reasonable time frame before shipping.

7. Ensure secure payment processing using SSL certificates and comply with industry standards.

8. Provide multiple payment options, such as credit cards, digital wallets, and other popular methods.

9. Clearly communicate shipping costs before the checkout process.

10. Offer various shipping methods with estimated delivery times.

11. Clearly state the return policy, including time frames and conditions.

12. Process refunds promptly after receiving returned items.

13. Implement robust security measures for customer accounts, including strong password requirements.

14. Allow customers to make purchases without creating an account.

15. Ensure promo codes are valid and have clear expiration dates.

16. Clearly communicate how discounts are applied and calculated.

17. Send timely and relevant email notifications about order status, promotions, and updates.

18. Provide easily accessible customer support channels for inquiries and issues.

19. Adhere to all applicable laws and regulations regarding ecommerce, including privacy policies and data protection.

20. Regularly monitor website performance, track key metrics, and analyse customer behaviour.

21. Implement systems to track and manage inventory levels effectively.

22. Ensure that the website is optimised for various devices, especially mobile phones and tablets.

3.2 PROPOSED DATA

Staff

The data stored includes staff ID, staff name, staff email, staff's phone number and staff address. The staff ID is unique. In this project staff manages all the products in the online store.

Customer

The data stored includes customer ID, customer name, customer address, Customer's phone number and customer email. The customer ID is unique. Customers can browse products, add products to cart, make orders, make payment, request for refund and review the order details.

Product

The data required on the product includes product ID, product name, product type, product price and product stock. The product ID is unique. All the products will be managed by staff.

Payment

The data required on payment includes payment ID, order ID, customer ID, payment method and payment amount. The order ID and customer ID are foreign keys. Customers can make payment for their purchases. Payment ID is unique.

Order
The data required in the order includes order ID, customer ID, order date, shipping date, total amount, shipping address. Order ID is the foreign key of the order. The order will be made by customers. Order Id is unique.

Cart

The data required on cart includes cart ID, product ID, product price and total amount. The product ID is the foreign key of the cart. Only important information will be shown in the cart. Cart ID is unique.

Refund

The data required in refund includes refund ID, order ID, return amount and return status. The order ID is the foreign key of the refund. Refunds will be processed if the customer makes a request. Refund ID is unique.

Review

The data required in review includes review ID, order ID, customer ID and rating. The order Id and customer ID are the foreign keys of the review. Customers can review the details after successfully making an order. Review ID is unique.

PROPOSED TRANSACTIONAL

Data Entry
− Enter the details of the sales report needed
− Enter the period of sales report needed
− Enter the details of the payment
− Enter the details of stock

Data Update/Delete
− Update/delete the details of the sales report needed.
− Update/delete the period of sales report needed
− Update/delete the details of stock
− Update/delete the details of the payment
− Update the tracking details

Data Queries
− List details of users that manage the store
− List details of products
− Identify the order history
− List the order history
− Display the tracking details with the tracking number, name
− Identity the order status
− Identify the payment status
− Identify the parcel path
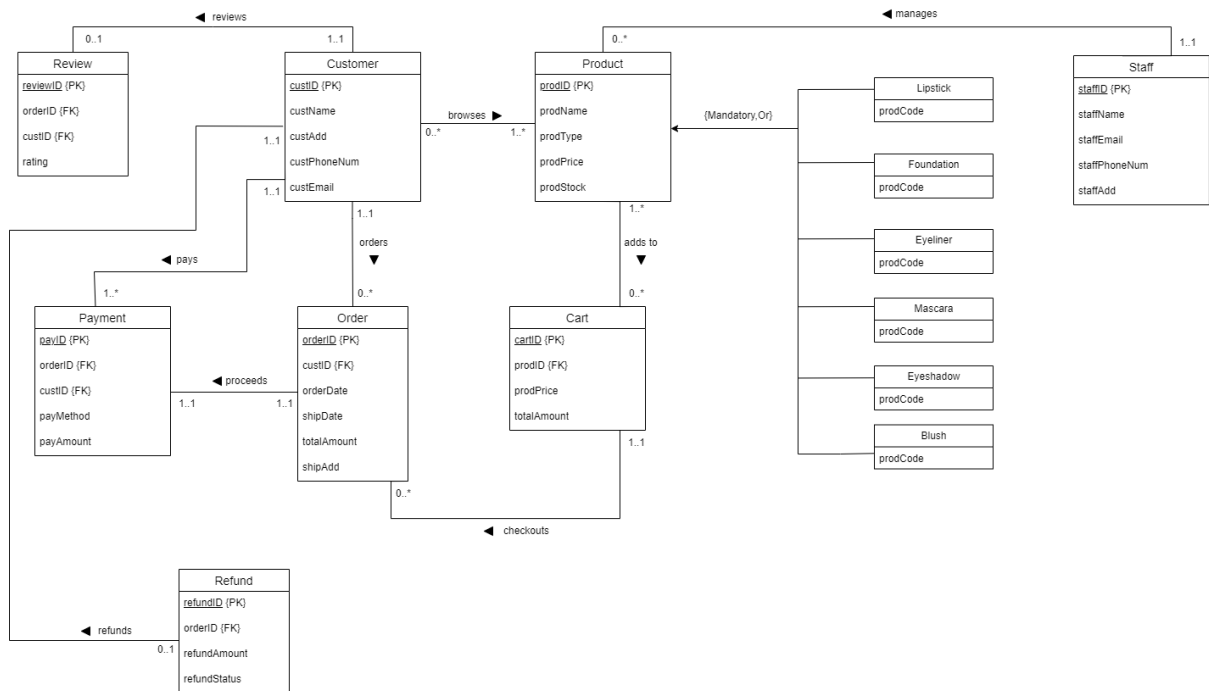
4.0 DATABASE CONCEPTUAL DESIGN

