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Top 20 System Design Concepts You Should Know

1 - Load Balancing: Distributes traffic across multiple servers for reliability and availability.

2 - Caching: Stores frequently accessed data in memory for faster access.

3 - Database Sharding: Splits databases to handle large-scale data growth.

4 - Replication: Copies data across replicas for availability and fault tolerance.

5 - CAP Theorem: Trade-off between consistency, availability, and partition tolerance.

6 - Consistent Hashing: Distributes load evenly in dynamic server environments.

7 - Message Queues: Decouples services using asynchronous event-driven architecture.

8 - Rate Limiting: Controls request frequency to prevent system overload.

9 - API Gateway: Centralized entry point for routing API requests.

10 - Microservices: Breaks systems into independent, loosely coupled services.

11 - Service Discovery: Locates services dynamically in distributed systems.

12 - CDN: Delivers content from edge servers for speed.

13 - Database Indexing: Speeds up queries by indexing important fields.

14 - Data Partitioning: Divides data across nodes for scalability and performance.

15 - Eventual Consistency: Guarantees consistency over time in distributed databases

16 - WebSockets: Enables bi-directional communication for live updates.

17 - Scalability: Increases capacity by upgrading or adding machines.

18 - Fault Tolerance: Ensures system availability during hardware/software failures.

19 - Monitoring: Tracks metrics and logs to understand system health.

20 - Authentication & Authorization: Controls user access and verifies identity securely.

Over to you: Which other System Design concept will you add to the list?

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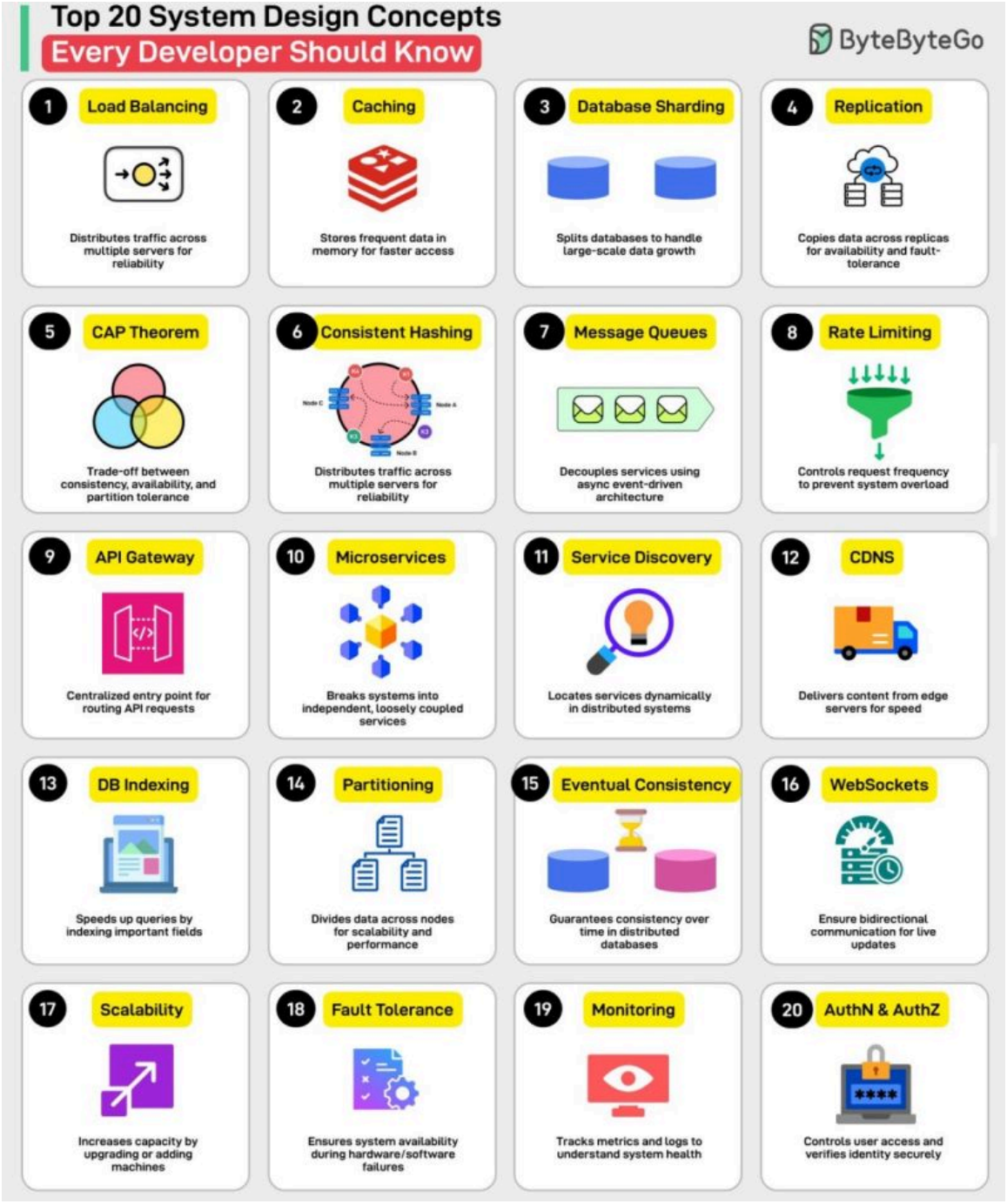
Source: Alex Xu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