SECD2613-16 SYSTEM ANALYSIS AND DESIGN

Online Marketplace	Develop a simple online marketplace where users can buy and sell goods. Include features such as product listings, search functionality, and user profiles.

Group 12	
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Topic: Online Market

Develop a simple online marketplace where users can buy and sell goods.
Include features such as product listings, search functionality, and user profiles.

1. Overview of the Project:

The Online Marketplace project proposes the creation of a robust web-based platform designed to facilitate seamless transactions between sellers and buyers, revolutionizing the e-commerce experience. Through this platform, we aim to provide a user-friendly interface that streamlines product showcasing, purchase processes, and seller-buyer communication, ultimately enhancing the online shopping experience. This initiative aligns with our group's dedication to fostering online trade and community connectivity.

2. Problem statement

The primary challenge our Online Marketplace aims to address is the lack of a unified platform where sellers and buyers can seamlessly interact, negotiate, and conduct transactions with ease. Current e-commerce platforms often suffer from poor user experience, limited seller tools, and inadequate customer support, leading to dissatisfaction among users. Additionally, issues related to trust and transparency in online transactions coupled with complex navigation and payment processes; hinder the growth of online trade. By developing a comprehensive solution, we seek to overcome these barriers and provide a reliable, efficient, and user-centric marketplace.

3. Proposed solutions

1. Develop an intuitive and user-friendly interface that simplifies navigation and enhances the overall shopping experience.
2. Implement advanced search functionality with filters and categories to help users easily find desired products.
3. Introduce comprehensive seller profiles and product listings with high-quality images and detailed descriptions to build trust and transparency.
4. Enable a secure and seamless payment gateway to facilitate smooth transactions between buyers and sellers.
5. Integrate a robust review and rating system to encourage honest feedback and improve community trust.
6. Offer personalized recommendations based on user behaviour and preferences to enhance engagement and cross-selling opportunities.
7. Provide sellers with powerful administrative tools for managing inventory, orders, and customer interactions efficiently.
8. Ensure data security and privacy through stringent compliance with industry standards and regulatory requirements.
9. Conduct continuous testing and gather user feedback to iteratively improve the platform.

4 Current Business Process/Workflow

4.1 Methods Used

To gather relevant information, we employed a mixed-method approach:

- Surveys: Distributed to a broad audience to collect quantitative data on user preferences and behaviours.
- Interviews: Conducted with a selected group of sellers and buyers to gather qualitative insights.
- Observation: Analysed user behaviour on existing popular marketplaces to understand common pain points and successful features.

4.2 Summary from Methods Used

- Example Interview:

1. Interview Questions for Sellers:
2. What challenges do you face with current online marketplaces?
3. How do high fees impact your business?
4. What features do you wish were available on these platforms?
5. Survey Questions for Buyers:
6. How often do you shop online?
7. What factors influence your purchasing decisions?
8. How important are product reviews and ratings to you?
9. What issues have you encountered with current online marketplaces?

Participants: 20 sellers and 30 buyers

Insights:

Sellers faced challenges with high fees, limited control over their storefronts, and the complexity of managing listings.

Buyers expressed concerns about product authenticity, the reliability of reviews, and the need for better search functionality.

Questionnaire:

Distributed to: 500 potential users

Key Findings:

75% of respondents prioritize robust search functionality and reliable review systems.

Many users highlighted the importance of intuitive navigation and secure payment options.

There was a strong preference for platforms that offer personalized recommendations.

- Observation

Analysed Behaviour:

Users preferred platforms with detailed product listings, including high-quality images and comprehensive descriptions.

Responsive customer service and easy-to-use interfaces were critical for user satisfaction.

Secure and efficient payment processes were essential for building trust and ensuring repeat business.

4.2. Requirement Analysis (based of AS-IS analysis):

Current business process (scenarios, workflow): Scenarios**:**

1. Seller Registration and Listing:

o Sellers individually register on various online marketplaces, each with its own registration process.

o They manually create product listings on each platform, entering product details such as descriptions, images, and pricing separately.

o Managing multiple listings across different platforms leads to duplication of effort and potential inconsistencies.

2. Buyer Search and Purchase:

o Buyers navigate through multiple online marketplaces to find desired products, leading to a fragmented shopping experience.

o They search for products using keywords or browse through categories, with search results varying across platforms.

o Purchases are made separately on each platform, involving different checkout processes and payment methods.

Workflow:

1. Seller Workflow:

o Sellers register on multiple online marketplaces individually, undergoing separate registration processes and providing redundant information.

o They manually create and manage product listings on each platform, requiring duplication of effort to synchronize inventory and pricing.

o Orders and customer inquiries are managed separately for each platform, leading to inefficiencies and potential delays in communication.

2. Buyer Workflow:

o Buyers visit multiple online marketplaces to search for products, resulting in a disjointed shopping experience.

o They encounter inconsistencies in product information and pricing across platforms, making it challenging to compare and make informed purchasing decisions.

o Purchases are made separately on each platform, with varying checkout processes and shipping options, causing inconvenience and potential confusion.

