



Republic of the Philippines
Bicol University
POLANGUI CAMPUS
Polangui, Albay



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COMPREHENSIVE

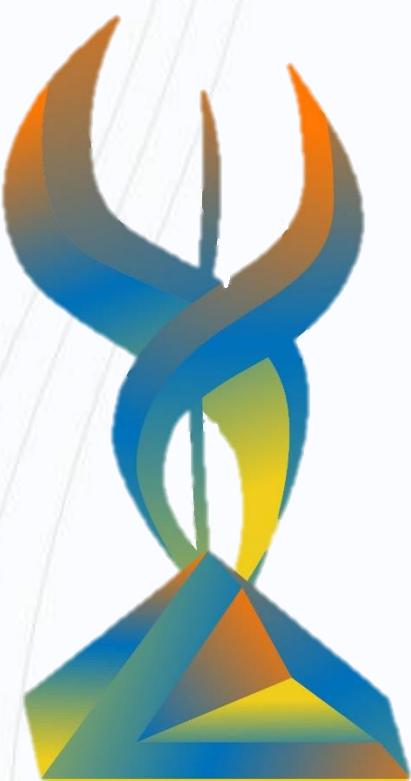
PLANNING &

ARCHITECTURAL

DESIGN

GROUP YOYO

Llona, Yasmien Mae M.
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Ruiz, Catlyn L.
Fermin, Yasmin M.
Bron, Niña Jezreen M.
Idanan, John Mark C.



PROJECT PROPOSAL

Title: NextGen Hardware

NextGen Hardware is an advanced online marketplace designed to provide high-quality computer hardware components for gamers, professionals, and tech enthusiasts. With the rapid evolution of technology, customers require a seamless shopping experience that offers easy access to the latest computer components. This system will serve as a one-stop solution for purchasing premium hardware while ensuring a smooth and secure transaction process. The platform will also include personalized recommendations and real-time order tracking to enhance user satisfaction.

Target users:

- **Gamers** – Individuals looking for high-performance components such as GPUs, CPUs, RAM, and cooling systems.
- **Professionals** – Designers, developers, engineers, and content creators in need of powerful workstations.
- **Tech Enthusiasts** – Hobbyists and PC builders who frequently upgrade and experiment with new hardware.
- **Business Clients** – Companies needing bulk hardware purchases for IT infrastructure or custom setups.

Features:

