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**Web Programming**

**Assignment 1**

**Question 3**

**KASB KTrade:**

**System Design and Software Architecture:** KASB KTrade likely employs a multi-tier architecture, separating presentation, business logic, and data storage layers. While specific details aren't provided, it's common in such applications to use a combination of relational databases for transactions and NoSQL databases for user profiles. The system ensures data integrity and efficient management of user data.

**API Architecture:** KASB KTrade likely utilizes RESTful APIs for seamless communication between clients and servers. OAuth, a secure authorization protocol, is likely implemented for user data protection. RESTful APIs offer scalability and ease of integration with other systems, ensuring smooth interactions between the application and external services.

**Scalability:** To manage high trading volumes, KTrade likely utilizes cloud-based solutions, employing auto-scaling and load balancing techniques. Caching mechanisms are probably in place to reduce database load and improve response times, ensuring the platform remains responsive even during peak usage.

**Strengths and Weaknesses:**

*Strengths:*

* **User-Friendly Interface:** KTrade offers an easy-to-use interface, making stock trading accessible to beginners.
* **Real-Time Data:** Provides real-time stock prices and market data, enabling users to make informed decisions.

*Weaknesses:*

* **Limited Scope:** Restricted to trading stocks listed on the Pakistan Stock Exchange.
* **Potential Latency:** Like all trading apps, there's a risk of latency, impacting trade execution times.

**Investify:**

**System Design and Software Architecture:** Investify probably uses a similar multi-tier architecture. The layers are likely divided for presentation, business logic, and data storage. It utilizes cloud-based solutions, enhancing data consistency and availability. The system is designed to handle real-time data for a vast number of stocks, indicating robust backend infrastructure.

**API Architecture:** Investify may utilize RESTful APIs or WebSockets for real-time data updates, ensuring users receive continuous, up-to-date information on stocks. These technologies allow for dynamic data provision, enhancing user experience and keeping traders informed about market changes.

**Scalability:** Investify's ability to provide real-time data for a vast number of stocks suggests the use of scalability solutions such as caching, load balancing, and distributed databases. These technologies enable the app to handle a large amount of data efficiently, ensuring a seamless user experience.

**Strengths and Weaknesses:**

*Strengths:*

* **Comprehensive Features:** Offers a wide range of features, including real-time data, interactive graphs, company profiles, and more.
* **User Experience:** Designed for both new investors and experienced traders, providing a balance of simplicity and advanced features.
* **Shariah Compliant Stocks:** Allows users to filter and view Islamic stocks, catering to a specific market segment.
* **Data Sync:** Portfolio and watchlist are automatically synced across devices, enhancing user convenience.

*Weaknesses:*

* **Limited to PSX:** Users can only track stocks listed on the Pakistan Stock Exchange, limiting the app's market coverage.
* **Dependency on Third-Party Data:** Relies on real-time data from PSX, making the app susceptible to disruptions or inaccuracies in the source data.