4.3. Functional Requirement (input, process and output):

Input:

1. User Registration Information:

o Users provide personal information (name, email, address, etc.) during registration on each online marketplace.

o Sellers may be required to provide additional business-related information (tax ID, business name, etc.) for verification purposes.

2. Product Listing Details:

o Sellers manually input product details (title, description, images, price, quantity, etc.) when creating listings on each platform.

o Each listing requires duplication of effort as sellers enter the same information across multiple platforms.

Process:

1. User Authentication and Authorization:

o Each online marketplace has its own authentication system, requiring users to log in separately to access their accounts.

o Authorization is managed individually by each platform, determining the level of access and permissions granted to users.

2. Product Search and Discovery:

o Search functionality varies across platforms, with differences in search algorithms, filters, and sorting options.

o Buyers navigate through product listings on each platform, with search results displaying product information based on the platform's criteria.

3. Transaction Management:

o Payment processing occurs separately on each platform, with buyers completing transactions using different payment methods.

o Order fulfillment and shipping are managed independently by sellers for each platform, leading to potential delays and inconsistencies in delivery.

Output:

1. User Profiles:

o User profiles are maintained separately on each platform, containing account information, order history, and preferences specific to that platform.

o Sellers may have separate seller profiles on each platform, showcasing their products and store information.

2. Product Listings:

o Product listings are displayed individually on each platform, containing product details, images, pricing, and seller information.

o Sellers manage and update their listings separately on each platform, leading to potential discrepancies and inconsistencies.

3. Order Management:

o Order details and status are tracked separately for each platform, with sellers managing orders and communicating with buyers independently.

o Buyers may receive order notifications and updates from each platform separately, leading to potential confusion.

4.4. Non-functional Requirement (performance and control): Performance:

1. Response Time: Response times may vary across platforms depending on server load, network conditions, and platform performance.

2. Scalability: Scalability of individual platforms may vary, impacting their ability to handle increased traffic and transactions effectively.

3. Reliability: Reliability of each platform may vary, leading to potential downtime, outages, or service disruptions.

Control:

1. Data Security: Data security measures implemented by each platform may differ, affecting the protection of user data and compliance with privacy regulations.

2. User Privacy: Privacy policies and practices may vary across platforms, impacting user trust and confidence in data handling and protection.

3. Quality Assurance: Quality assurance processes may differ across platforms, affecting the consistency and reliability of the user experience across different online marketplaces.

5. Logical DFD (AS-IS)

- Entities: Buyers, Sellers, Payment Gateway
- Processes: User Registration, Product Listing, Purchase Process, Payment Processing
- Data Flows: User Data, Product Information, Transaction Details