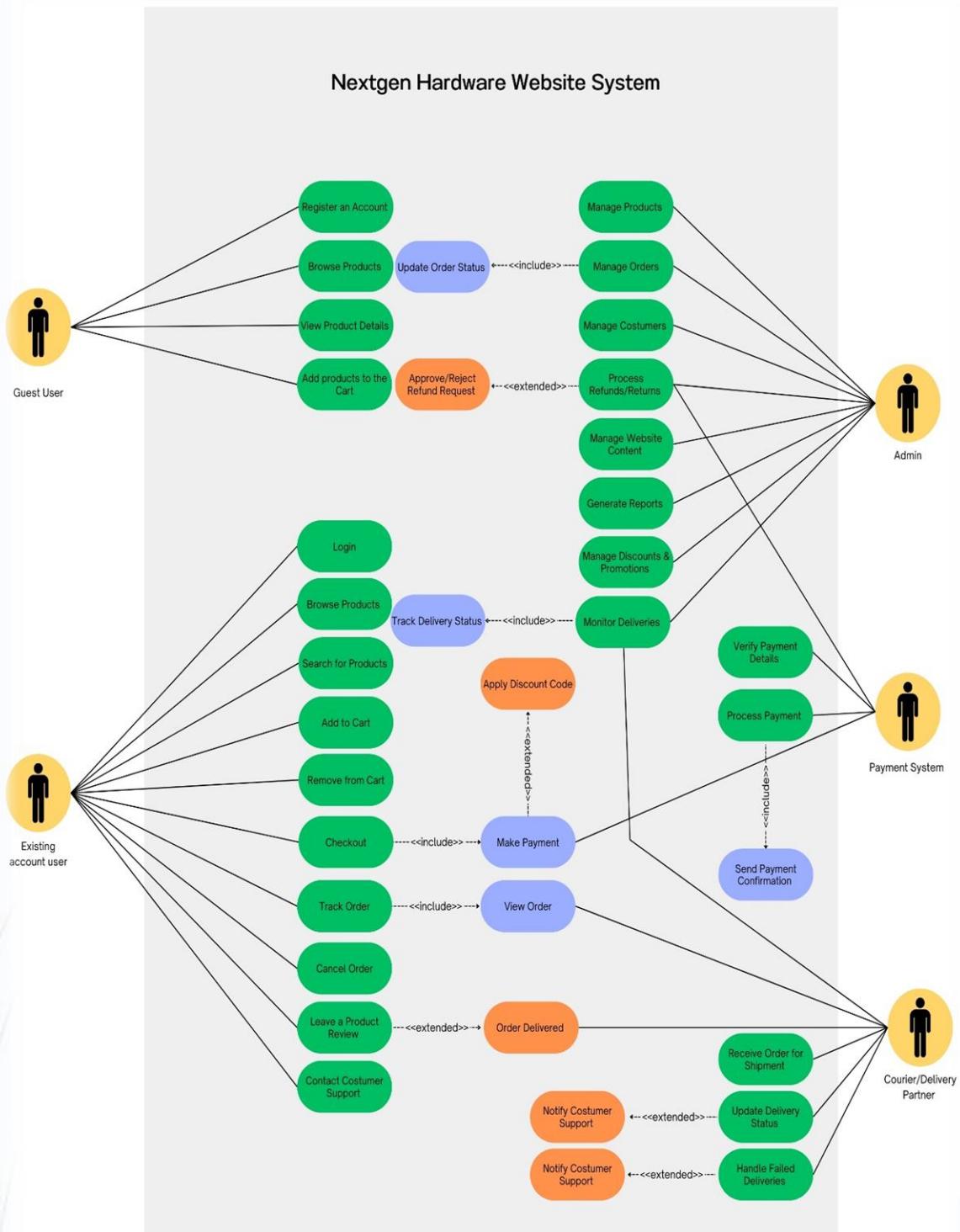
- **User-Friendly Interface** – A clean, intuitive design for easy navigation and product selection.
- **Secure Transactions** – Encrypted payment gateways to ensure data security.
- **Personalized Recommendations** – AI-driven suggestions based on browsing history and preferences.
- **Real-Time Order Tracking** – Enables users to monitor their purchases from confirmation to delivery.
- **Product Reviews & Ratings** – Customers can leave feedback to help others make informed decisions.

Brief objective:

