

E-FARM

ARCHITECTURAL PATTERN:
CLIENT-SERVER PATTERN



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IT, NSTU, E-Farm



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E-FARM

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E-FARM

requires a structured approach to connect farmers and consumers while offering various services. The **Client-Server pattern** fits here as *multiple clients* (farmers, consumers) interact with a *centralized server* (E-Farm platform) to access services, resources, and data.

Context

IT, NSTU, E-Farm

01

DEFINITION

What's Architectural Pattern?



E-FARM

What's Client-Server pattern?

Architectural Pattern refers that **structured approach** to designing software systems by defining a set of rules, principles, and relationships between various components to achieve specific objectives.

The Client-Server pattern involves decentralized clients requesting services or resources from a centralized server in a distributed computing environment.



Our System is an

EXAMPLE

In E-Farm, **farmers and consumers** (clients) access the platform through their devices, interacting with the centralized **E-Farm server** to list products, make purchases, access consultancy services, or rent equipment.

Client-Server pattern

MORE EXAMPLE

- **Web Applications:** The browser acts as a client requesting web pages from servers.
- **Database Management Systems:** Clients request data from the database servers.
- **File Sharing Systems:** Clients retrieve files stored on file servers.

Client-Server pattern



PROBLEM

based on Scenario

Traditional agricultural supply chains involve intermediaries, leading to unfair prices for farmers and limited access to fresh produce for consumers.

The **challenge** lies in creating a direct connection between farmers and consumers while ensuring fair prices and quality products.

****We want to improve scalability and availability by centralizing the control**



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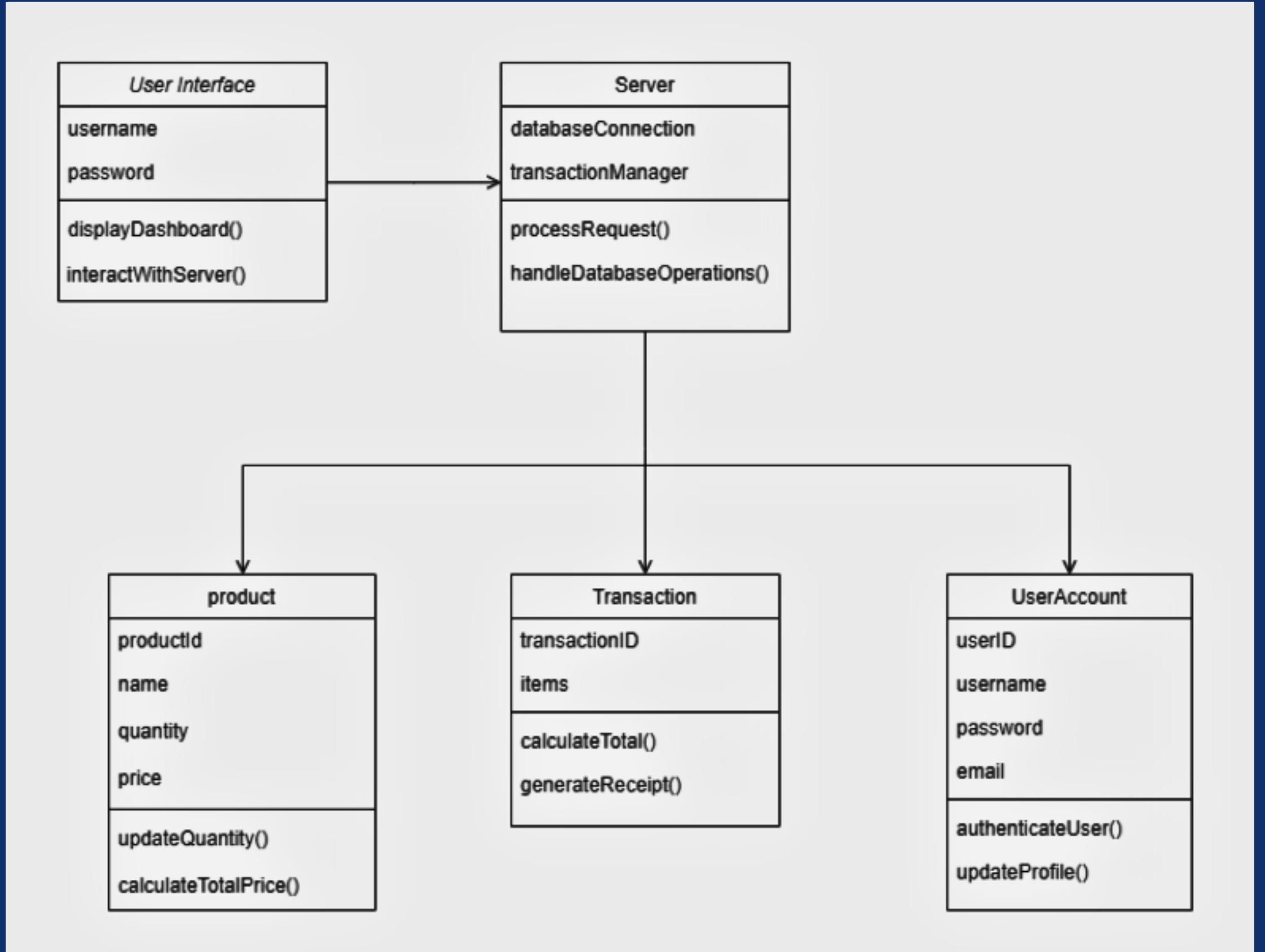
Here is the **SOLUTION**

