`

SECD2523 - DATABASE

SEMESTER 1 2023/2024

P2 – Database Conceptual Design

GROUP 6

Group name: YYDS

Group member: a. SOO WEN CHUN A22EC0105

b. ENG JUN XIANG A22EC0049

c. KONG YEW YEONG A22EC0061

d. LIEW YONG ZHENG A23CS5008

Section: section 10

Lecturer: Dr ROZILAWATI BINTI DOLLAH

Table of Contents

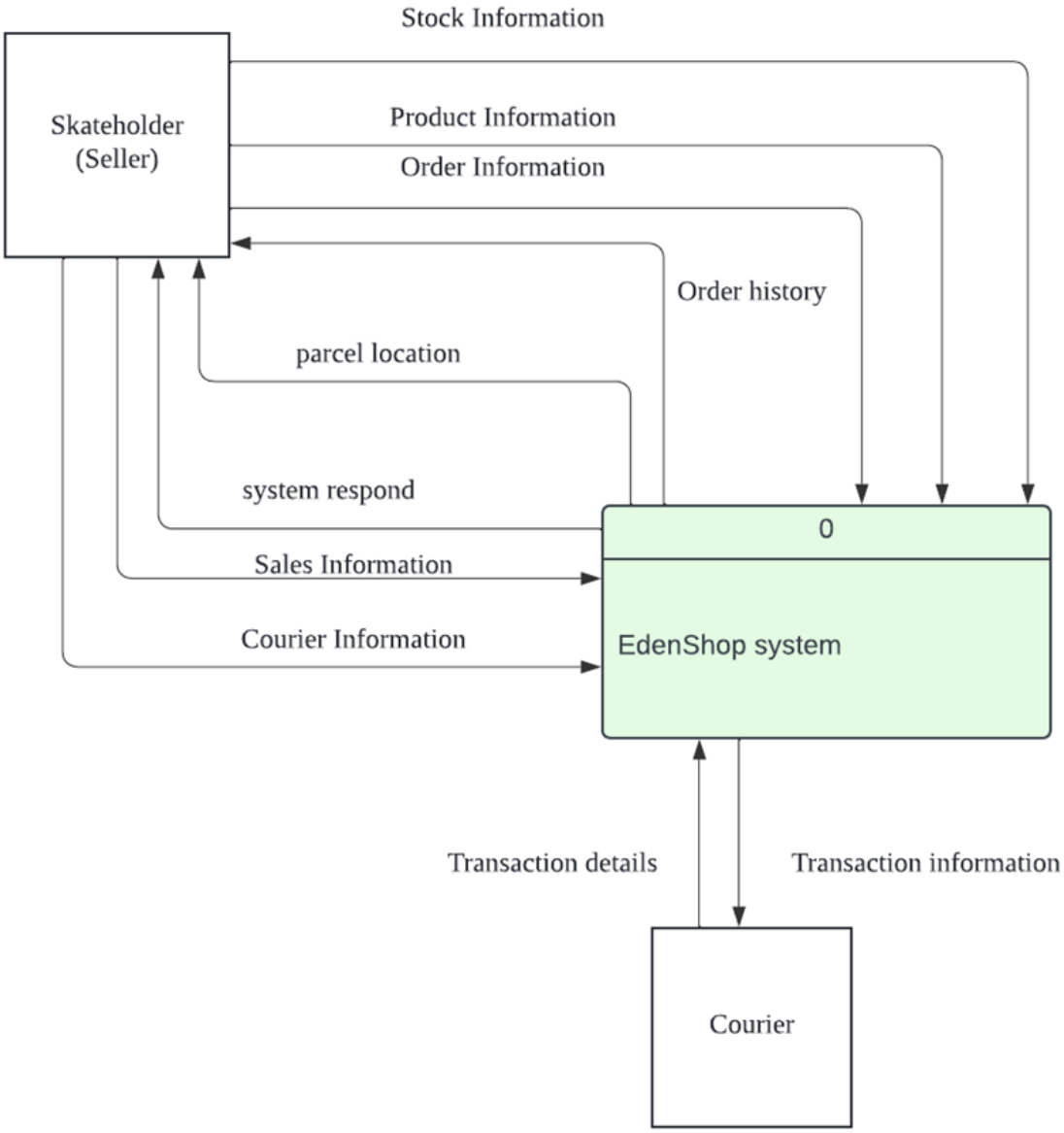
1.0 Introduction

Introducing EdenShop, a revolutionary platform meticulously tailored for sellers seeking to redefine their online retail experience. Focused on addressing key challenges faced by sellers, EdenShop prioritises four crucial aspects: efficient inventory management, insightful data analysis, fortified transaction security, and seamless order accuracy and processing. Sellers can bid farewell to inventory concerns as EdenShop provides an intuitive suite of tools for effortless stock management, real-time updates, and predictive analytics. Leveraging the power of data, our platform equips sellers with invaluable insights into market trends and customer behaviour, empowering informed decision-making. Transaction security is paramount at EdenShop, where robust measures ensure the protection of sensitive information and the trust of both sellers and customers. Hence, an application with a smooth management and ordering system is important to guarantee accurate and prompt fulfilment, elevating overall customer satisfaction.