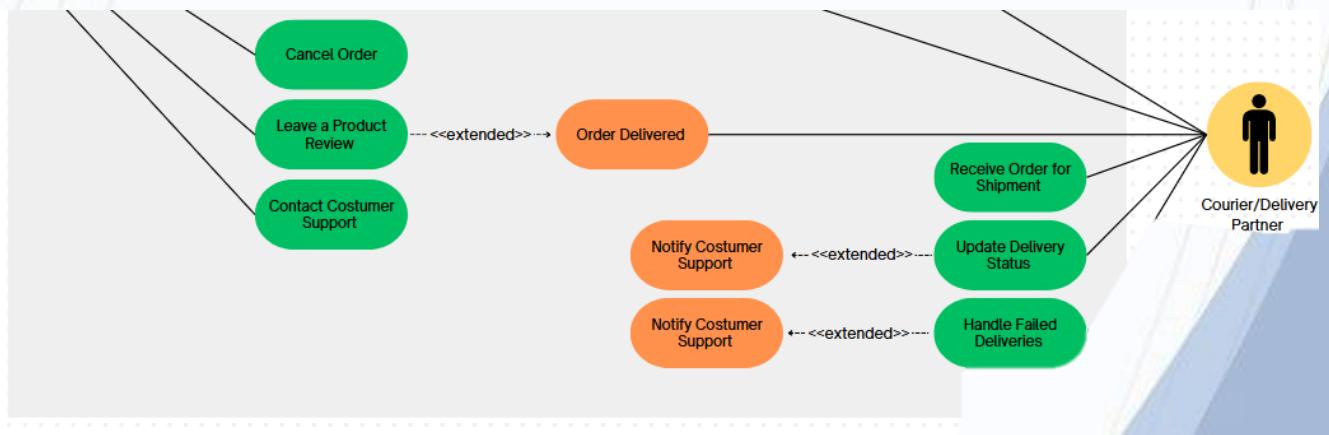
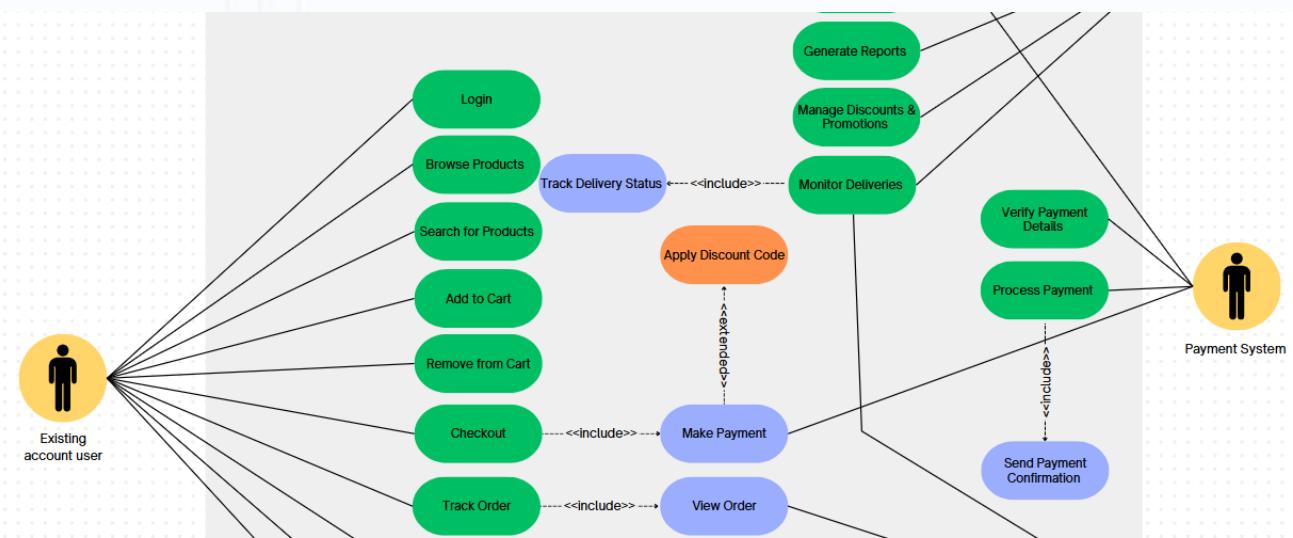
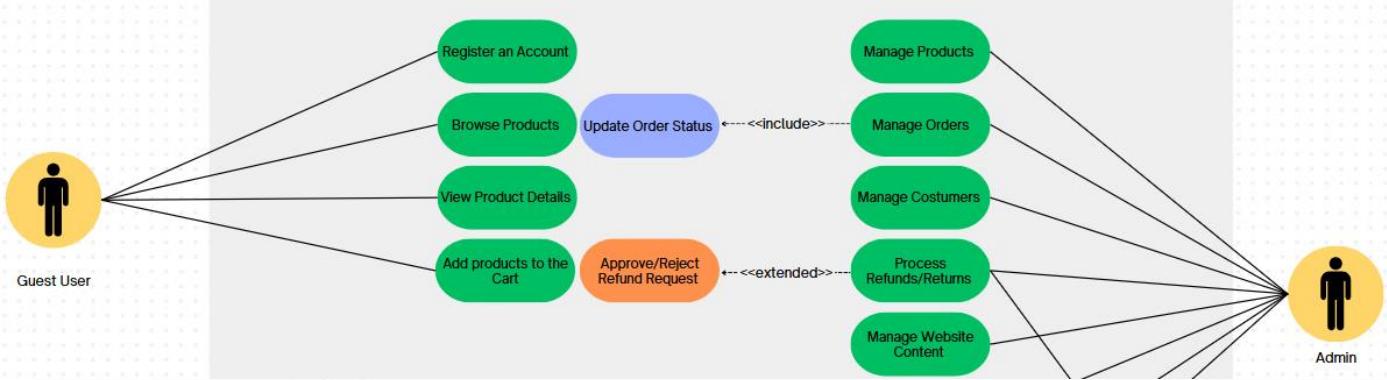
The main objective of this system establishes a user-friendly, secure and time-efficient solution that lets buyers explore their options and make purchases of computer hardware products. The system will achieve enhanced customer satisfaction through individually tailored recommendations together with exact order tracking in real time throughout the entire purchasing process.

