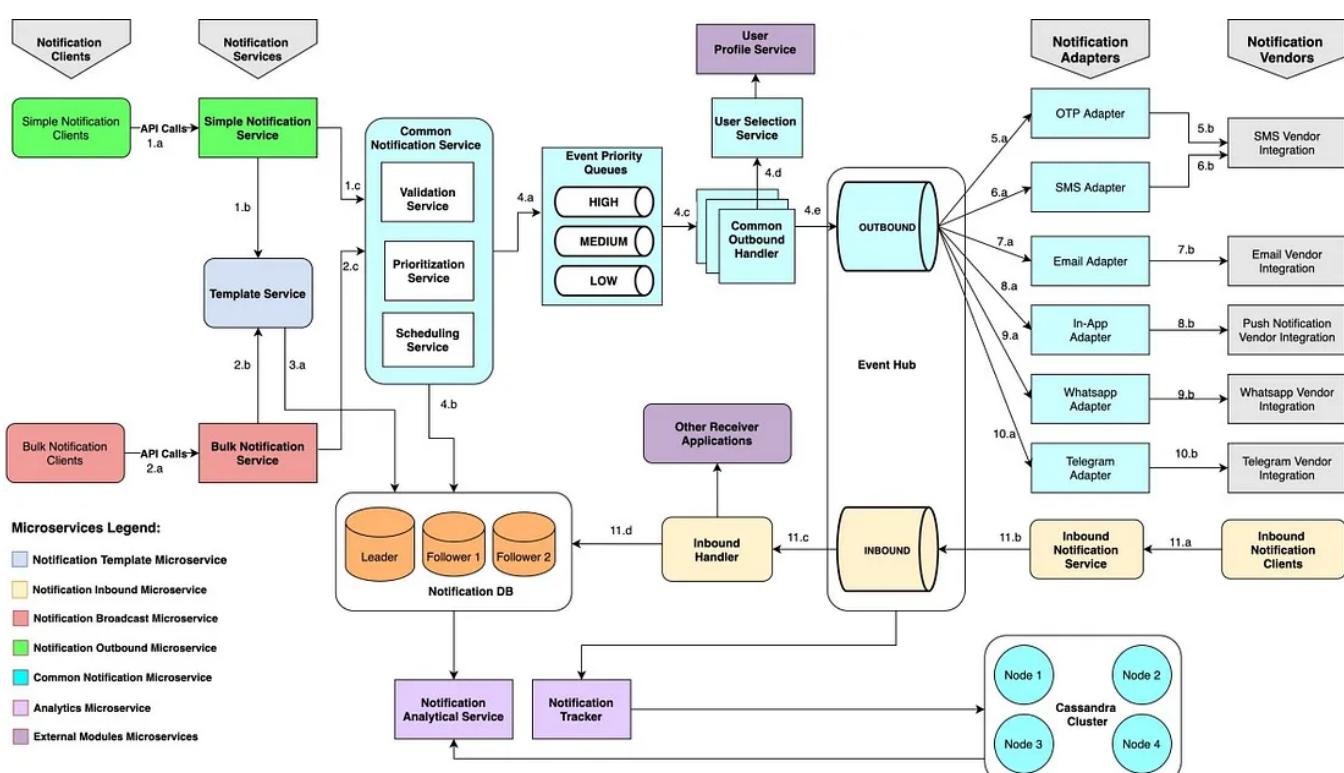




Golden Rules for System Design Interview

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The system design is complex and one design doesn't fit all. Below I share useful rules to get you unstuck in an interview.

1. For a Read-Heavy System – Consider using a Cache.
2. For a Write-Heavy System – Use Message Queues for async processing
3. For a Low Latency Requirement – Consider using a Cache and CDN.