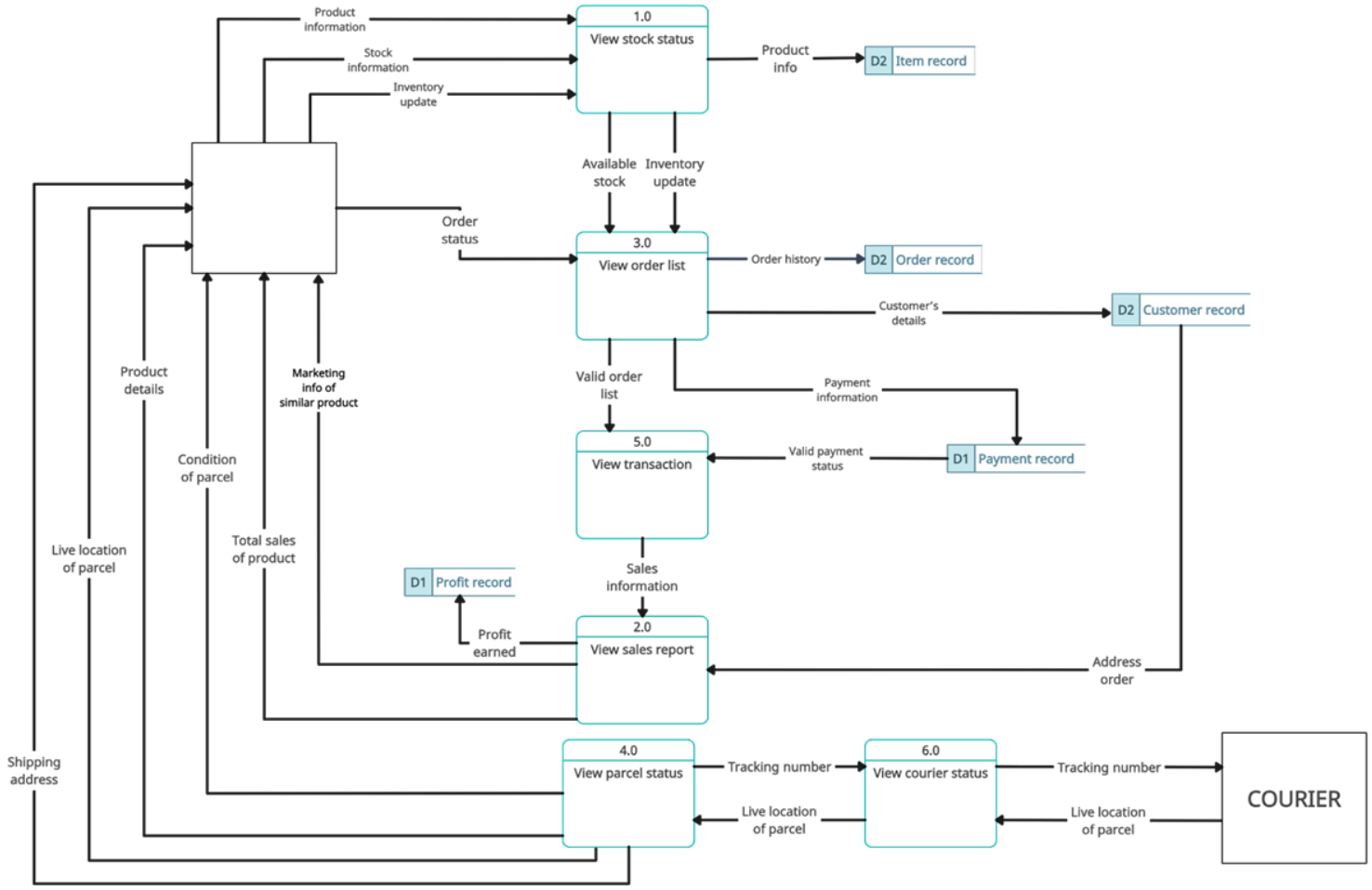
In this phase 2, we will discuss the current business rule and transaction requirements in our EdenShop system. Besides that, database conceptual ERD and enhanced ERD is designed to describe the relationships between the entities. Data dictionary is friendly to our stakeholders for easier understanding about our proposed system. These processes are crucial to point us in the right direction for the entire proposed system.