4.1 CONCEPTUAL ERD

IM BEAUTY ERD
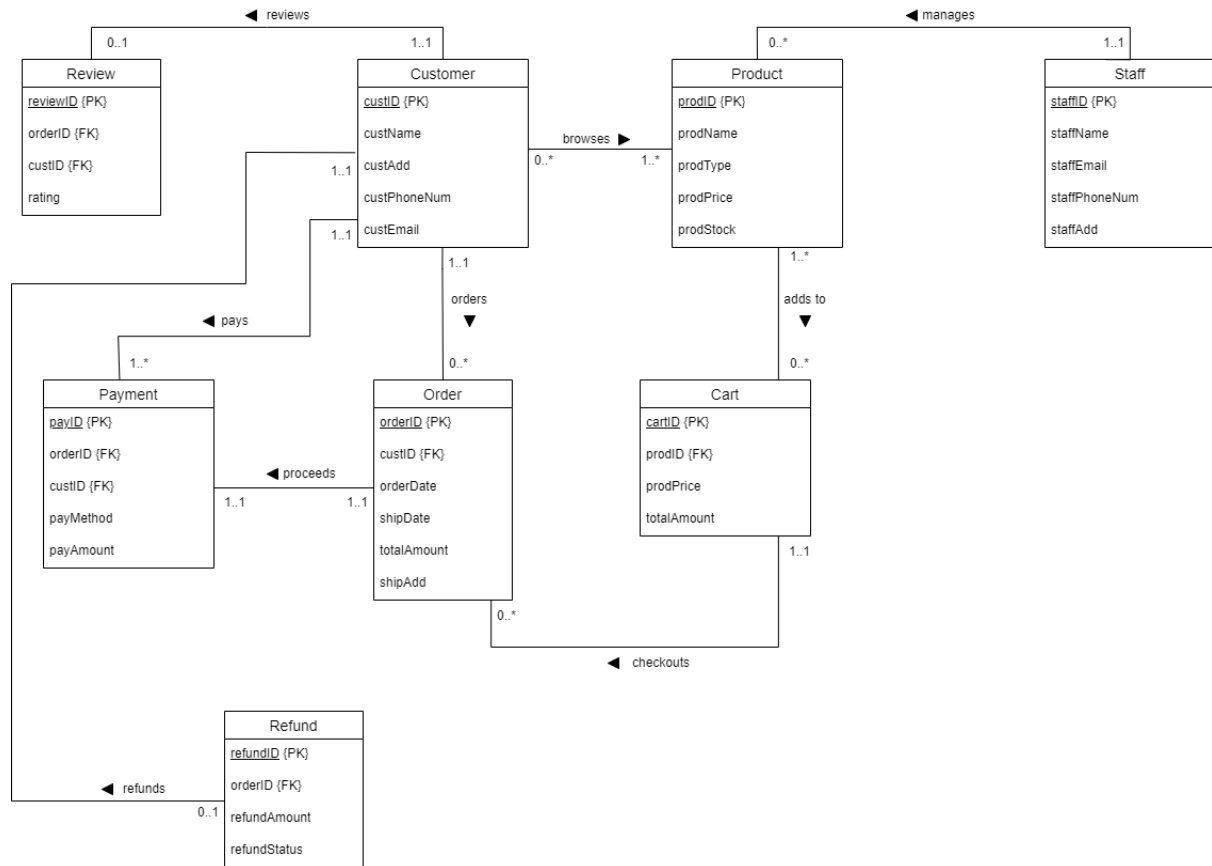
4.2 ENHANCED ERD (EERD)