6.0 System Analysis and Specification

6.1. Logical DFD AS-IS system (Context Diagram, Diagram 0, Child):

context diagram

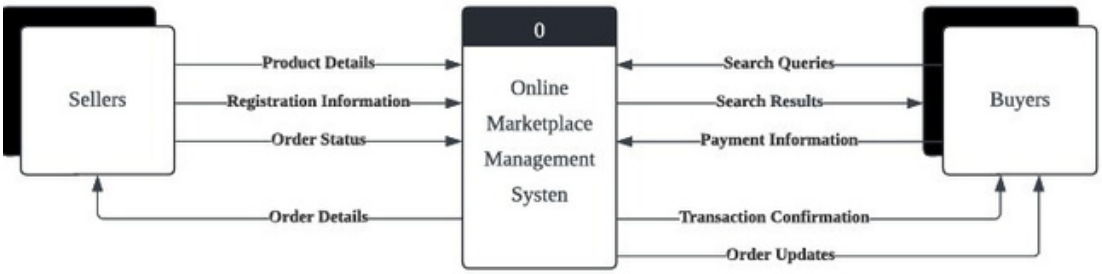
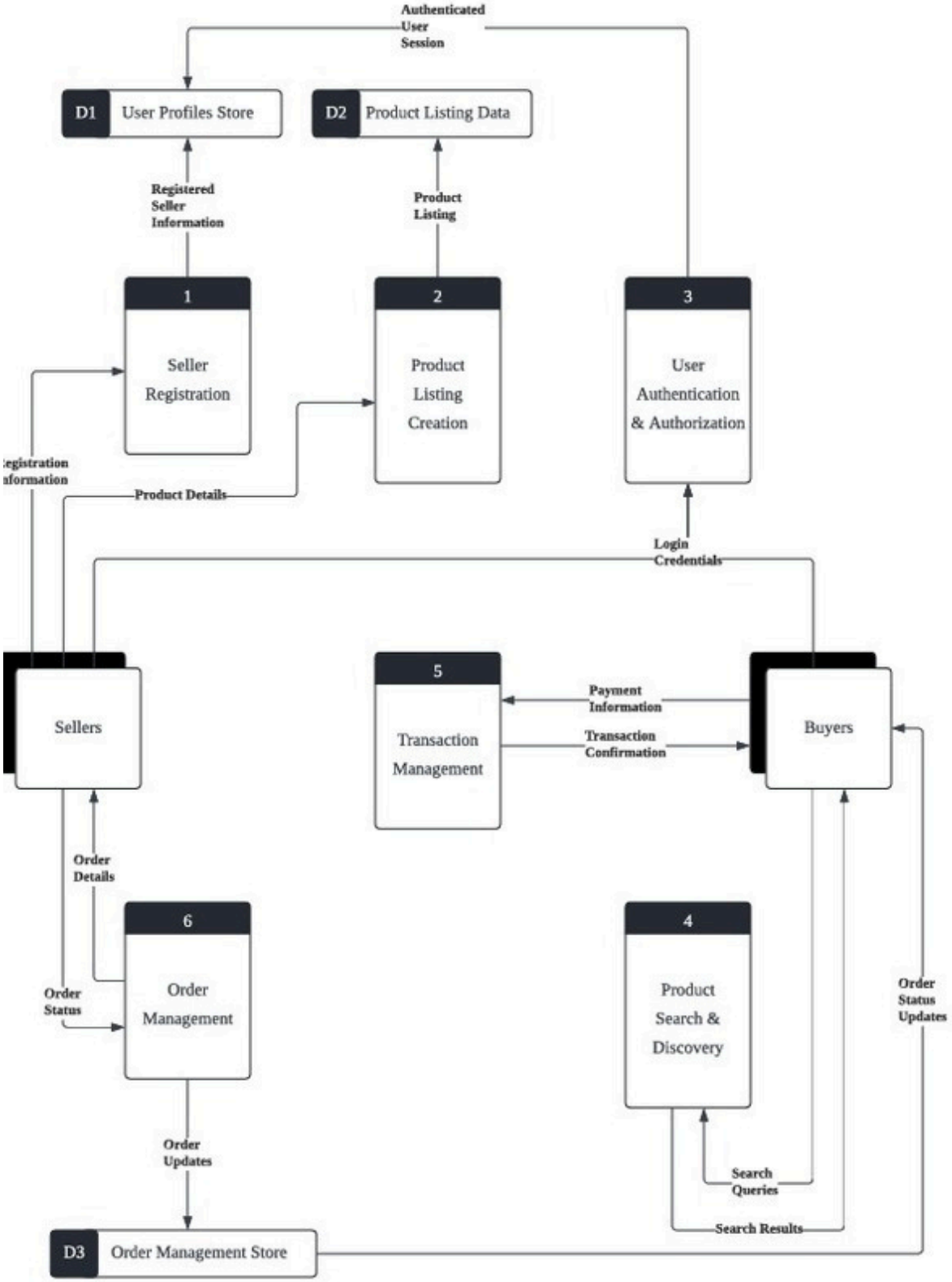
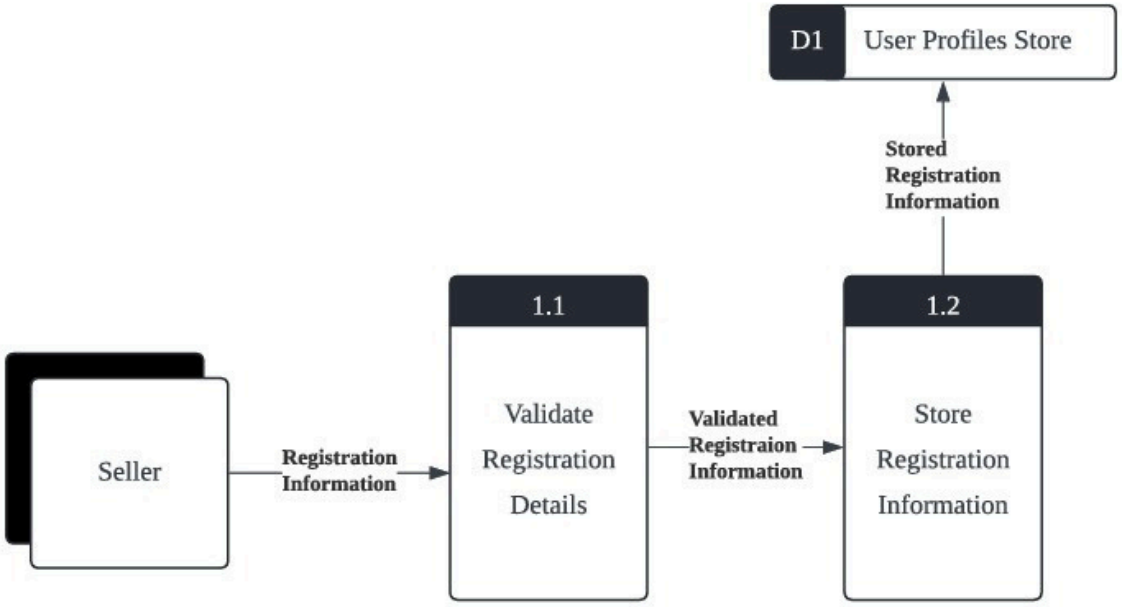


diagram 0


Authenticated User Session
D1 User Profiles Store
D2 Product Listing Data
Registered Seller Information
Product Listing
1 Seller Registration
2 Product Listing Creation
3 User Authentication & Authorization
Product Details
Login Credentials
Sellers
5 Transaction Management
Payment Information
Transaction Confirmation
Buyers
Order Details
6 Order Management
Order Status
4 Product Search & Discovery
Order Status Updates
Order Updates
Search Queries
Search Results
D3 Order Management Store