4. Need Atomicity, Consistency, Isolation, Durability Compliant DB – Go for RDBMS/SQL Database.
5. Have unstructured data – Go for NoSQL Database.
6. Have Complex Data (Videos, Images, Files) – Go for Blob/Object storage.
7. Complex Pre-computation – Use Message Queue & Cache.
8. High-Volume Data Search – Consider search index, tries, or search engine.
9. Scaling SQL Database – Implement Database Sharding.
10. High Availability, Performance, & Throughput – Use a Load Balancer.
11. Global Data Delivery – Consider using a CDN.
12. Graph Data (data with nodes, edges, and relationships) – Utilize Graph Database.
13. Scaling Various Components – Implement Horizontal Scaling.
14. High-Performing Database Queries – Use Database Indexes.
15. Bulk Job Processing – Consider Batch Processing and Message Queues.
16. Server Load Management & Preventing DOS Attacks- Use a Rate Limiter.
17. Microservices Architecture – Use an API Gateway.
18. For Single Point of Failure – Implement Redundancy.
19. For Fault-Tolerance and Durability – Implement Data Replication.
20. For User-to-User fast communication – Use Websockets.
21. Failure Detection in Distributed Systems – Implement a Heartbeat.
22. Data Integrity – Use Checksum Algorithm.
23. Efficient Server Scaling – Implement Consistent Hashing.
24. Decentralized Data Transfer – Consider Gossip Protocol.
25. Location-Based Functionality – Use Quadtree, Geohash, etc.
26. Avoid Specific Technology Names – Use generic terms.
27. High Availability and Consistency Trade-Off – Eventual Consistency.
28. For IP resolution and domain Name Query – Mention DNS.
29. Handling Large Data in Network Requests – Implement Pagination.
30. Cache Eviction Policy – Preferred is LRU (Least Recently Used) Cache.
31. To handle traffic spikes: Implement Autoscaling to manage resources dynamically
32. Need analytics and audit trails – Consider using data lakes or append-only databases
33. Handling Large-Scale Simultaneous Connections – Use Connection Pooling