IM BEAUTY EERD

5.0 DATA DICTIONARY

Entity Name	Attributes	Data Type & Length	Description	Nulls	Multivalued
Staff	staffID	Decimal (10)	Identifier for staff members	NO	NO
	staffName	Varchar2 (50)	Name of the staff member	NO	NO
	staffEmail	Varchar2 (20)	Email address of the staff member	NO	NO
	staffPhoneNum	Varchar2 (15)	Phone number of the staff member	NO	NO
	staffAdd	Varchar2 (50)	Address of the staff member	YES	YES
Customer	custID	Decimal (10)	Identifier for customers	NO	NO
	custName	Varchar2 (50)	Name of the customer	NO	NO
	custEmail	Varchar2 (20)	Email address of the customer	NO	NO
	custPhoneNum	Varchar2 (15)	Phone number of the customer	NO	NO
	custAdd	Varchar2 (50)	Address of the customer	YES	YES
Product	prodID	Decimal (10)	Identifier for products	NO	NO
	prodName	Varchar2 (50)	Name of the product	NO	NO
	prodType	Varchar2 (10)	Type or category of the product	YES	YES
	prodPrice	Decimal (10)	Price of the product	NO	NO
	prodStock	Decimal (1000)	Quantity of the product in stock	NO	NO

	prodCode	Decimal (10)	Product code or identifier in the cart.	NO	NO
Cart	cartID	Decimal (10)	Identifier for the shopping cart	NO	NO
	prodID	Decimal (10)	Reference to the product in the cart	NO	NO
	prodPrice	Decimal (10)	Price of the product in the cart	NO	NO
	totalAmount	Decimal (1000)	Total cost of items in the cart	NO	NO
Order	orderID	Decimal (10)	Identifier for orders	NO	NO
	custID	Decimal (10)	Reference to the customer placing the order	NO	NO
	orderDate	Date	Date when the order was placed	NO	NO
	shipDate	Date	Date when the order was shipped	YES	YES
	totalAmount	Decimal (1000)	Total cost of the order	NO	NO
	shipAdd	Varchar2 (50)	Shipping address for the order	YES	YES
Payment	payID	Decimal (10)	Identifier for payments	NO	NO
	orderID	Decimal (10)	Reference to the order for payment	NO	NO
	custID	Decimal (10)	Reference to the customer making the payment	NO	NO
	payMethod	Varchar2 (20)	Payment method used	NO	NO
	payAmount	Decimal (1000)	Amount of the payment	NO	NO
Refund	refundID	Decimal (10)	Identifier for each refund transaction.	NO	NO
	orderID	Decimal	Identifier linking the refund	NO	NO

		(10)	to the original order.		
	refundAmount	Decimal (1000)	Amount refunded for the corresponding order.	NO	NO
	refundStatus	String (100)	Current status of the refund.	NO	NO
Review	reviewID	Decimal (10)	Identifier for reviews	NO	NO
	prodID	Decimal (10)	Reference to the product being reviewed	NO	NO
	custID	Decimal (10)	Reference to the customer writing the review	NO	NO
	rating	Varchar2 (50)	Rating given by the customer	NO	NO

6.0 SUMMARY

Im Beauty's purchasing system provides a convenient and technologically advanced platform, making it a responsive response to the ever-changing needs of beauty enthusiasts. The system allows customers to easily choose and buy cosmetic products from the comfort of their homes by seamlessly fusing technology and business. The Data Flow Diagram (DFD), which maps the interconnected network of customers, the ordering system, payment gateways, inventory management, and shipping, illustrates the synergy between these systems and the Digital Cosmetic Emporium, ensuring efficiency, accuracy, and transparency through e-commerce procedures.

Using the DFD, the customer's journey is examined, emphasising the safe payment options, careful inventory control, and well-thought-out shipping operations. The system shows itself to be an intelligent solution that improves user experience while optimising backend operations for accurate and quick responses. As the conversation comes to an end, the following parts deliver a thorough analysis of every DFD layer, highlighting the system's creativity, customer-focused methodology, and ability to completely transform the beauty retail industry.