USE CASE DIAGRAM

The use case diagram of our website entitled "NextGen Hardware" is part of the Comprehensive Planning and Architecture Design phase. It shows how users will interact with our proposed system along with the main functions it provides. By defining user roles and system actions, the diagram will help to ensure a clear and organized system design. This makes development easier and will serve as a guide for future improvements.

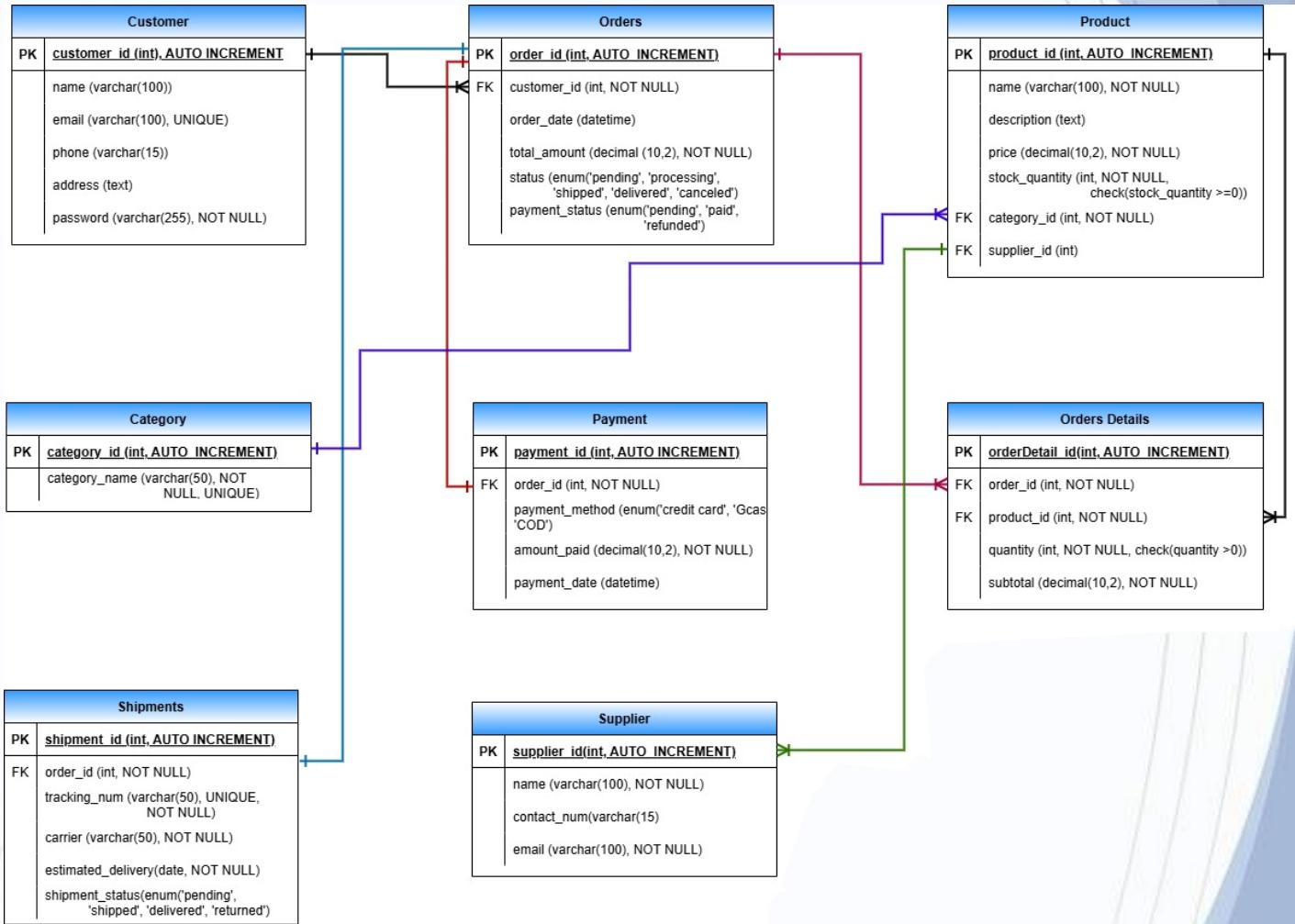


Nextgen Hardware Website System



ENTITY RELATIONSHIP DIAGRAM

The **Entity-Relationship Diagram (ERD)** defines the system's data structure by showing key entities, their attributes, and relationships. It ensures an organized database design, improves data flow, and guides system development for efficiency and future scalability.



