



APACHE CASSANDRA

DURATION OF TRAINING: 32HRS.

BATCH TYPE: WEEKDAYS/ WEEKENDS

MODE OF TRAINING: CLASSROOM/ ONLINE/
CORPORATE TRAINING

Module 1: Introduction to Apache Cassandra

- Overview of NoSQL databases and Cassandra.
- History and evolution of Cassandra.
- Cassandra's features and use cases.
- Distributed database concepts.

Module 2: Cassandra Data Model

- Understanding the Cassandra data model (tables, rows, columns).
- Primary keys and clustering columns.
- Data types in Cassandra.
- Composite keys and collections (sets, lists, maps).


Module 3: Data Modeling in Cassandra

- Best practices for data modeling.
- Denormalization and designing for queries.
- Understanding the CAP theorem in the context of Cassandra.
- Creating and managing tables in Cassandra.

Module 4: Querying Data in Cassandra

- CQL (Cassandra Query Language) basics.
- SELECT statements and filtering data.
- UPDATE, DELETE, and INSERT operations.
- Batch operations and lightweight transactions.

Module 5: Data Distribution and Replication

- Cassandra's distributed architecture.
 - Partitioning and data distribution.
 - Replica placement and consistency levels.
 - Handling data distribution and replication for high availability.
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Module 6: Tuning and Optimization

- Monitoring and metrics in Cassandra.
- Tuning Cassandra for performance.
- Compaction and compression strategies.
- Handling large-scale data.

Module 7: Security in Cassandra

- Authentication and authorization.
- Encryption and SSL/TLS.
- Data encryption at rest.
- Securing Cassandra clusters.

Module 8: Backup and Recovery

- Backup strategies and options.
- Point-in-time recovery.
- Backup and restore procedures.
- Data durability and fault tolerance

Module 9: Apache Cassandra Operations

- Deploying Cassandra clusters.
- Managing nodes and adding/removing nodes.
- Maintenance and upgrades.
- Troubleshooting common issues.

Module 10: Integrations and Ecosystem

- Using drivers and client libraries (Java, Python, etc.).
- Integrating Cassandra with other technologies (Spark, Elasticsearch, etc.).
- Exploring the Cassandra ecosystem and tools

Module 11: Use Cases and Real-World Examples

- Case studies and examples of Cassandra in production.
- Architectural patterns and best practices for specific use cases.
- Building scalable and fault-tolerant applications.

Module 12: Advanced Topics (Optional)

- Time-series data modeling.
- Multi-datacenter and cross-region replication.
- Consistency and tunable consistency.
- Advanced troubleshooting and performance optimization.





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TRIVANDRUM)