- diagram child p1



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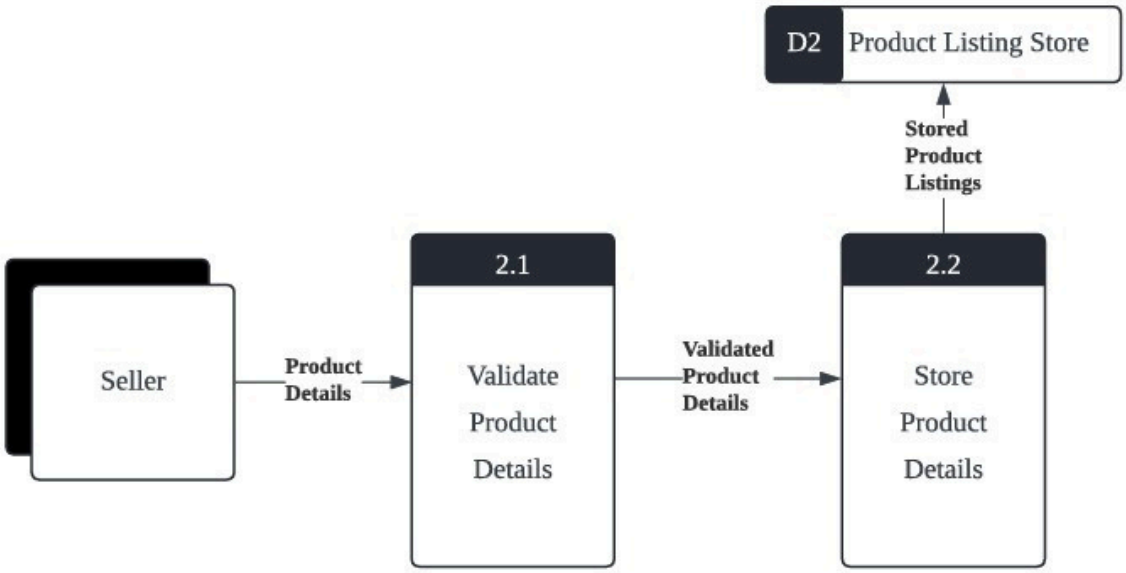

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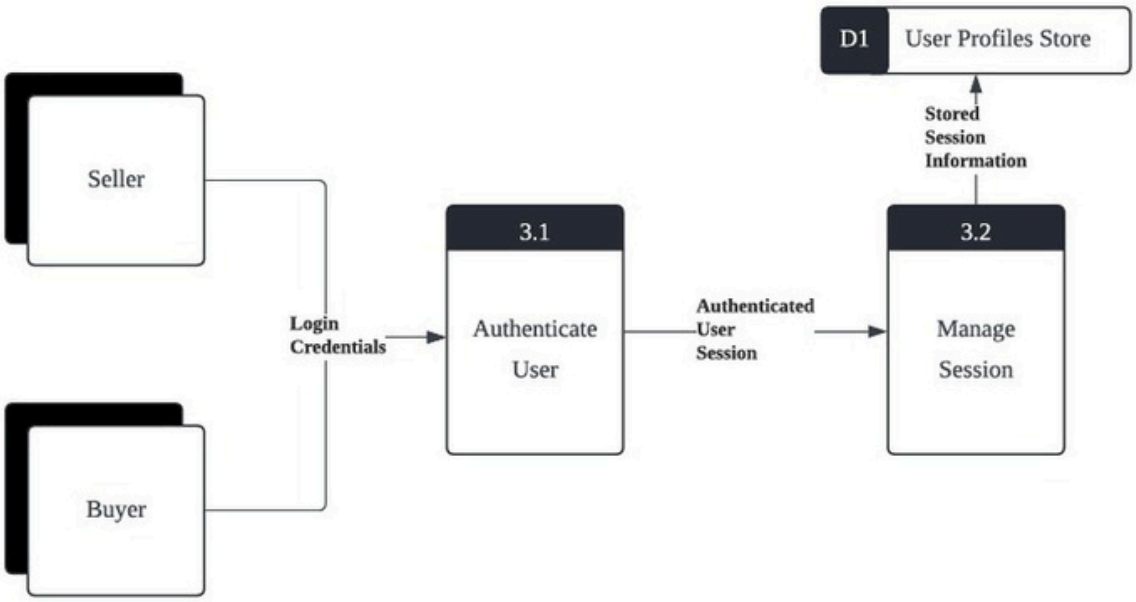