1. Entities and Attributes

Each blue box represents the entity, and lines describe the relationships between these entities.

- **Customer:** Stores user details.
- **Orders:** Represents customer purchases.

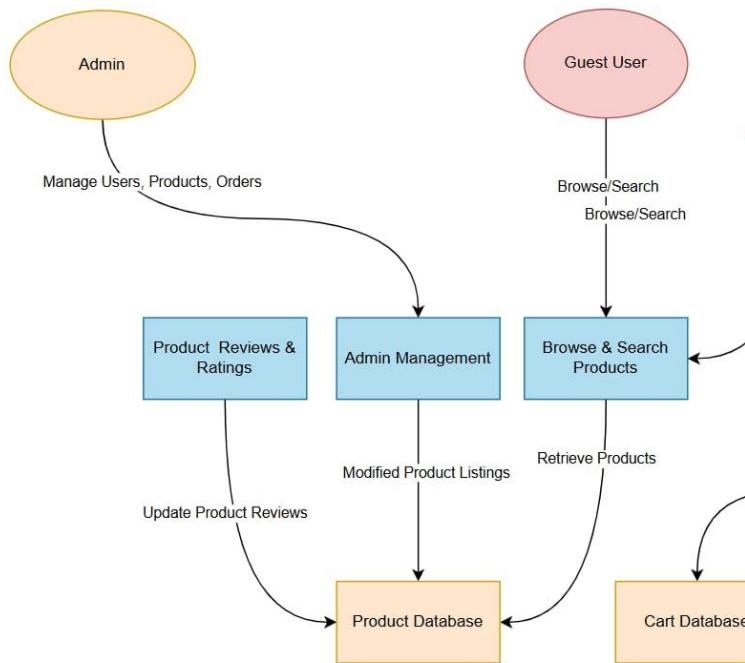
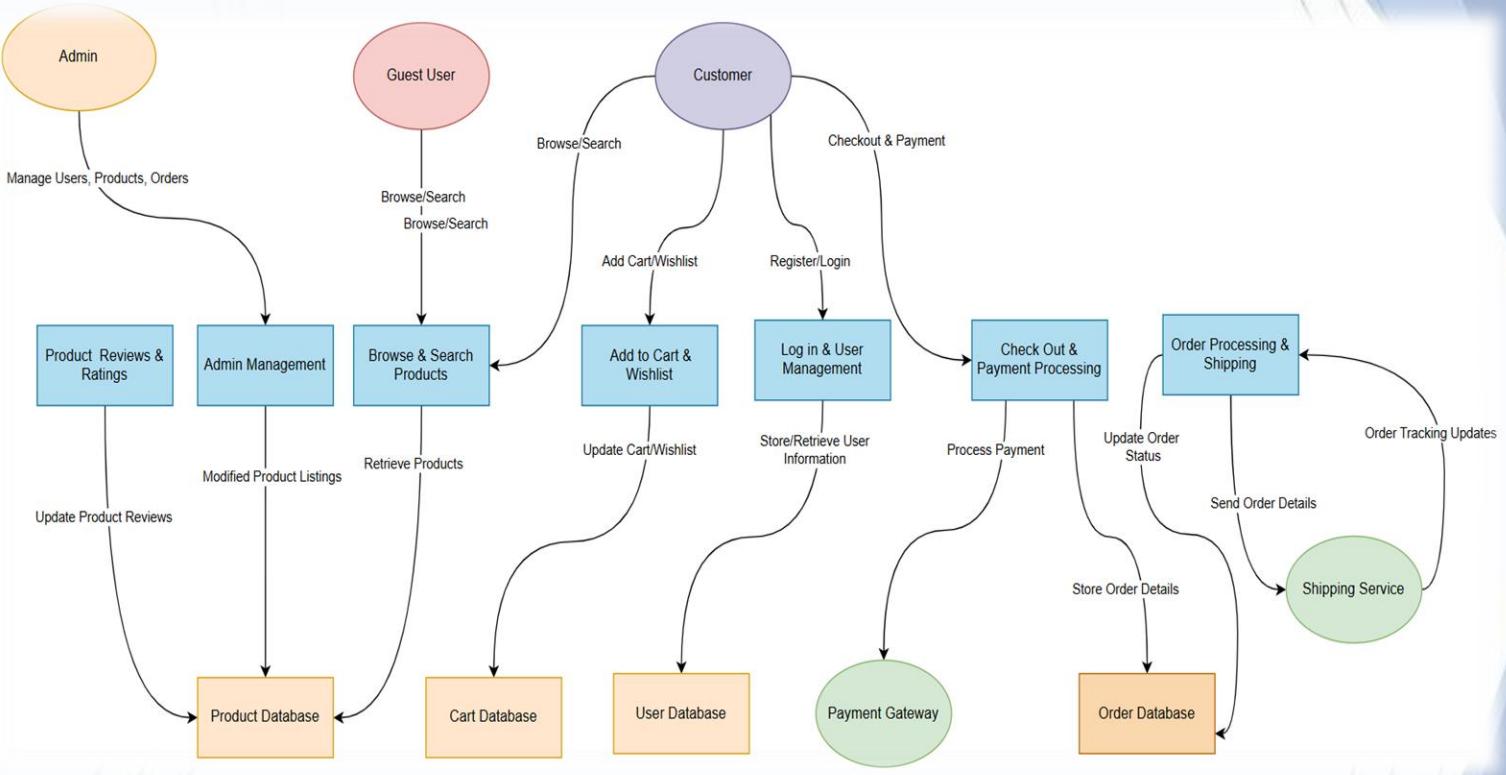
- **Product:** Stores product details.
- **Category:** Categorizes products.
- **Order Details:** A bridge table linking orders and products.
- **Payment:** Stores payment transactions.
- **Shipments:** Tracks deliveries.
- **Supplier:** Stores supplier details.

