System Design Interview Framework - IF-RAIL

Use the IF-RAIL framework to structure every system design interview:

I - Inputs: Clarify use case, traffic, users, latency, consistency

F - Functional Requirements: Core features, APIs, flows

R - Reliability & Resilience: Failures, retries, fallbacks, HA design

A - Architecture & Tradeoffs: DB choice, Kafka vs SQS, Redis vs Memcached

I - Integration & Interfaces: APIs, pub-sub, batch vs stream

L - Latency, Scale, Monitoring: Throughput, SLA, alerts, metrics

Tech Tradeoffs:

- SQL vs NoSQL: Use SQL for strong joins; NoSQL (Cassandra, DynamoDB) for scale

- Kafka vs API Polling: Kafka for real-time and decoupling

- Redis vs Memcached: Redis supports persistence, TTL, ZSETs; Memcached is ephemeral and faster