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Course: Enterprise Architecture

**Class Exercise 3**

**Scenario for the Exercise:**

Imagine you are part of a team developing an Online Bookstore for a large retail company. The bookstore will allow customers to browse, search, purchase books, and manage their orders online. You need to implement a Service-Oriented Architecture (SOA) to ensure flexibility, scalability, and integration of various systems.

Key Business Goals:

1. Provide a seamless shopping experience for customers.

2. Enable customers to browse and purchase books online.

3. Manage orders efficiently and track order history.

4. Ensure secure payment processing.

5. Integrate the online store with the company’s existing inventory and delivery systems.

What you will do:

Based on the scenario, specify the following SOA steps in detail:

1. **Business Goals:** List the primary objectives the Online Bookstore aims to achieve.

* Provide smoother user registration and login functionality.
* Provide functionality for giving feedbacks/rating when they purchase the product.

1. **Business Capabilities:** Identify the main functions (services) the business needs to fulfil its goals (e.g., browsing books, payment processing, order management).

- Users can search a particular book based on authors and publications, etc. and order it accordingly.

- Users will have the capability to view the information about their orders and track them.

- Offers and Deals on products that will boost the profit, and they will get notifications about it for e.g. Black Friday, Christmas.

- Providing return/exchange functionality to the users, if the items were damaged or they ordered different book.

3. **Service Identification:** Specify the key services needed to support the business capabilities (e.g., Search Service, Payment Service, Order Management Service).

- Authentication Service: It provides and manages user accounts like logging in to the system, creating user accounts.

- Order Service: It manages the orders of the users and user is able to manage cart details, and takes care of all the orders the user has completed and providing invoice to customers.

- Payment Service: Provides multiple payment gateways/providers e.g. Stripe, PayPal and Net banking to pay for their orders.

- Inventory Service: This service has the list of all the books available in the store and it stores every information about a book i.e. category, title, description, price, ref number, stock available, etc. and providing search functionality for better searching the product.

- Order tracking service: This is used to track paid orders and gives the information to the customers about their orders through various methods e.g. email, sms and in-app notifications.

4. **Service Design:** Define how each service will operate. What inputs and outputs will they have? How will they interact with other services?

- Authentication Service:

- Input: Email, Password for login, and with some extra details like Full name, phone number for registration.

- Output: Redirects to home page if user found and logs into the system, otherwise it will show an error.

- Order Service:

- Input: User clicks on a product and adds it to the cart then checks out the items in cart. And can view order history.

- Output: Successful message if they paid for the order, else Error message. They can view the order history in orders section/page.

- Search Service:

- Input: User will provide input about the book i.e. author details, title or publication, category.

- Output: They will receive a list of books related to the input they provided.

5. **Service Realization:** Consider how the services will be built or implemented. Will you build them from scratch or reuse existing services?

- Search service: Using search service developed for other project, so no need to re-implement once again.

- Authentication service: This service is developed for every project, so reusing and modifying it according to our needs.

6. **Service Orchestration:** Describe how these services will work together to fulfil customer actions (e.g., browsing books, adding to cart, making a payment, and completing an order).

- Step 1: For new users, register their accounts by providing necessary information to the system.

- Step 2: Login to the system by providing their credentials like username/email, password. After successful login, they will be redirected to home page.

- Step 3: If they forgot the credentials, they will be able to reset their password by providing security questions and their username/email.

- Step 4: User can search for a particular book by typing related information about it and get the list of books.

- Step 5: User can add a particular book to the cart and go for the checkout and pay for the order.

- Step 6: Payment can be done by multiple payment providers like net banking, cards, paypal.

- Step 7: Once payment is successful, user will be notified via email, sms, in-app notification. And they’ll receive an invoice.

- Step 8: The users can track their orders that are completed.