PAK-AUSTRIA FACHHOCHSCHULE:
INSTITUTE OF APPLIED SCIENCES AND TECHNOLOGY

Project Proposal for "OLX for Pak-Austria": Software Design and Architecture

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1. Project Overview

Objective:

The project aims to develop an e-commerce platform designed specifically for the Pak-Austria Fachhochschule University community. It will allow users within the university to buy and sell goods securely by interacting with an admin-managed product listing and approval process. The software will adhere to university policies and prioritize security, usability, and performance.

Goals:

- Provide a dedicated platform for university users to facilitate the exchange of goods.
- Create a secure, easy-to-use system with efficient data handling and admin-based verification.
- Maintain a high level of reliability and security.

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2. Functional Overview

User Roles:

1. Admin: Verifies and posts product listings, monitors user activity, and manages platform security.
2. Buyers and Sellers: University users who browse, search, or submit products for sale.
   Core Features
3. User Registration and Login:
   Allows users to register using university email and access password recovery.

4. Product Submission and Management:
   Users submit product details to admins for approval. Admins review, approve, or modify listings.
5. Search and Filter Options:
   Enables users to browse and filter products by categories, price, and condition.
6. Messaging System:
   Internal messaging for buyers and sellers, keeping personal contact information private.

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7. Software Architecture

Architecture Style:

The platform will employ a three-tier architecture:

1. Presentation Layer:
   Web-based user interface accessible on desktop and mobile, using responsive front-end technologies.
2. Business Logic Layer:
   Server-side processing, including user authentication, product submission, verification, and communication services.
3. Data Layer:
   Secure database handling user information, product data, and messages.

Technologies

- Front-end: HTML, CSS, JavaScript, and Bootstrap for responsive design.
- Back-end: Node.js or PHP for server-side logic, ensuring efficient handling of user requests.
- Database: MySQL or PostgreSQL for structured data storage.
- Security Protocol: HTTPS for data security, with SSL certificates ensuring encrypted data transmission.

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4. System Design

4.1 User Interface Design

- User-Friendly Interface:
  Intuitive navigation, accessible menu options, and responsive layout for both mobile and desktop use.
- Admin Dashboard:
  Provides admins with tools for managing product listings, viewing user activity, and handling platform settings.

4.2 Data Flow

- User Interaction Flow:
  Users submit products, which are routed to the admin for approval. Once approved, listings are available for all users to view and filter.
- Messaging System Flow:
  Secure, real-time communication between buyers and sellers, ensuring personal information remains protected.

4.3 Security Measures

- Data Encryption:
  All data, including user credentials and product information, will be encrypted in transit and at rest.
- Access Control:
  Role-based access (Admin and User), preventing unauthorized access to admin functionalities.
- Backup and Recovery:
  Regular data backup to maintain data integrity and support system recovery if needed.

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5. Technical Requirements

5.1 Functional Requirements

- Registration and Login:
  Allow users to register and access accounts with university-issued emails.
- Product Management:
  Enable submission, review, approval, and removal of products.
- Search & Filter:
  Provide filtering options for easier navigation through product listings.
- Messaging:
  Internal messaging for communication between buyers and sellers.

5.2 Non-Functional Requirements

- Performance:
  Supports up to 1,000 concurrent users, with a response time within 3 seconds.
- Usability:
  Clear interface with an intuitive layout.
- Reliability:
  High system availability with an uptime goal of 99%.
- Compliance:
  Ensures adherence to university policies and data protection laws.

6. Project Milestones and Deliverables

1. Requirement Gathering (Weeks 1-2): Define the project scope, gather user requirements, and outline functional and non-functional specifications.

2. System Architecture Design (Weeks 3-4): Define the architectural structure, data flow, and security protocols.

3. UI/UX Design (Weeks 5-6): Develop wireframes and prototypes for user and admin interfaces.

4. Development Phase (Weeks 7-14): Build the front-end, back-end, and database, integrating the messaging system and search functionalities.

5. Testing & Quality Assurance (Weeks 15-16): Perform functional, usability, and security testing to ensure the platform meets the requirements.

6. Deployment and User Training (Weeks 17-18): Deploy the system on a secure server and provide training sessions for admins.

7. Documentation and Maintenance (Ongoing): Provide system documentation and ensure regular maintenance and updates.

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7. Expected Outcomes

- A secure, efficient, and easy-to-use e-commerce platform tailored for Pak-Austria's university community.
- A reliable messaging system that enables safe communication between users.
- A user-friendly admin interface, enabling effective moderation and management.