

3. E-commerce: Product Management System

Objective: Manage product inventory, pricing, and stock using callback functions, error handling, async/await, and ES6 features.

Part 1: Basic Features

Instructions:

1. **Create a class Product** with properties `productId`, `name`, `price`, and `stock`.
2. **Implement methods to:**
 - Update the product price (with error handling).
 - Restock the product (with callback function).
 - Fetch product data from a simulated API (using `async/await`).
 - Save updated product data to a simulated API (using `async/await`).
3. **Use callback functions** to display updated price and stock after fetching and updating data.
4. **Add error handling** to manage simulated API request failures.

Part 2: Advanced Features

Objective: Enhance the product management system using advanced ES6 features, including modules, EventEmitter, and streams.

Instructions:

1. **Organize code using ES6 modules:**
 - Split the code into separate modules for Product, API calls, Logger, and Streams.
2. **Add an event-driven logging system** using EventEmitter:
 - Log significant actions such as fetching data, updating price, and restocking.
3. **Implement stream operations:**
 - Create readable, writable, duplex, and transform streams to handle product data.
 - Use `pipe()` for efficient data flow.
4. **Enhance error handling** to manage stream operations and API request failures.