System Design Interview

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Software Development

Performance

Scalable Applications

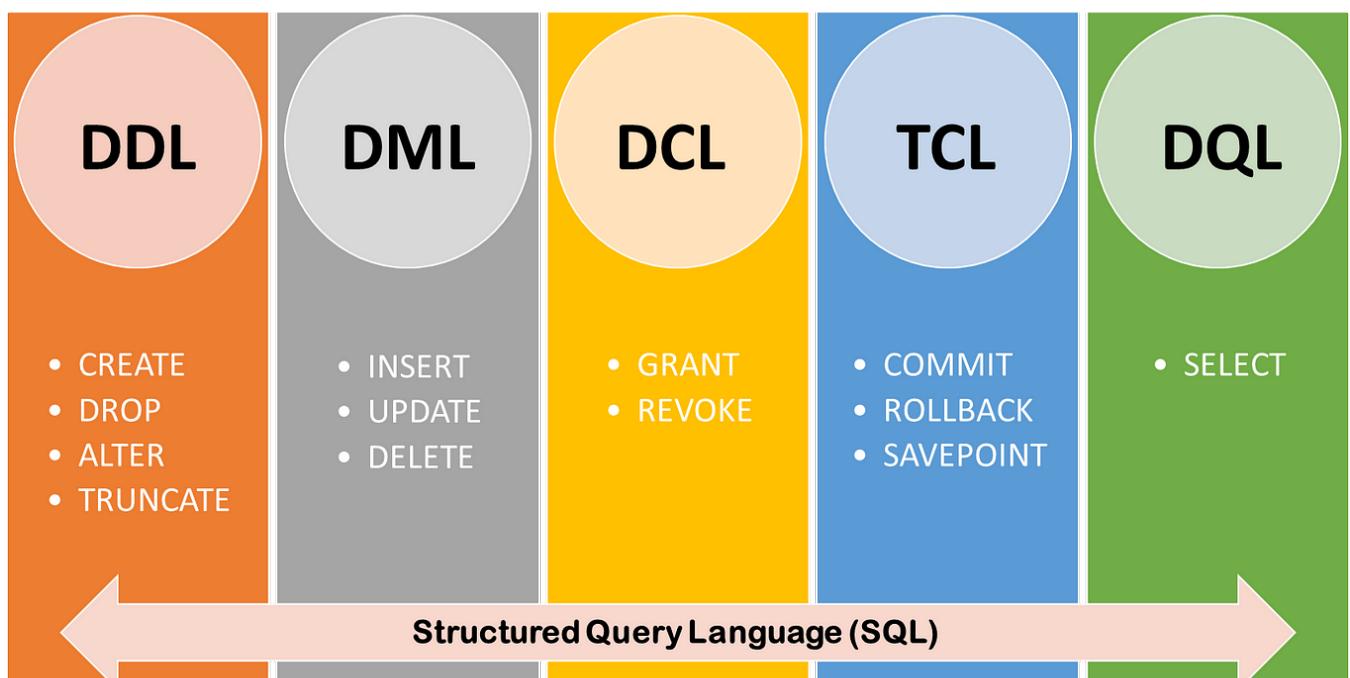


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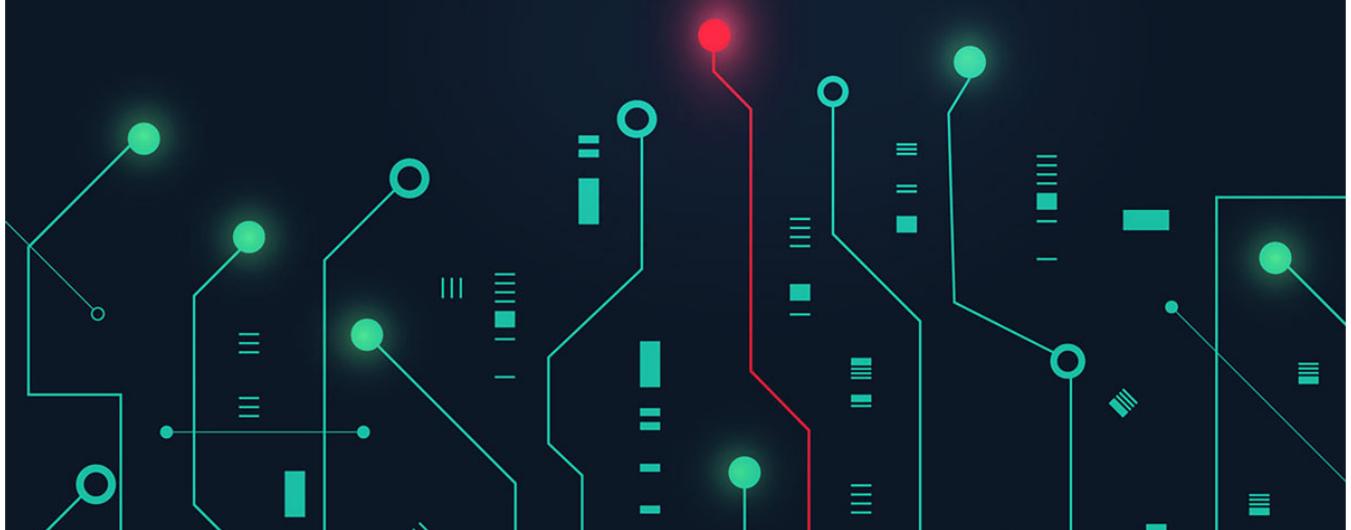
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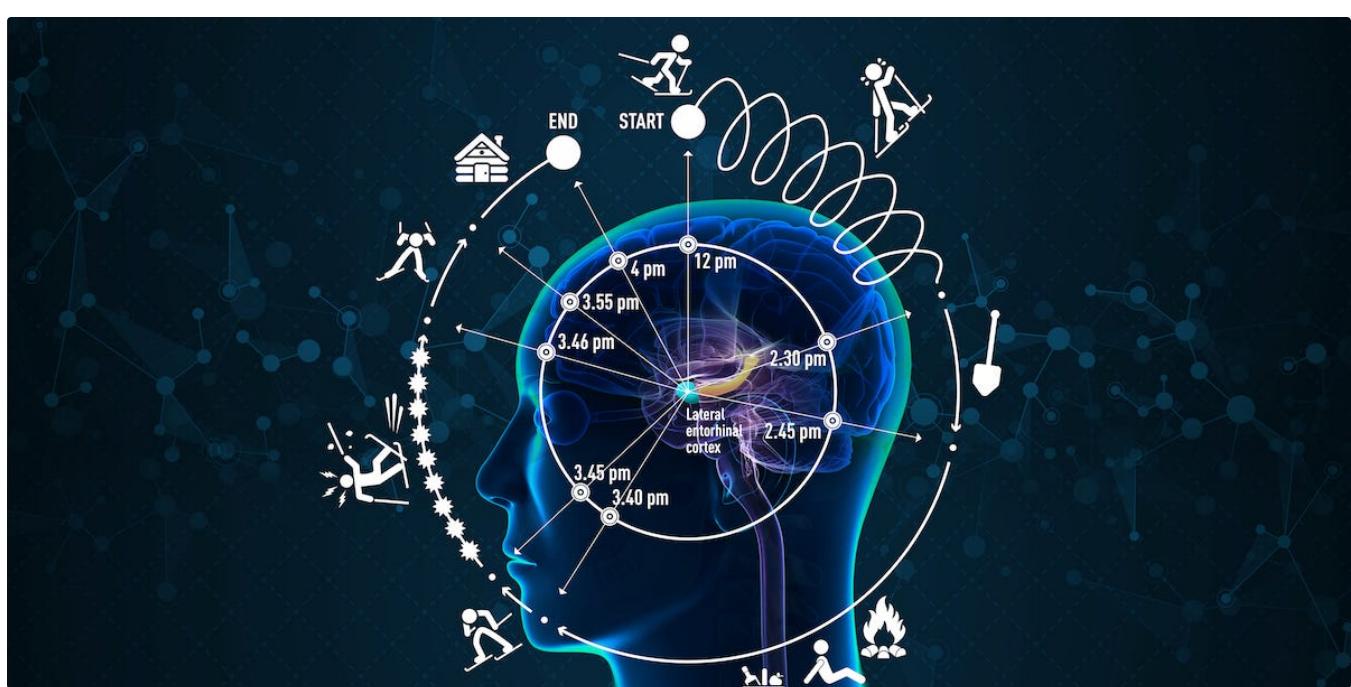


