**Title:  
Authentication and Api Services Hub: Enhancing APIs through Web-Based Services  
  
Group:  
Developed By  
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**Objectives**

1. Primary Goal: Create a robust web-based service hub integrating authentication and API services to provide seamless, secure user interactions.
2. Advanced Functionality: Automate stock trading by enabling users to place buy/sell orders based on predefined threshold values without human intervention.
3. User-Centric Design: Offer real-time updates, personalized dashboards, and error-free processes to improve user experience.
4. Scalability: Build a system that can integrate additional APIs and services in the future.
5. Security and Reliability: Ensure secure user authentication, encrypted data handling, and robust error management.

**Functional Requirements**

1. User registration, login, and logout functionality.
2. Secure password encryption using hashing techniques.
3. API integrations for:
   * Stock data retrieval (e.g., Alpaca, Polygon APIs).
   * Real-time stock market updates.
   * Automated trading functionality based on user-set thresholds.
4. Session management to ensure secure, authenticated access.
5. Dashboard displaying personalized user activities and notifications.
6. Admin panel to manage user activities, tickets, and logs.
7. Support ticket submission and resolution workflow.
8. Analytics and tracking services (e.g., page views, heatmaps).
9. Payment and subscription management, including invoice generation.
10. User profile management, including personal details and profile picture uploads.

**Non-Functional Requirements**

1. **Scalability**: The system should handle increased users, data, and service requests.
2. **Performance**: APIs and the system should deliver responses within milliseconds for a smooth user experience.
3. **Security**: End-to-end encryption, secure API keys, and adherence to best practices for data protection.
4. **Usability**: Intuitive and user-friendly interface for all user types.
5. **Reliability**: Ensure a 99.9% uptime for critical services like stock trading automation.
6. **Maintainability**: Modular design to simplify updates and future service additions.

**Target Users**

1. **Individual Traders**: Users seeking automated trading solutions.
2. **Investors**: Those requiring real-time stock and market data.
3. **Small Businesses**: Utilizing analytics, subscription management, and payment services.
4. **Platform Administrators**: For system monitoring and support ticket management.

**Novelty**

1. **Automated Trading Functionality**: Uniquely integrates buy/sell order execution based on user-defined thresholds, removing human dependency.
2. **Comprehensive Services**: Combines authentication, data analytics, stock trading, and user management into a single platform.
3. **Real-Time Notifications and Updates**: Provides instant insights and actions across financial and user activity.

**Tech-Stack**

1. **Backend**: PHP (Core Scripting Language)
2. **Frontend**: HTML, CSS
3. **Database**: MySQL
4. **Server**: LAMP stack (Linux, Apache, MySQL, PHP)
5. **Additional Tools**:
   * API Integration (e.g., Alpaca API, Polygon API)
   * PHP Extensions for enhanced functionality.

**List of APIs Designed**

1. **Authentication APIs**:
   * User registration, login, logout.
   * Password recovery.
2. **Trading APIs**:
   * Automated buy/sell orders.
   * Retrieve asset details via Alpaca API.
3. **Analytics APIs**:
   * User activity tracking.
   * Conversion metrics.
4. **Market Data APIs**:
   * Real-time stock data via Polygon API.
   * Market status updates.
5. **Support APIs**:
   * Support ticket creation and status updates.
6. **Notification APIs**:
   * User-specific notifications and admin alerts.

**Data Schema**

1. **Users Table**:
   * id (Primary Key)
   * username
   * email
   * password\_hash
   * profile\_picture
   * created\_at, updated\_at
2. **Sessions Table**:
   * session\_id (Primary Key)
   * user\_id (Foreign Key)
   * start\_time
   * end\_time
3. **Stocks Table**:
   * stock\_id (Primary Key)
   * symbol
   * name
   * last\_price
   * threshold\_value
4. **Transactions Table**:
   * transaction\_id (Primary Key)
   * user\_id (Foreign Key)
   * stock\_id (Foreign Key)
   * type (buy/sell)
   * amount
   * created\_at
5. **Support Tickets Table**:
   * ticket\_id (Primary Key)
   * user\_id (Foreign Key)
   * subject
   * message
   * status (open/closed)
   * created\_at, resolved\_at

**High-Level System Design**

1. **Frontend Layer**:
   * User interacts with a web interface built on HTML and CSS for ease of use.
   * Data visualization tools for analytics and market updates.
2. **Backend Layer**:
   * PHP handles business logic, API calls, and session management.
   * Integrates with third-party APIs for market and stock data retrieval.
3. **Database Layer**:
   * MySQL ensures secure and structured data storage.
   * Handles transactions, user data, and support ticket logs.
4. **API Gateway**:
   * Facilitates interaction between backend services and external APIs (e.g., Alpaca, Polygon).
   * Centralizes error handling and API key management.
5. **Automation Engine**:
   * Monitors stock prices and user-set thresholds.
   * Triggers buy/sell orders in real-time without user intervention.
6. **Notification Service**:
   * Alerts users about trading activity, market updates, and support tickets.
   * Ensures real-time updates for both users and admins.

A screen shot of a computer screen

Description automatically generatedA screenshot of a computer

Description automatically generatedA red circles on a white background

Description automatically generatedA graph with blue squares

Description automatically generatedA white rectangle with black lines

Description automatically generatedA screenshot of a computer

Description automatically generatedA blue rectangular object with text

Description automatically generatedA screenshot of a invoice

Description automatically generatedA screenshot of a computer screen

Description automatically generatedA white rectangular box with black text

Description automatically generatedA screenshot of a computer

Description automatically generatedA screenshot of a computer

Description automatically generatedA screenshot of a computer

Description automatically generatedA screenshot of a login screen

Description automatically generatedA black and grey striped background

Description automatically generatedA computer diagram of a computer

Description automatically generated with medium confidenceA screenshot of a computer

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