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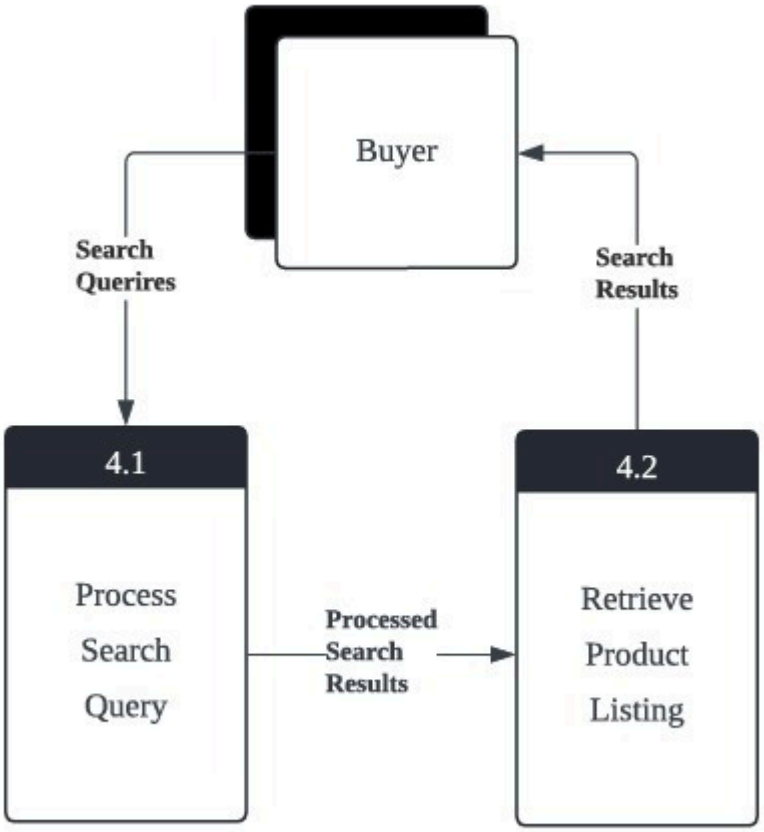

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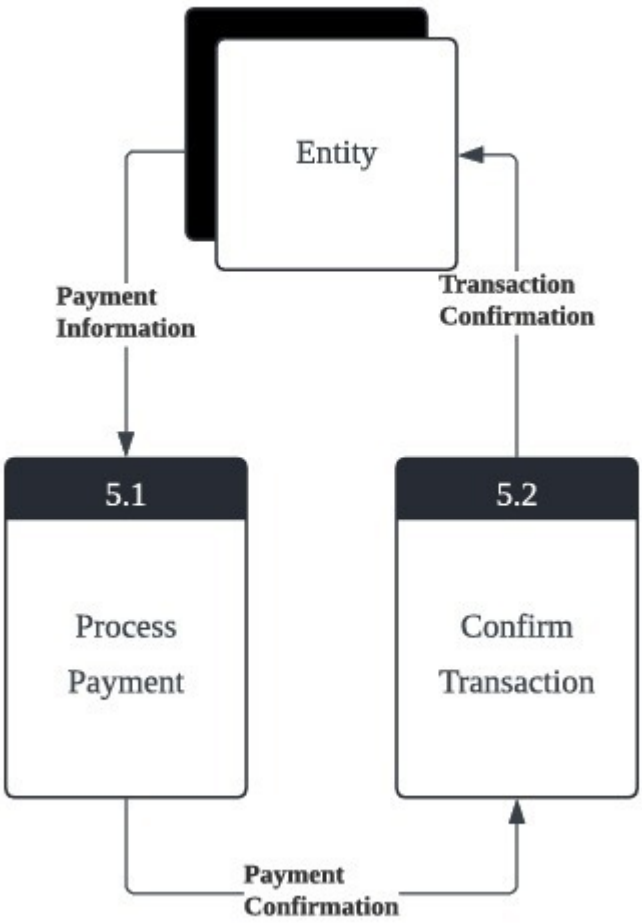

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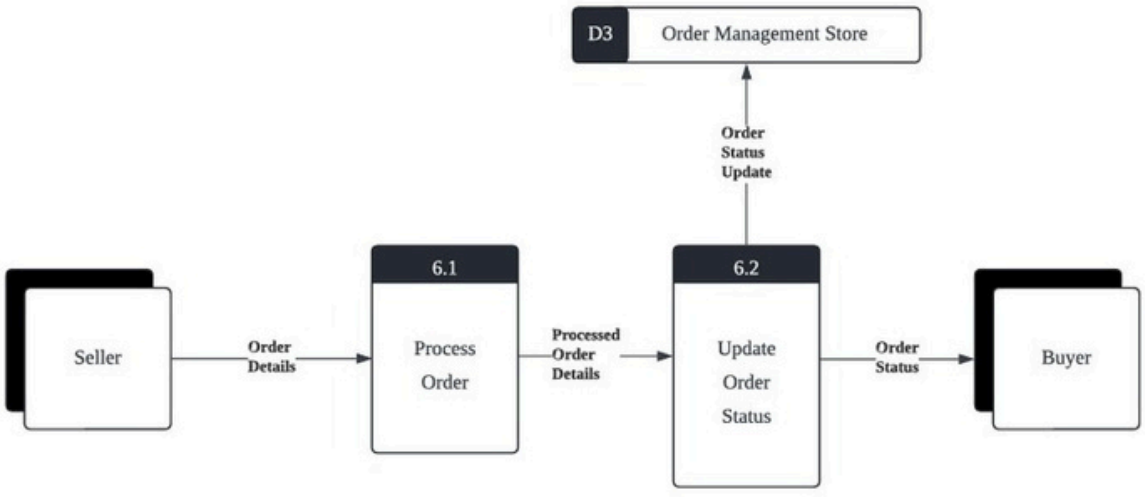


6.2 Process Specification (based on Logical DFD TO-BE)

1. **User Authentication and Authorization:**
   - Each online marketplace has its own authentication system, requiring users to log in separately to access their accounts.
   - Authorization is managed individually by each platform, determining the level of access and permissions granted to users.