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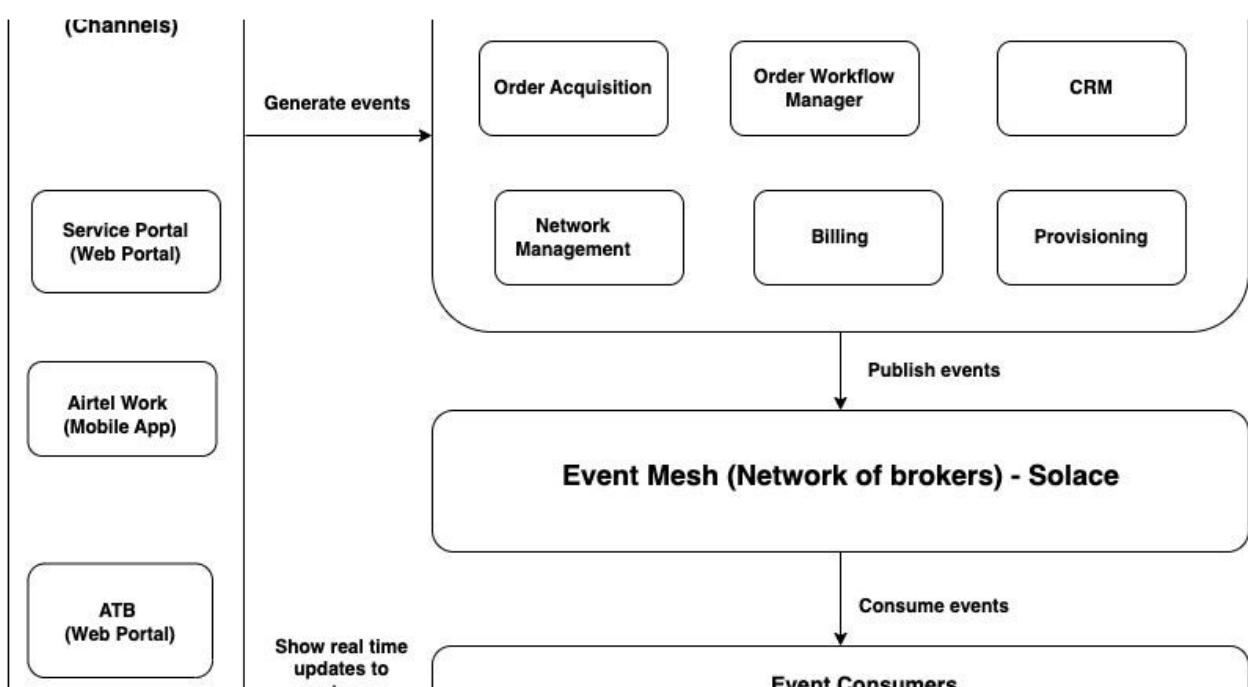
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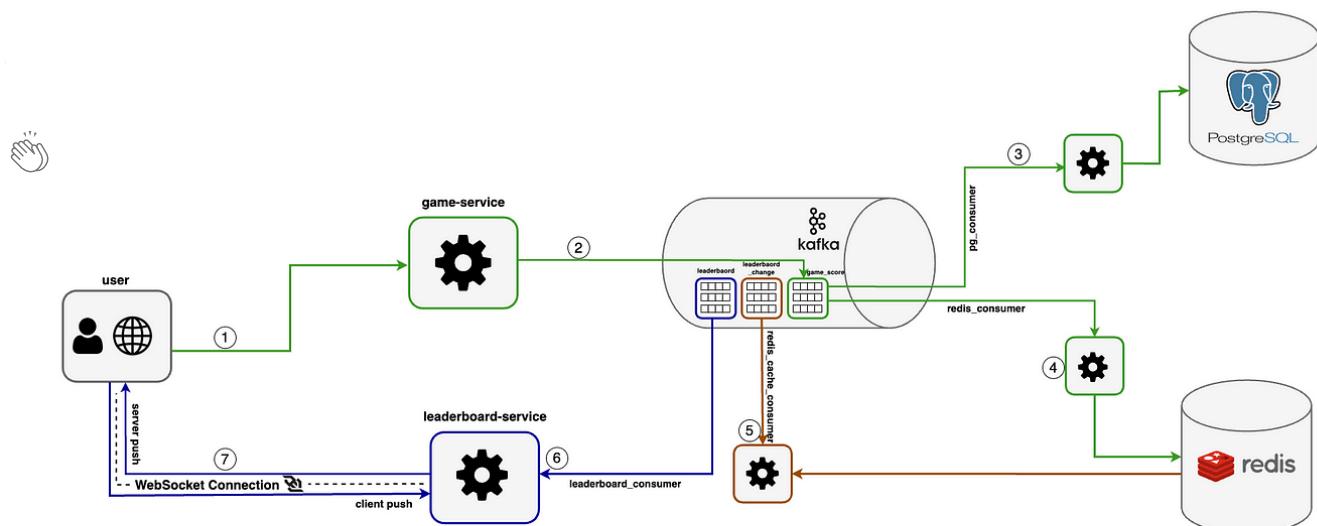
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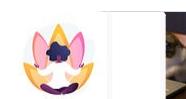