2.0 DFD

2.1 Context Diagram

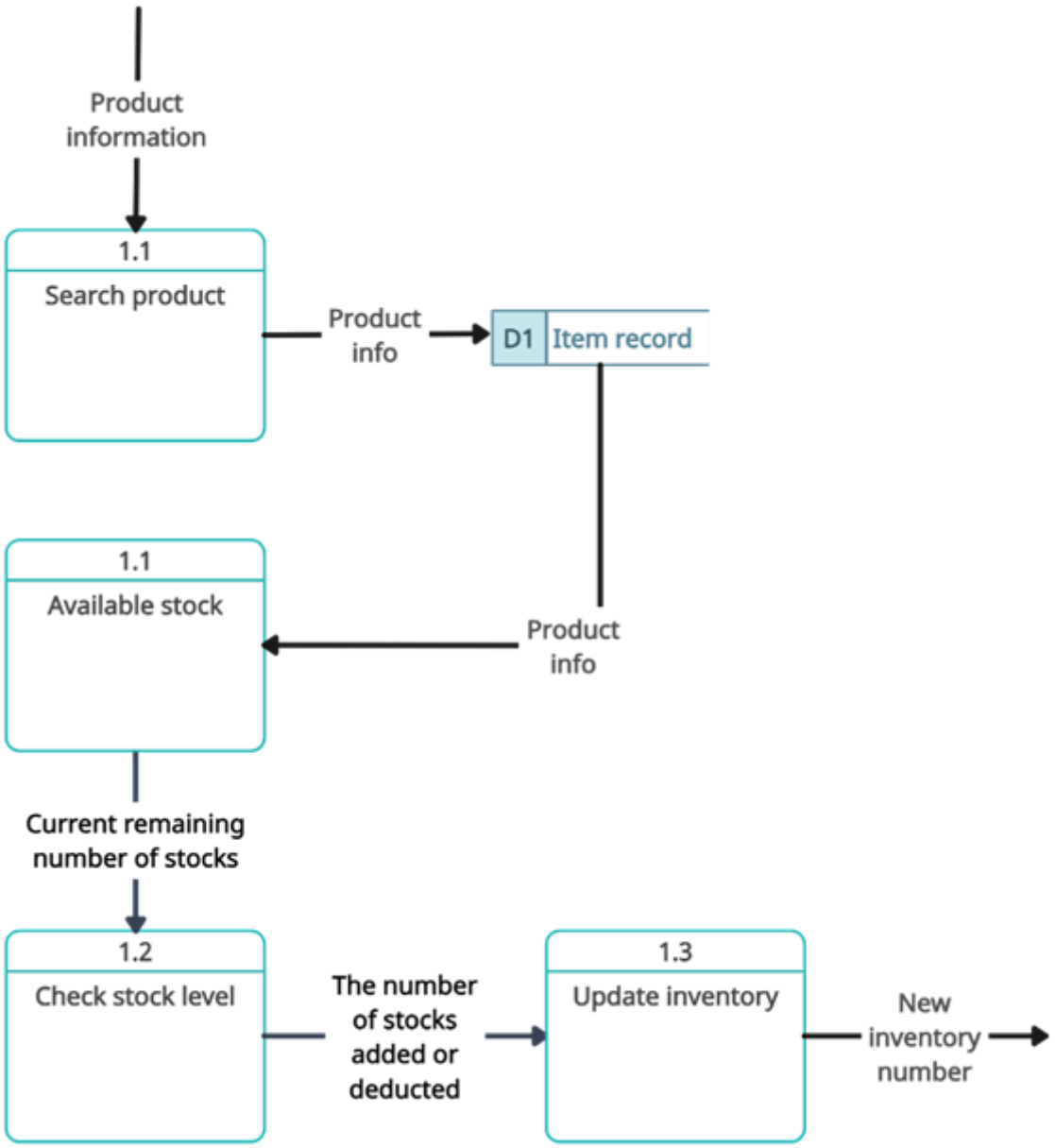


2.2 Level 0 Diagram

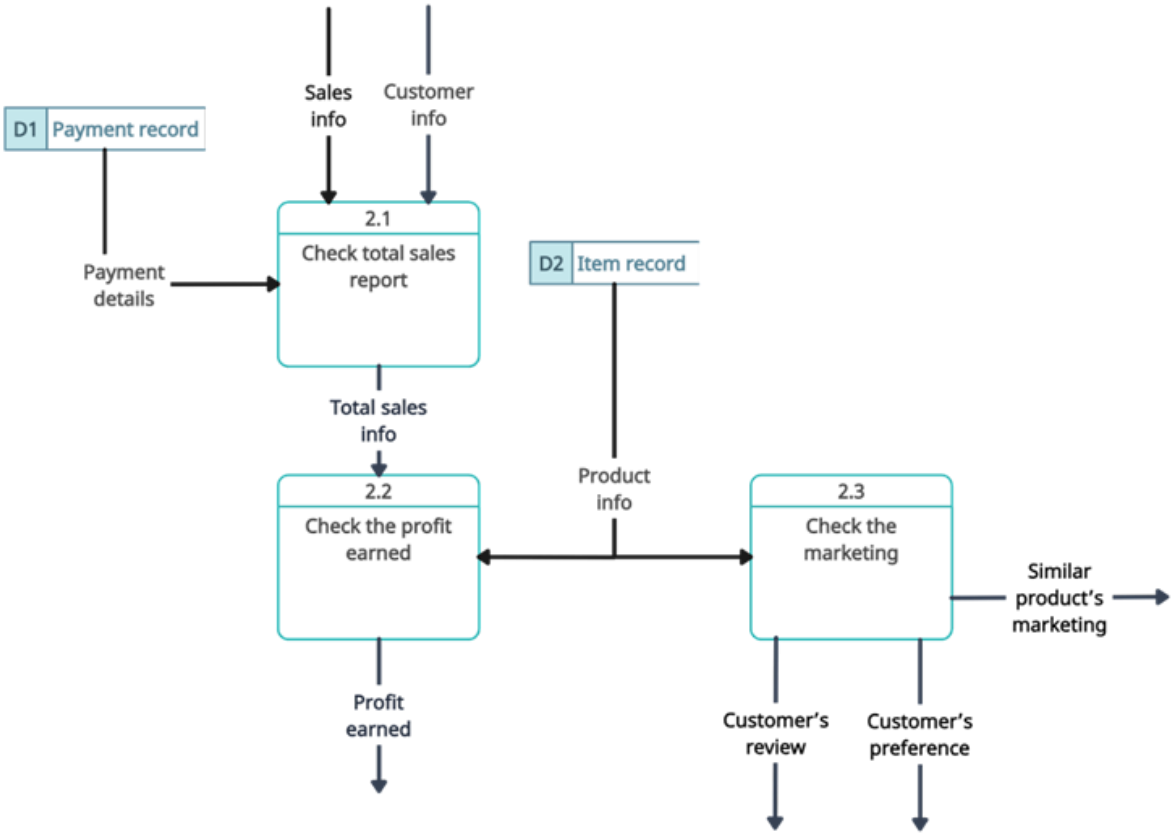


2.3 Level 1 Diagram

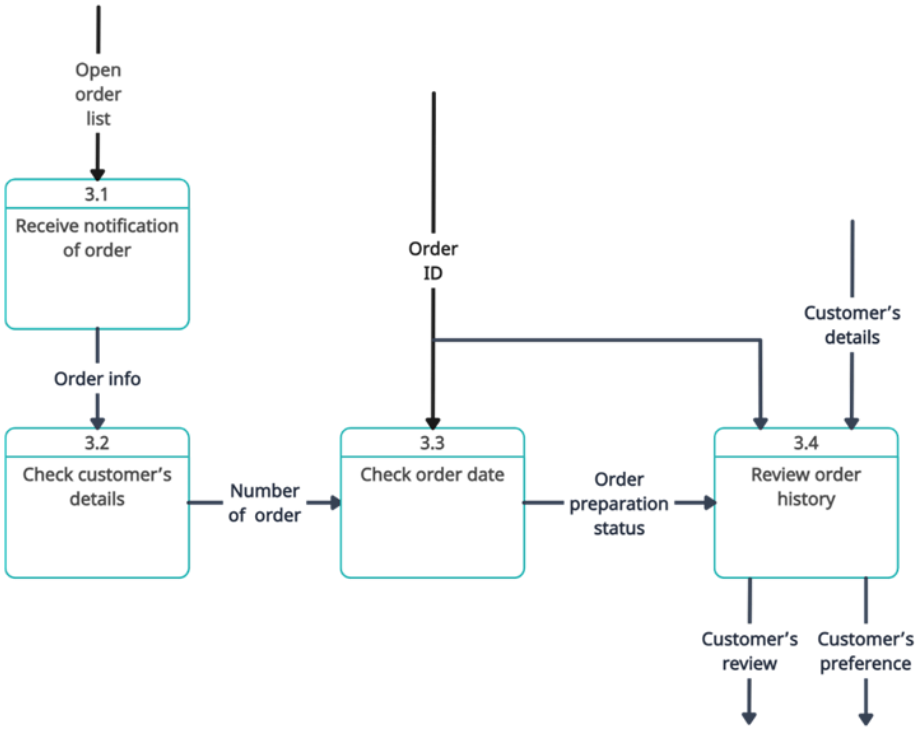
Process 1: View stock status



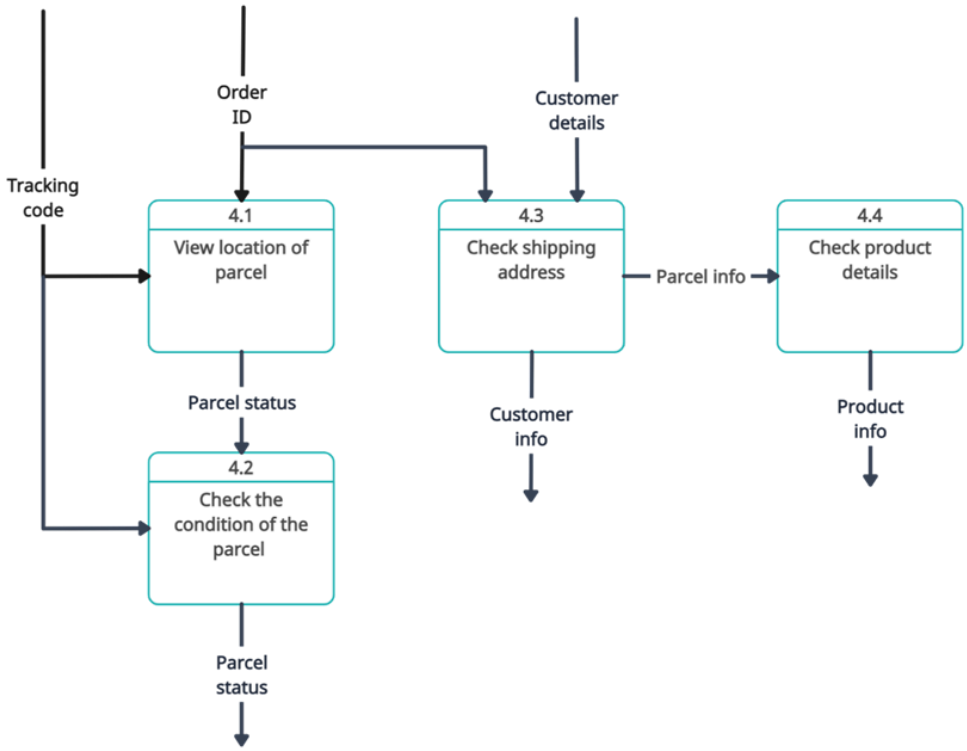
Process 2: View sales report



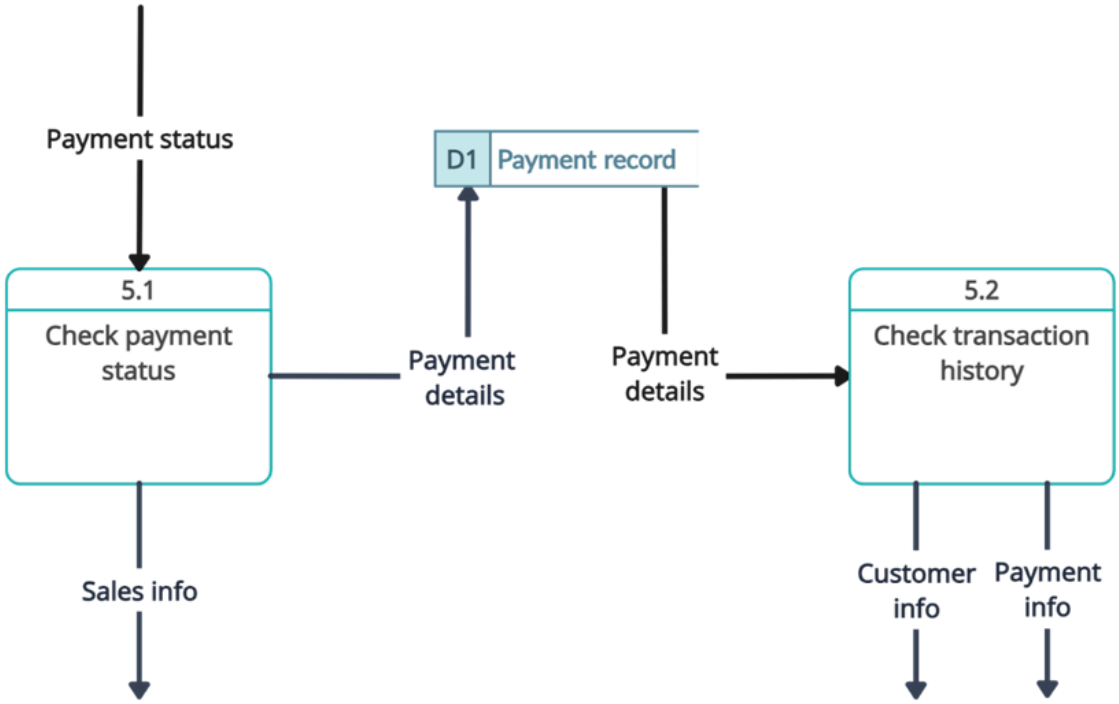
Process 3: View order list



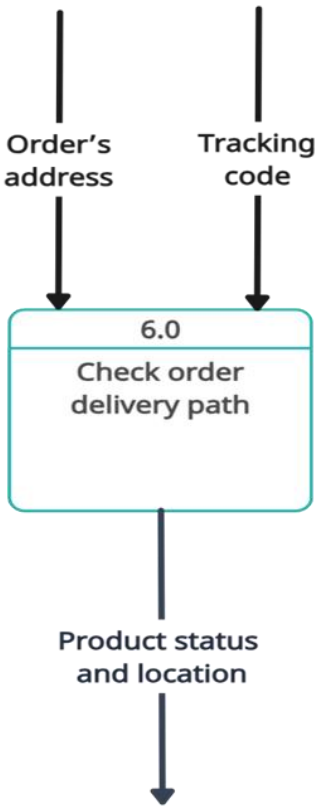
Process 4: View parcel status



Process 5: View transaction



Process 6: View courier status



3.0 DATA & TRANSACTION REQUIREMENTS

3.1 Proposed Business Rule

1. Each customer can place multiple order
2. Each order contains one or more quantity of products
3. Each customer can place multiple order from several users (sellers)
4. Each user (seller) has their own identifier
5. Each customer has their own identifier
6. Each user (seller) can sell multiple product
7. Each customer can only make one payment
8. Each tracking has its tracking number
9. Each user (seller) is allowed to check order history
10. Each user (seller) will be known the current available stock for products

3.2 Proposed Data Requirement

PK = Primary key

FK = Foreign key

1. User Data Requirement
    - UserID (PK)
    - UserName
    - UserPH
    - UserEmail

2. Customer Data Requirement
    - CustomerID (PK)
    - CustomerName
    - CustomerPH
    - CustomerAddress
    - CustomerEmail

3. Product Data Requirement
    - ProductID (PK)
    - ProductName
    - ProductCode
    - ProductDesc

4. Order Data Requirement
    - OrderID (PK)
    - OrderQty
    - OrderDate
    - TotalPrice
    - CustomerID (FK)
    - TrackingNo (FK)