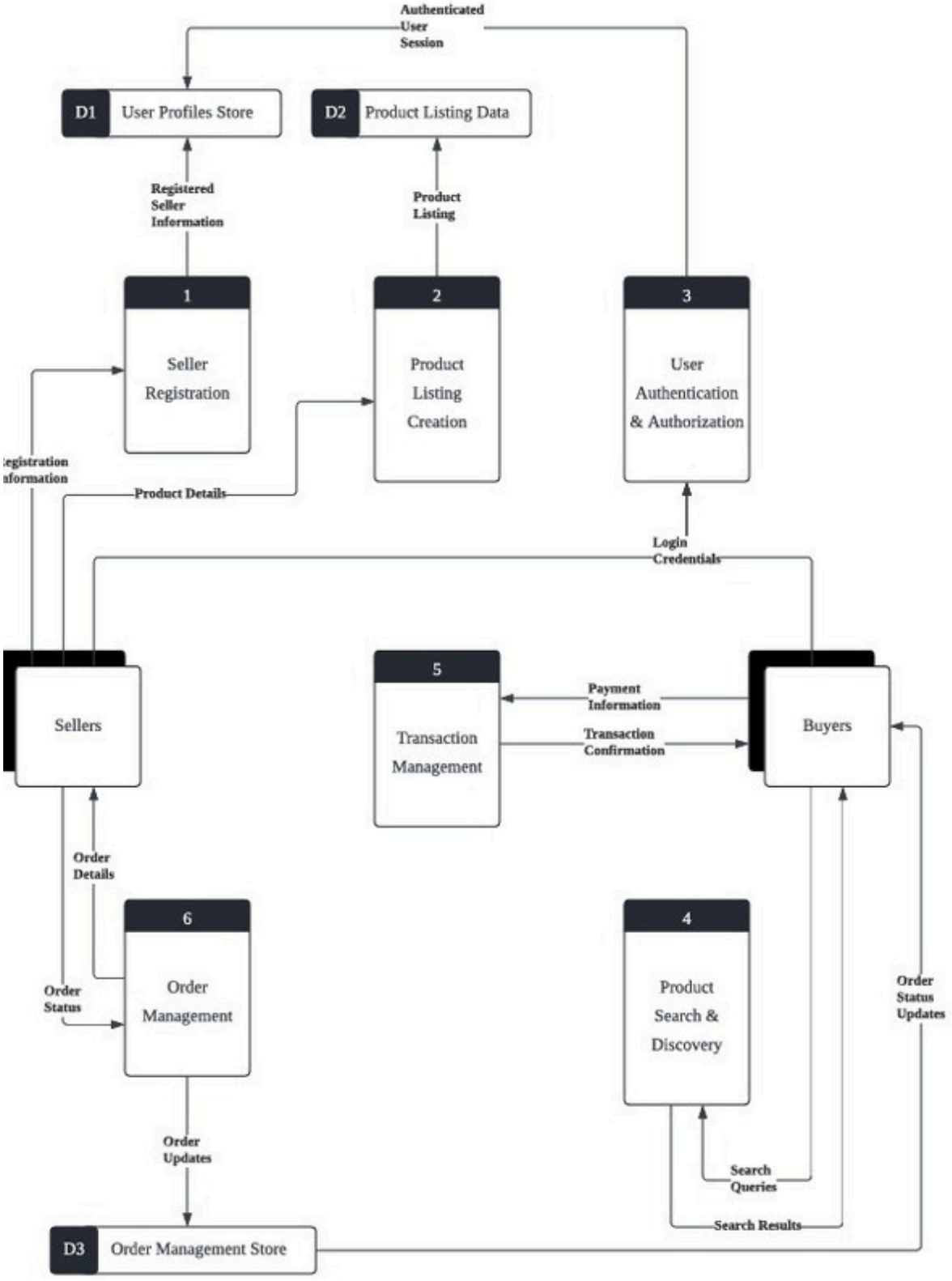
2**. Product Search and Discovery:**
   - Search functionality varies across platforms, with differences in search algorithms, filters, and sorting options.
   - Buyers navigate through product listings on each platform, with search results displaying product information based on the platform's criteria.