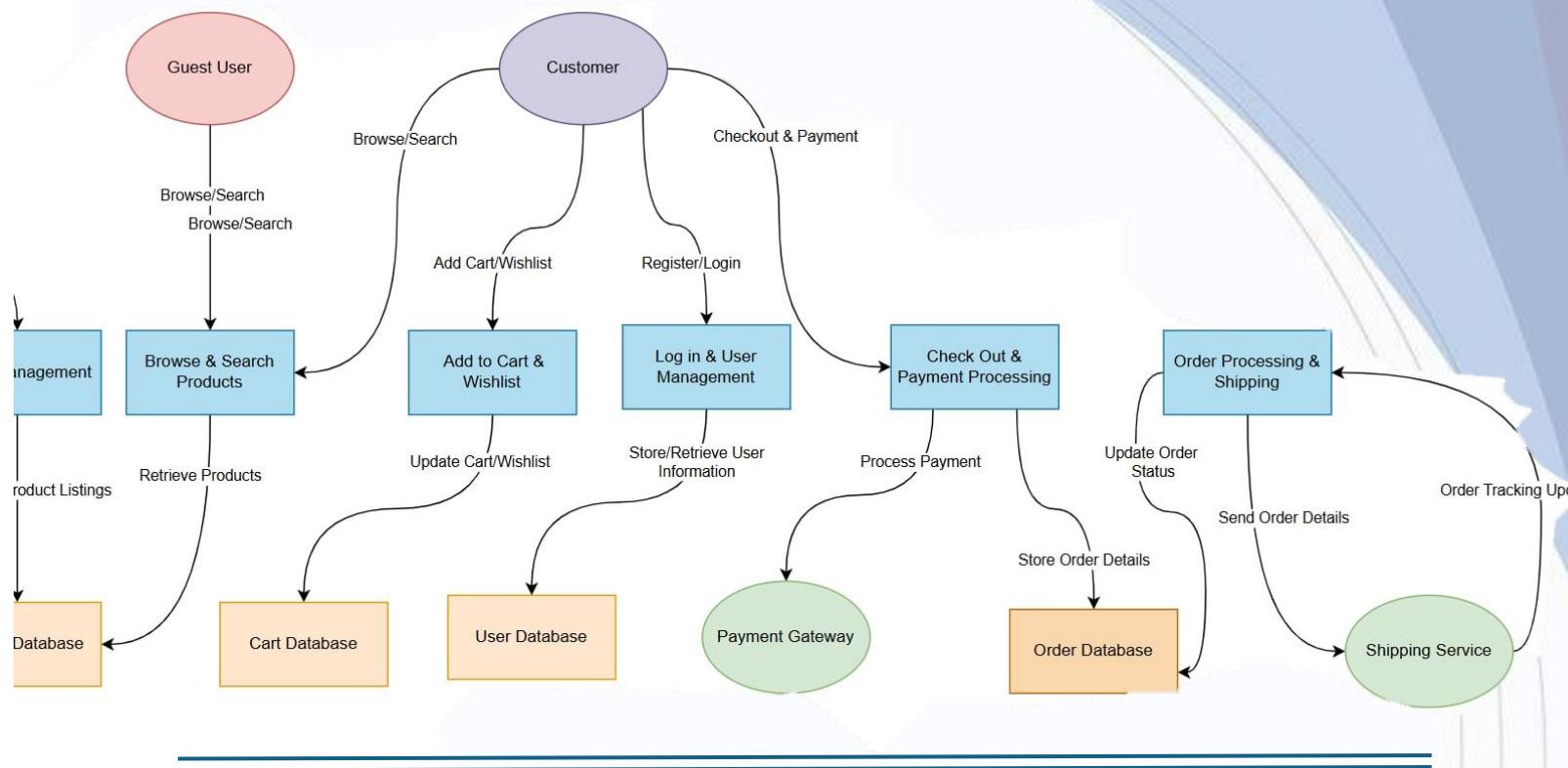
2. Relationships and Cardinality

- **Customer → Order (1:N)**
 - One user can place multiple orders.
 - One order belongs to one user.
 - (*Customer.customer_id* → *Order.customer_id*)
- **Order → OrderDetails (1:N)**
 - One order can have multiple order details.
 - One order detail belongs to one order.
 - (*Order.order_id* → *OrderDetails.order_id*)
- **Category → Product (1:N)**
 - Each product belongs to one category.
 - (*Category.category_id* → *Product.category_id*)
- **OrderDetails → Product (N:1)**
 - Each order detail references a single product, but a product can be in multiple orders.
 - (*OrderDetails.product_id* → *Product.product_id*)
- **Order → Payment (1:1)**
 - One order has one payment.
 - One payment is linked to one order.
 - (*Order.order_id* → *Payment.order_id*)
- **Order → Shipment (1:1)**
 - One order has one shipment.
 - One shipment is linked to one order.
 - (*Order.order_id* → *Shipment.order_id*)
- **Supplier → Product (1:N)**
 - One supplier can supply multiple products.
 - One product is supplied by one supplier.
 - (*Supplier.supplier_id* → *Product.supplier_id*)

DATA FLOW DIAGRAM

The **Data Flow Diagram (DFD)** illustrates how data will move through the system, showing inputs, processes, and outputs. It helps in understanding system workflow, improving efficiency, and ensuring a clear structure for development and future enhancements.





1. External Entities