5. Courier Data Requirement
    - TrackingNo (PK)
    - TrackingDate
    - TrackingAddrs
    - ProductID (FK)
    - PaymentID (FK)

6. Stock Requirement
    - ProductQty
    - newProduct
    - ProductID (FK)

7. Payment Requirement
    - PaymentID (PK)
    - PaymentType
    - PaymentAmount

3.3 Proposed Transactional Requirement

3.3.1. Data Entry

a. Account Registration
- Allow data entry for new customer details
- Capture new customer's personal information, such as name, contact information and address.

b. Product Display
- Analyse the favourite product of customers
- Filter and display the related products to customers

c. Order Placement
- Users should be able to manually record customer orders.
- Capture customer details including name, contact information, and shipping address.
- Display the ordered products, and the total price.

d. Customer communication
- Generate the order confirmation messages for customers.
- Updated the status of parcel to customers

3.3.2. Data Update/ Delete Transactions

a. Customer Information Update
- Allow stakeholders to update customer's information
- Example: contact information and shipping address

b. Product Information
- Enable stakeholders to update their product information.
- Example: stock quantity, description, and new price of the product

c. Order Update
- Allow the changes to the quantity of order made by customers
- Allow the changes of product selected by customers
- Allow the authorized users to cancel orders

3.3.3. Data Queries

a. Information Restoration

- Allow users to restore the information of customer based on customer name

b. Product Detail Query

- Enable users to query and retrieve the product information based on the product's identity

c. Order History

- Enable users to query and retrieve the history of product ordered

d. Stock Status

- Enable users to query and retrieve the remaining stock of product

e. Payment Tracking

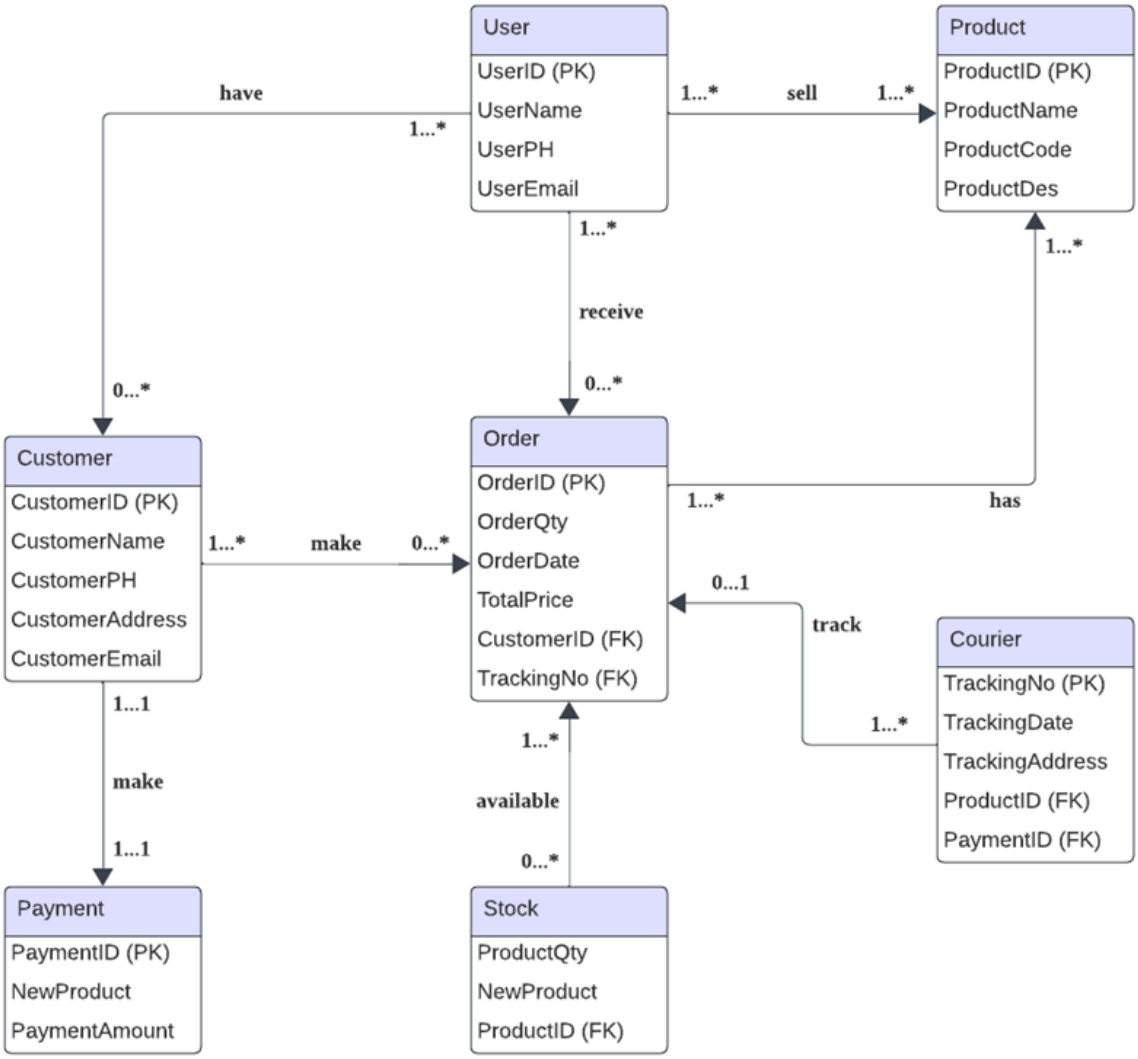
- Record the payment details for each order, including payment method
- Ensure the amount of payment received is accurate