3. **Transaction Management:**

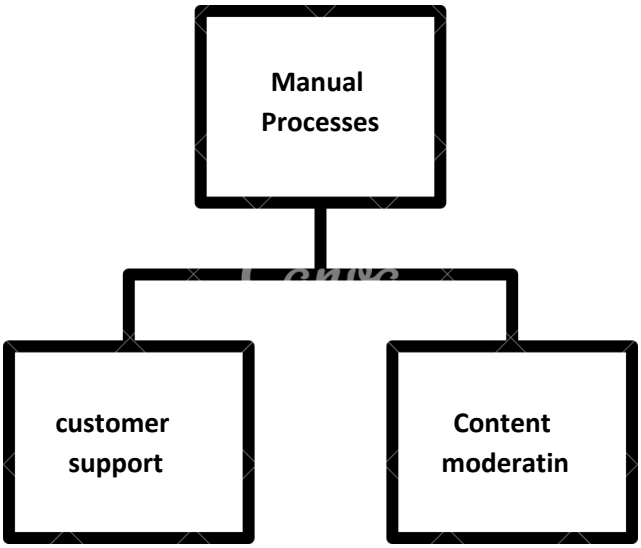
   - Payment processing occurs separately on each platform, with buyers completing transactions using different payment methods.
   - Order fulfillment and shipping are managed independently by sellers for each platform, leading to potential delays and inconsistencies in delivery.

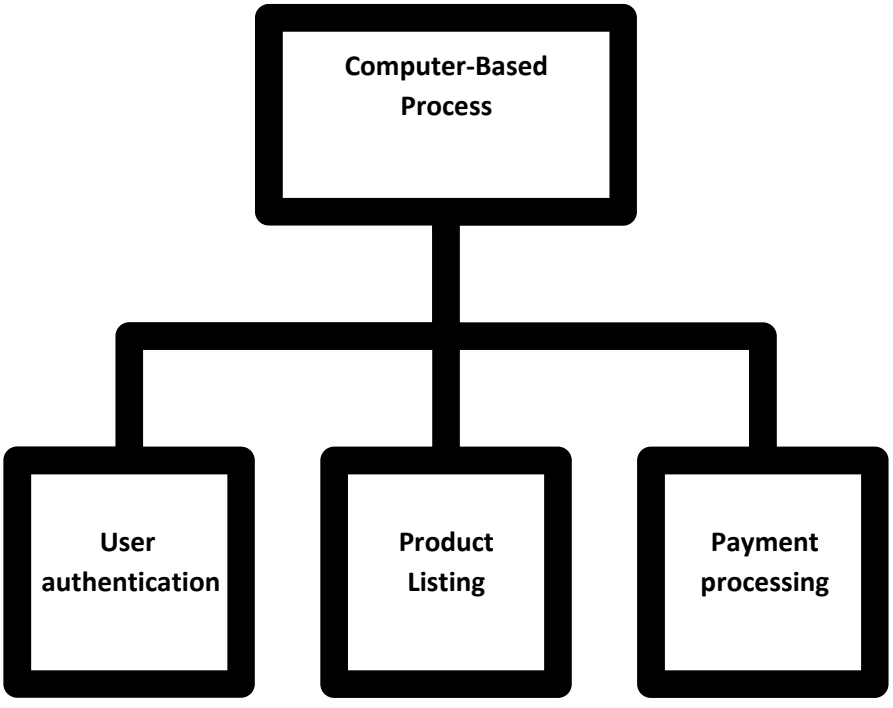
7.0 Physical System Design

diagram 0



Partitioning Partitioning





CRUD Matrix

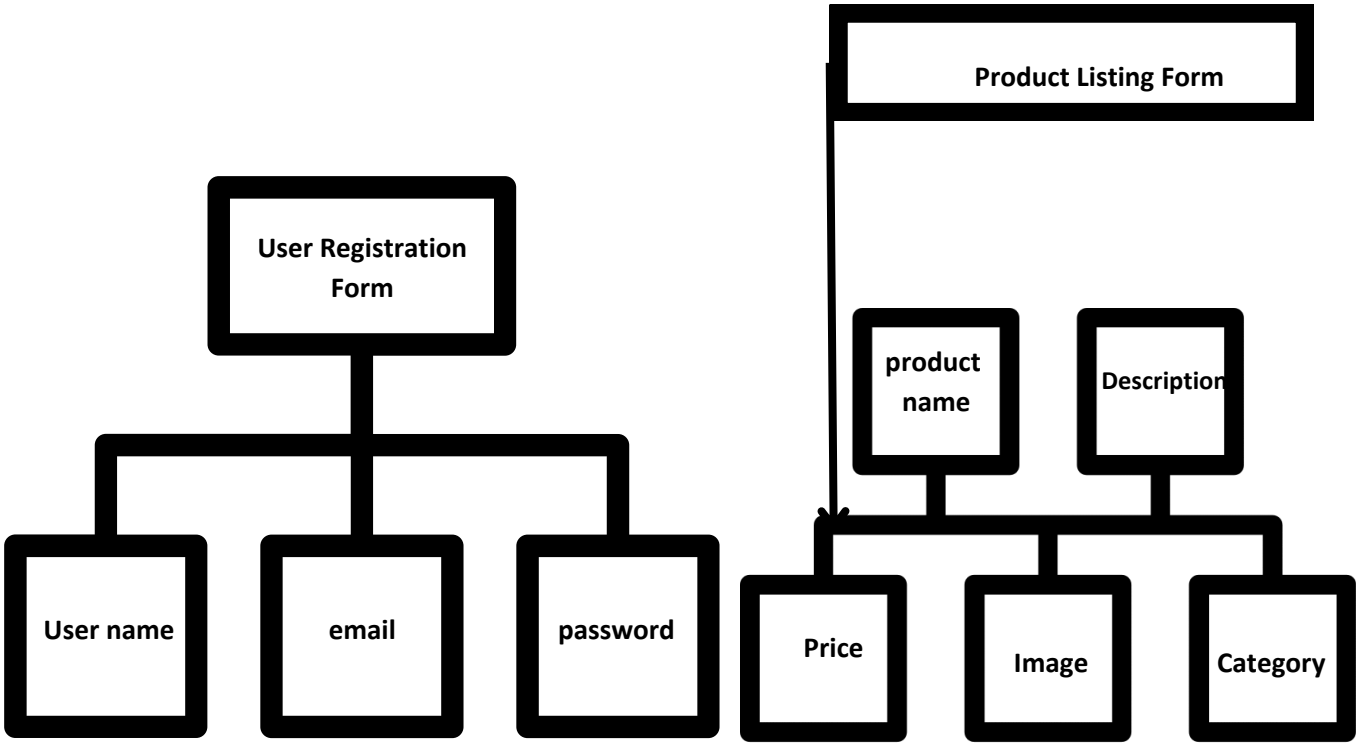
Activity	Buyers	Selers	ITEMS	Order Detail
Seller Registration	CRUD	CRUD	R	
Product Listing	R	CRUD	R	RUD
Item Selection	CRUD	R	R	
Order Checkout	C	RUD	R	RUD
Add Account	R	RUD	R	RUD
Add Item	CRUD	RUD	R	RUD

