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| 1 | Basics of Architecture, Why Architecture is Required, Vertical and Horizontal Scaling, why we need Distributed System. CAP theorem, ACID Properties, Common Terms (Latency, Throughput, Availability) |
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| 2 | High Availability Architecture and Different kind of Replication (Hot Standby, Warm Stand By, Cold Stand By) |
| | Data Structures Advanced (LRU Cache, Graph Data Structure and Dig Ikra Algorithm), |
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| 3 | Different kind of Load Balancers (Round Robin LB, Layer-4 LB, Layer-7 LB, Consistent Hashing LB, DNS LB, etc) |
| 3a | Data Centre, role of DNS Server, Routers, Switches, Spine Leaf Architecture,<br>OSI Model in Networking.<br>Introduction of How Switches work and how Routers work,<br>Layer-2 and Layer-3 Traffic<br>Introduction.<br>Why do we need Tunnels and How VPN works via Tunnels. |
| 3b | Role of Cluster Manager in Data Centre and how Global Data Centre works. |
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| 4 | Micro Services, Micro Services Good Practices, API Gateway, Rest API (includes also Rest-Api Security and Rest API scaling) |
| 4a | API Rate Limiters |
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| 5 | Different Kind of Deployments (Master-Slave, Master-Master, Master (with tape backup), Single Master), |
| 5a | Deployment (Virtual Machines, Containers Docker, Kubernetes) |
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| 6 | How Cluster Architecture Works (Google File System) and Hadoop Cluster Architecture and Hadoop Map Reduce and Kubernetes Architecture |
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| 7 | Common Architectural Patterns (SAAS, Client-Server, Proxy forward and Reverse Proxy, Layered, MVC, leader Election, Consistent Hashing, Distributed Cache, Other Cloud Architectural Patterns, etc,etc) |

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| 9 | Consistent Hashing in detail and how it works in Distributed Cache, Load Balancers,etc |
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| 10 | Event Driven Architecture and Kafka Producer Consumer and Observer Design Pattern |
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| 11 | Different Performance Tuning Techniques (Multi-threading, Caching, Bulk Write, SSD, etc,etc) , and different Rate Limiters at Rest API in detail. |
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| 12 | Different Databases (SQL and NO SQL) and Caches (Mem Cache and Redis). |
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| 13 | Cyber Security and Introduction to Security in Architecture, and Zero Trust Network Architecture (ZTNA) |
| 14 | How to Approach a System Design and Soft Skills and having solutions handy. We have a framework using this framework-based thinking which we built you can approach the requirements (functional, nonfunctional, etc) along with frameworks for Solutions with this framework will lead to solve issues faster and a well thought off organized manner. |
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| 15 | System Design-1 (WhatsApp Application) |
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| 16 | System Design-2 (You tube Application) |
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| 17 | System Design-3(Google Search Engine Application) |
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| 18 | System Design-4 (Google Maps Application) |
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| 19 | Mock Interviews |
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| 20 | Miscellaneous select any 1 per Batch<br>(<br>Art of Good Code Review,<br>Introduction to Machine Learning and Data Science<br>Time Management.<br>Capacity Planning in Architecture<br>) |
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| | Note: OOAD, Design Patterns and UML can be covered if needed (T&C apply)<br>basics of DS can be covered (T & C apply) |