Implementing a Client-Server architecture allows E-Farm to serve as the centralized server managing services like the agri marketplace, equipment rental, and consultancy.

Clients (farmers and consumers) interact with this server to access the platform's functionalities and resources.

IIT, NSTU, E-Farm

UML



E-FARM

REPRESENTATION

ADVANTAGES AND DISADVANTAGES

(Advantages)

- **Scalability:** Allows E-Farm to accommodate more users without impacting core functionalities.
- **Centralized Management:** Simplifies control and management of services offered.
- **Resource Sharing:** Enables centralized access to resources like product listings, equipment details, and consultancy services.

Client-Server pattern

CONTINUE... ...

(Disadvantages)

- **Single Point of Failure**: If the E-Farm server experiences issues, it affects all connected clients.
- **Network Dependency**: Performance relies on the quality and reliability of the network.

Client-Server pattern

SIMILARITIES AND DISSIMILARITIES WITH OTHERS

(Client-Server **vs** Peer-to-Peer)

- **Similarities with Peer-to-Peer (P2P):**

1. Both involve multiple entities communicating.
2. Resource sharing is a common aspect.

- **Dissimilarities with P2P:**

1. Client-server involves a centralized server managing resources, unlike P2P systems where resources are distributed among peers without a central authority.

CONTINUE... ...

(Client-Server **vs** Layered)

- **Similarities with Layered:**

1. Both aim to structure systems efficiently, providing a clear separation of concerns. Both contribute to the overall organization and maintainability of the system.

- **Dissimilarities with Layered:**

1. The Layered pattern focuses on horizontal layers (presentation, business logic, data) within a single system, while Client-Server involves communication between distinct clients and a central server.

CONTINUE...

(Client-Server **vs** Pipe-filter)

- **Similarities with Pipe-filter:**

1. Both emphasize modularity and componentization within a system

- **Dissimilarities with Pipe-filter:**

1. Pipe-Filter involves data transformation through a series of processing steps, while Client-Server deals with communication between decentralized clients and a centralized server.

CONTINUE... ...

(Client-Server **vs** Broker pattern)

- **Similarities with Broker pattern:**

1. Both facilitate communication and interaction within a distributed system.

- **Dissimilarities with Broker pattern:**

1. The Broker pattern involves a mediator facilitating communication between components, while Client-Server entails direct client-server interactions without an intermediary mediating all communication.

CONTINUE... ...

(Client-Server **vs** Model-view-controller)

- **Similarities with Model-view-controller(MVC):**
 1. Both aim to structure systems to separate concerns and enhance maintainability.
- **Dissimilarities with MVC:**
 1. MVC specifically focuses on separating data, presentation, and user interaction within a single application, while Client-Server manages interactions between multiple clients and a central server.

CONTINUE... ...

(Client-Server **vs** Blackboard pattern)

- **Similarities with Blackboard pattern:**

1. Both involve interactions between different components or entities in a system.

- **Dissimilarities with Blackboard pattern:**

1. Blackboard involves a shared global knowledge base where multiple agents contribute and access information, while Client-Server manages communication between clients and a centralized server.

APPROPRIATENESS FOR E-FARM

- **Agri Marketplace:** Fits well for managing product listings, orders, and payments between farmers (clients) and consumers.
- **Equipment Rental and Maintenance:** Allows centralized control over equipment details, rental requests, and maintenance services.
- **Agro Solution and Consultancy:** Facilitates direct interaction between farmers seeking guidance and the platform's consulting services.

The Client-Server pattern seems highly suitable for E-Farm, so we select this pattern for our project.



THANK
YOU!



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