f. Sales Report

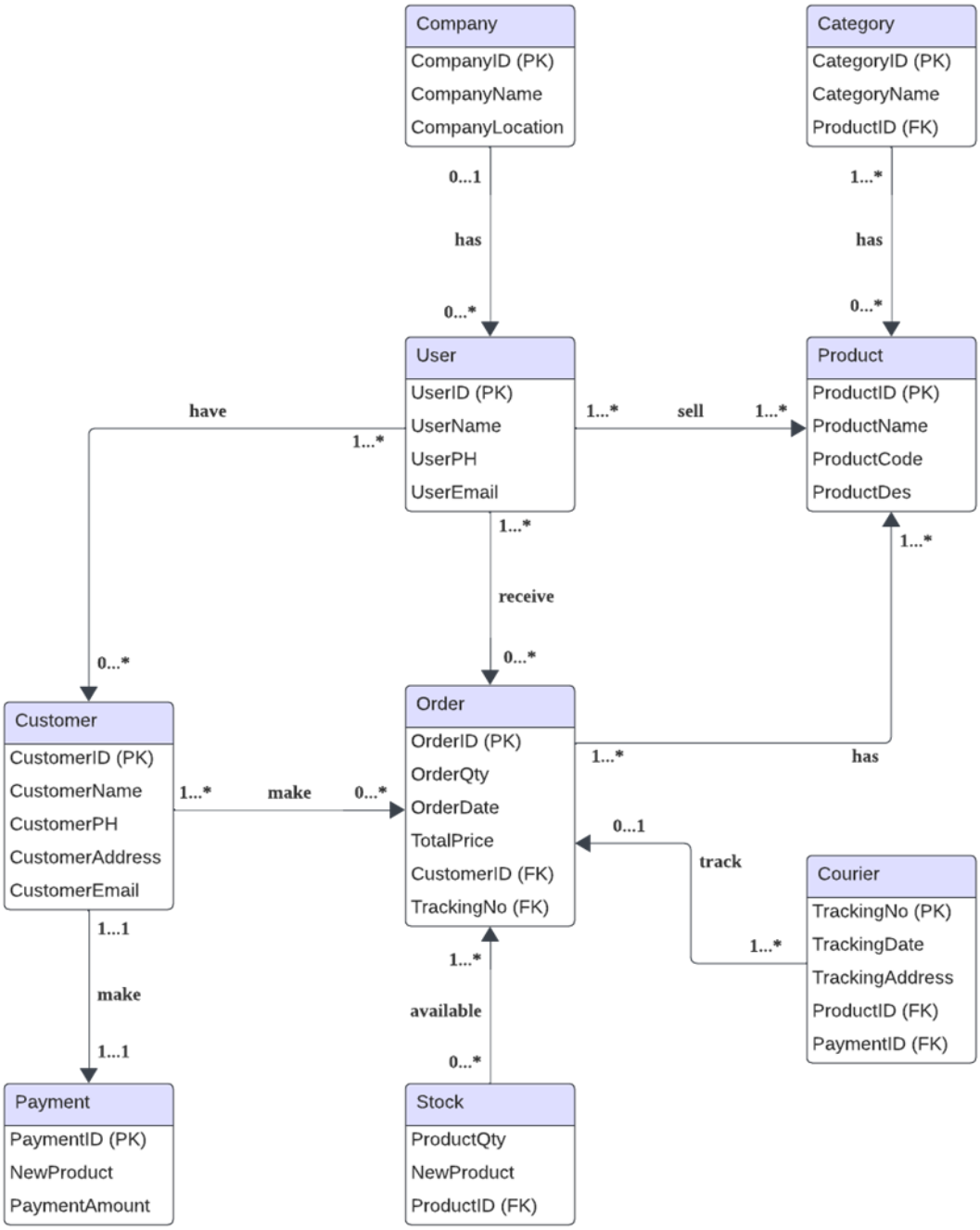
- Generate a report including the amount of sales, the total price of products sold, and the total profit made by users.
- Generate a report about the marketing of the similar products sold by other users.