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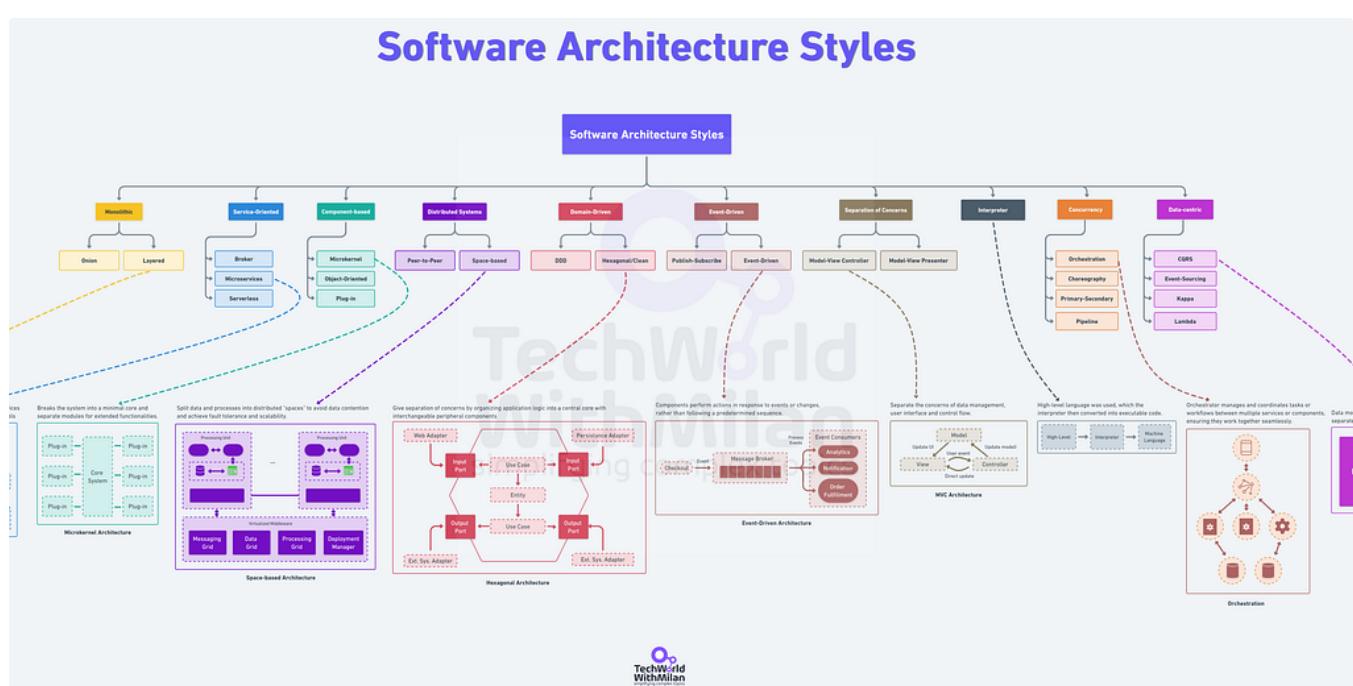
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