EVENT RESPONSE

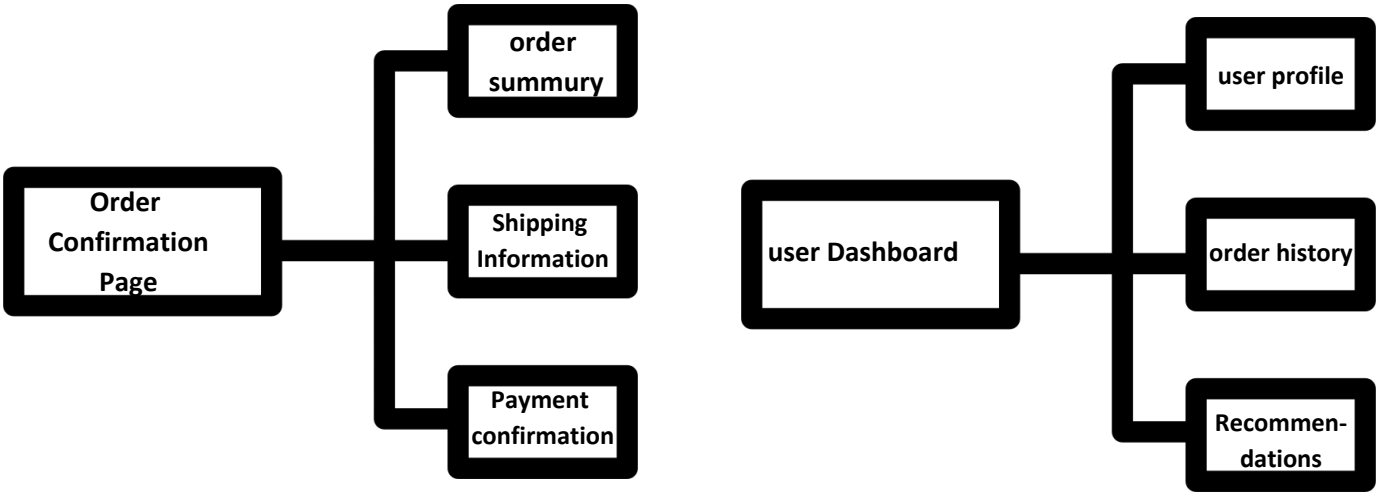
Event	source	Triger	Activity	Destination
Customer logs on	Customer	number & password	varify password	customer
Customer Browses Items	Customer	Item Information	find items with prices	customer
Customer Add items	Customer	item number & quantities	store order details	customer
checkout	Customer	click “check Out”	display customer order web page	Event
Payment	Customer	add credit card information	varify credit card	transaction management
manage order	Seller	accept payment & confirm	order status	customer

8.0 System Wireframe (Input Design, Output Design)

8.1 .Input Design



8.2. Output Design



9.0 Summary of the proposed system:

The requirement analysis process involved gathering detailed insights from potential users through interviews, surveys, and observations. This comprehensive approach ensured a thorough understanding of user needs and preferences. The information gathered was used to define both functional and non-functional requirements for the platform. Logical DFDs provided a clear visualization of data flows and processes, facilitating a structured development approach. This meticulous analysis will guide the development of a user-friendly, secure, and reliable Online Marketplace, addressing the pain points of both sellers and buyers effectively.