4.0 Database conceptual design

4.1 Conceptual ERD



4.2 Enhanced ERD (EERD)



5.0 Data dictionary

5.1 Description of Entities

Entity	Description
Customer	Customer can make orders
User	Users (sellers) can manage their products
Order	Order made by customer
Payment	Payment made by customer
Courier	Provide and update the tracking number to customer and user
Stock	Provide status of stock

5.2 Relationship between entities

Entity	Multiplicity	Relationship	Multiplicity	Entity
User	1…*	Have	0…*	Customer
	1…*	Sell	1…*	Product
	1…*	Receive	0…*	Order
Customer	1…*	Make	0…*	Order
	1…1	Make	1…1	Payment
Courier	1…*	Track	0…1	Order
Stock	0…*	Available	1…*	Order
Order	1…*	Has	1…*	Product

5.3 Attributes in Entities

Entity	Attribute	Description	Data Type	Constraint	Multivalued
User	UserID	User ID	VARCHAR2(16)	PRIMARY KEY	NO
	UserName	User's name	VARCHAR2(30)	NOT NULL	NO
	UserPH	User's phone number	VARCHAR2(12)	NOT NULL	YES
	UserEmail	User's email	VARCHAR2(30)	NOT NULL	NO
Customer	CustomerID	Customer ID	VARCHAR2(16)	PRIMARY KEY	NO
	CustomerName	Customer's name	VARCHAR2(30)	NOT NULL	NO
	CustomerPH	Customer's phone number	VARCHAR2(12)	NOT NULL	YES
	CustomerAddress	Customer's address	VARCHAR2(50)	NOT NULL	NO
	CustomerEmail	Customer's email	VARCHAR2(30)	NOT NULL	NO
Product	ProductID	Product's ID	VARCHAR2(10)	PRIMARY KEY	NO
	ProductName	Product's name	VARCHAR2(20)	NOT NULL	NO
	ProductCode	Product's Code	VARCHAR2(10)	NOT NULL	NO
	ProductDesc	Product's description	VARCHAR2(200)	NOT NULL	NO
Order	OrderID	Order ID	VARCHAR2(10)	PRIMARY KEY	NO
	OrderQty	Order quantity	NUMBER (2)	NOT NULL	NO

	OrderDate	Order date	DATE	NOT NULL	NO
	TotalPrice	Total price of Order	DECIMAL (8,2)	NOT NULL	NO
	CustomerID	Customer ID	VARCHAR2(16)	FOREIGN KEY reference Customer	NO
	TrackingNo	Tracking number	VARCHAR2(12)	FOREIGN KEY reference Courier	NO
Stock	ProductQty	Product quantity	NUMBER (4)	NOT NULL	NO
	newProduct	New Product updated	NUMBER (3)	NOT NULL	NO
	ProductID	Product ID	VARCHAR2(10)	FOREIGN KEY reference Product	NO
Payment	PaymentID	Payment ID	VARCHAR2(12)	PRIMARY KEY	NO
	PaymentType	Type of payment	CHAR (1)	NOT NULL	NO
	PaymentAmount	Amount of payment	DECIMAL(8,2)	NOT NULL	NO
Courier	TrackingNo	Tracking number	VARCHAR2(12)	PRIMARY KEY	NO
	TrackingDate	Tracking date	DATE	NOT NULL	NO
	TrackingAddrs	Tracking Address	VARCHAR2(50)	NOT NULL	NO
	ProductID	Product ID	VARCHAR2(10)	FOREIGN KEY reference Product	NO

	PaymentID	Payment ID	VARCHAR2(12)	FOREIGN KEY reference Payment	NO

6.0 Summary

EdenShop stands at the forefront of e-commerce innovation, presenting a groundbreaking platform meticulously crafted to cater to the unique needs of sellers. With an unwavering commitment to reshaping the online retail landscape, EdenShop places paramount importance on four critical pillars: efficient inventory management, insightful data analysis, fortified transaction security, and seamless order accuracy and processing.

The platform's arsenal of tools is strategically designed to tackle the intricate challenges faced by sellers. It goes beyond conventional solutions, offering an intuitive inventory management system that allows sellers to effortlessly track, organise, and optimise their product stock. Real-time updates and predictive analytics provide sellers with a comprehensive understanding of their inventory, ensuring timely decisions and a disruption-free supply chain.

EdenShop's prowess extends to data analysis and insight, where sellers can harness the power of detailed analytics and reports. This functionality empowers sellers with invaluable insights into market trends and customer behavior. Armed with this knowledge, sellers can make informed, data-driven decisions, refine marketing strategies, and uncover growth opportunities within the platform.

Security is ingrained in the DNA of EdenShop, with robust measures in place to safeguard sensitive information and foster trust among both sellers and customers. Secure payment gateways, encryption protocols, and multi-factor authentication contribute to a trustworthy environment, laying the foundation for secure financial transactions on the platform.

The emphasis on a smooth management and ordering system within EdenShop underscores its commitment to order accuracy and processing efficiency. Sellers receive instant notifications of new orders, enabling prompt processing and dispatch. Automated

order tracking and status updates keep both sellers and customers informed, minimizing errors, and elevating overall customer satisfaction.

As EdenShop progresses into Phase 2, the focus shifts to current business rules and transaction requirements within the system. This phase is complemented by the design of a conceptual Entity-Relationship Diagram (ERD) and an enhanced ERD, providing a visual representation of entity relationships. A user-friendly data dictionary accompanies these elements, facilitating stakeholder understanding and guiding the development of the entire platform.

In summary, EdenShop emerges as more than just an e-commerce platform; it's a dynamic and user-friendly ecosystem that empowers sellers to thrive in the ever-evolving online marketplace. By effectively addressing challenges related to inventory management, data analysis, transaction security, and order processing, EdenShop stands as a reliable and secure ally for sellers on their journey to success.