- Customer – A registered user who can browse, add to cart, purchase products, track orders, and leave reviews.
- Guest User – Can browse and search for products but cannot purchase without registering.
- Admin – Manages users, products, and orders. Payment Gateway – Processes payments securely. Shipping
- Service – Handles order shipments and provides tracking updates.

2. Main Processes

- (P1) Login & User Management
 - Customers register or log in
 - User information is stored or retrieved from the **User Database** (D1).
- (P2) Browse & Search Products
 - Customers and guest users search for products.
 - Product details are retrieved from the **Product Database** (D2).
- (P3) Add to Cart & Wishlist
 - Customers add products to their cart or wishlist.
 - Data is updated in the **Cart Database** (D4).
- (P4) Checkout & Payment Processing
 - Customers proceed to checkout.
 - Order details are stored in the **Order Database** (D3).
 - Payment is processed via the **Payment Gateway**.

- (P5) Order Processing & Shipping
 - Orders are processed and shipping details are updated.
 - Information is sent to the Shipping Service for delivery.
 - Tracking updates are provided to the customer.
- (P6) Product Reviews & Ratings
 - Customers leave reviews and ratings on purchased products.
 - This information is updated in the Product Database (D2).
- (P7) Admin Management
 - Admin can manage user accounts, product listings, and orders. Admin updates the User Database (D1) and Product Database (D2).

