Your All In One E-commerce Solution

Dealytics

Layered Architecture

Presented by Akanta Das

Overview

1. Presentation Layer (User Interface and API Gateway)
2. Business Logic Layer (Core Services)
3. Persistence Layer (DAO, ORM)
4. Database Layer (Relational and Time-Series Storage)
5. Integration Layer (Web scraping, API Integration, Notification and Message Services)
6. Infrastructure Layer (Cloud platform, Containerization, CI/CD Monitoring, Log Management)

Presentation Layer

- Purpose:
  - Handles user interaction,
  - ensuring a seamless experience for buyers and sellers.

Presentation Layer

- Components:
- Buyer :
  - Personalized Deals UI
  - Trending Deals UI
  - Product Query U
  - Deals List UI
  - Product Review UI
- Admin :
  - Scraping Dashboard
  - Scraping Configuration View
- Seller :
  - Critical Inventory Product UI
  - Critical Reputation Product UI
  - Critical Price Update UI
  - Recent Product UI
  - Deal List UI
  - Product List UI
  - Custom Analytics UI
  - Product Review UI

Presentation Layer

- Tech Stack:
  - React.js
  - Material-UI + Tailwind CS
  - Recharts + D3.js

Business Logic Layer

- Purpose:
  - Implements the core logic of backend
  - Data processing, storing, retrieval workflow

Business Logic Layer

- Components:
    - Analytics Service for Buyer
    - Analytics Service for Seller
    - Subscription Service
    - Product Aggeration Service
    - ReviewService
    - Deal Metrics Service
    - User Engagement Analytics Service
    - Conversation Service
    - Product Forecast Service(Price/Reputation/Inventory)

Business Logic Layer

- Tech Stack:

  - Backend Services:

    Spring Boot with embedded Tomcat

  -Internal Communication:

    Eureka Naming Server

Persistence Layer

- Purpose:
  - Abstracts interactions with the database
  - Provides schemas for database tables

Persistence Layer

- Components:
- DAO:
  - UserEngagementProfileDAO
  - BrowsingSessionDAO
  - BrowsingEventDAO
  - ProductUpdateDAO
  - NotificationDAO
  - ConversationModelDAO
  - MessageDAO

- ORM

Persistence Layer

- Tech Stack:
  - ORM:
  Java Persistence API (JPA)
  - Cache:
  Redis

Database Layer

- Purpose:
  - Actual storage and management of data
  - Handles relations between data
  - Enables querying data efficiently
  - Enables semantic search

Database Layer

Primary DB(Relational):

Stores

- Product
- Buyer
- Seller
- Deal
- Review
- Subscription
- Scraping Rule
- Scraping Target
- Scraping Session
- Scraped Product

Time Series DB:

Stores

- UserEngagementProfile
- BrowsingSession
- BrowsingEvent
- ProductUpdate

Database Layer

- Tech Stack:
  - PostgreSQL
  - InfluxDB

Integration Layer

- Purpose:
  - Abstracts communication with external APIs
  - Enables usage of external services with ease

Integration Layer

- Components:
    - Web scraping
    - API integration
    - Notification and Messaging Services
        - Notification
        - ConversationModel
        - Message

Integration Layer

- Tech Stack:
  - Scrapy , BeautifulSoup
  - Retrofit
  - Firebase Cloud Messaging
  - SendGrid

Infrastructure Layer

Purpose:

- Provides foundational support for hosting and deployment the backend APIs, models and user's data
- Storing temporary data for different services
- Storing resources like images, pdf in CDN

Infrastructure Layer

- Components:
  - Cloud platform
  - Containerization
  - CI/CD
  - Monitoring
  - Log management

Infrastructure Layer

- Tech Stack:
  - AWS
  -Kubernetes
  -Jenkins
  - Github Actions
  -Prometheus
  -Splunk

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Thank You

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