E-Commerce Project (Console) — Microservices Architecture

# Project Overview

Build a modular console-based E-commerce system with separate microservices managing users, products, carts, orders, and optionally inventory and notifications. Each microservice handles its own data and business logic.

# Microservices & Their Responsibilities

## 1. User Service

- Register new users (ID, name, email, password)  
- User login/authentication  
- Update user information  
- List users (admin functionality)

## 2. Product Service

- Add, update, remove products (ID, name, description, price, stock)  
- List products with pagination  
- Search products by name or category

## 3. Cart Service

- Manage shopping cart per user  
- Add/remove items from cart  
- View cart contents  
- Clear cart after order placement

## 4. Order Service

- Create orders from cart  
- Validate stock availability before order confirmation  
- Calculate total price  
- Update order status (pending, shipped, delivered)  
- List user and admin orders

# System Features & Workflow

1. User registers and logs in  
2. Browses product catalog  
3. Adds products to their cart  
4. Places an order from the cart  
5. Order service validates stock, creates order, updates inventory  
6. User checks order status and order history

# Additional Features (Optional)

- Mock payment processing  
- Admin dashboard to manage products, users, and orders  
- Discount codes and promotions  
- Reports on sales and user activities

# Technical Notes

- Use classes or modules for each microservice  
- Services communicate via method calls simulating APIs  
- Console input/output for user interaction  
- Data persistence via JSON files (optional)

# Benefits of Microservices Architecture Here

- Clear separation of concerns  
- Easier maintenance and extension  
- Simulates real-world scalable architecture