3. Data Stores

- D1 (User Database) – Stores customer login credentials and user details.
- D2 (Product Database) – Stores product listings, descriptions, and reviews.
- D3 (Order Database) – Stores order history and order status.
- D4 (Cart Database) – Stores items added to the cart and wishlist.

4. External Interactions

- The Payment Gateway ensures secure transactions.
- The Shipping Service handles order deliveries and updates the system with tracking details.

GITHUB REPOSITORY URL

- <https://github.com/JezreenB/final-project-yoyo>

REPOSITORY STRUCTURE

Our initial repository structure reflects a strong foundation, starting with the planning phase. Organized documentation, including DFD, ERD, UCD, and project proposal, will set the stage for smooth development. With backend, frontend, and database directories ready, we are prepared for the next steps. A well-structured start ensures a well-executed system.

#ProjectPlanning #StructuredDevelopment

```
C:\Users\JOEHONEY\Documents\final-project-yoyo>tree /f /a
Folder PATH listing for volume OS
Volume serial number is DAA8-09D1
C:.
|   README.md
|
+---backend
|       .gitkeep
|
+---database
|       .gitkeep
|
+---docs
|   \---planning
|       Phase1_DFD.pdf
|       Phase1_ERD.pdf
|       Phase1_ProjectProposal.pdf
|       Phase1_UCD.pdf
|
\---frontend
        .gitkeep
```

MEMBERS' ROLE REFLECTIONS

Member	Role
Yasmien Mae M. Llona	Project Manager
Maryan D. Lusantas	Frontend Developer
Catlyn L. Ruiz	Backend Developer
Yasmin M. Fermin	Database Manager
Niña Jezreen M. Bron	Github Manager
John Mark C. Idanan	Tester/Debugger/Documentation Officer

As the **Project Manager** for our system/website development, I will oversee the entire project lifecycle, ensuring that we meet deadlines, stick within the instructions , and achieve our goals. I will coordinate with the development team, designers, and developers to ensure clear communication and smooth collaboration. My commitment is to manage risks, resolve issues efficiently, and maintain a structured workflow to keep the project on track. I will ensure that quality standards are met by reviewing progress, providing feedback, and implementing necessary improvements. Ultimately, I will lead the team with dedication, ensuring the successful delivery of a functional and user-friendly system/website.

YASMIEN MAE M. LLONA



Project Manager

My main goal in this project as a **Frontend Developer** involves designing an attractive user interface which offers seamless functionality for this project or web application. I will take responsibility for implementing responsive layouts in addition to creating interactive elements together with a clean user-friendly interface. The thing that drives me right now is to write well-organized code which can be easily reused while closely collaborating with my team to achieve seamless integration.

MARYAN D. LUSANTAS



Frontend Developer

CATLYN L. RUIZ



Backend Developer

I am assigned as the **Backend Developer** for this project. My role is to develop and manage the server-side functionality, including database management, API development, and system security. I commit to ensuring that the backend operates efficiently, securely, and seamlessly integrates with the frontend to provide a smooth user experience.

Data management is about keeping things organized, safe, and kept in good working order. For me, a **database manager**, it basically means working on keeping any information accurate and readily available while also protecting it from issues. I mainly work with my team to solve any issues that may arise, enhancing performances and improving data management systems. It is a challenging role, but I take pride in the fact that I am the backbone of data operations.

YASMIN M. FERMIN



Database Manager

NIÑA JEZREEN M. BRON



Github Manager

As the **GitHub Manager**, I'm going to make sure our project's space on GitHub is well organized. I want everyone to be able to find what they need, even if they're not that comfortable with the command line. I'll also be managing permissions and helping out with GitHub basics to make collaboration smooth. I'm committed to keeping our repository a clean and reliable spot for our final project.

JOHN MARK C. IDANAN



Tester/Debugger/ Documentation Officer

My role in this project as a **Documentation Manager/Tester and Debugger** is to help with documentation, testing, and debugging. I commit to organizing reports, ensuring clear documentation, assisting in test case creation, identifying issues, and helping fix errors in the code. Even though I have my own role, I will also help my other groupmates whenever needed to ensure the success of our project.