INFOSOFT IT SOLUTIONS

Training | Projects | Placements

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GOOGLE CLOUD SPANNER TRAINING

- 1 **Introduction to Cloud Spanner**:

  - Overview of Cloud Spanner and its use cases.
  - * Financial Services
  - * Gaming Industry
  - * Retail and E-commerce
  - * Global Applications
  - Comparison with other database products.
  - Planning and setting up Spanner instances.
  - * Planning and setting up Spanner instances
  - * Instance Configuration
  - * Budget and Cost Management

- 2 **Creating and Managing Databases**:

  - Creating Spanner databases using the Google Cloud Console, CLI, and Terraform.
  - Database schema design and optimization.
  - * Understand Your Data Model
  - * Normalized vs. Denormalized Schema
  - * Foreign Keys and Indexes
  - Managing relationships with primary keys, foreign keys, and interleaved tables.

- 3 **Querying and Programming**:

  - Using the Cloud Spanner API.

- - * Database Management

    - * Data Manipulation

    - * Transactions

    - * Monitoring and Logging

- Authenticating and authorizing users and applications.
- * Identity and Access Management (IAM)

    * OAuth 2.0 and API Keys

    * **Access Control Lists (ACLs)**

- Running queries and managing transactions.
- * Executing SQL Queries
- * Query Optimization
- * Parameterized Queries
- Optimizing queries with indexes and understanding read consistency models.

- 4 **Application Integration**:

  - Integrating Cloud Spanner with applications using client libraries (e.g., Python)
  - Deploying applications with Cloud Functions and Cloud Run.
  - Data migration using Dataflow and Apache Beam.
  - * Dataflow and Apache Beam
  - * Source and Destination Connectors
  - * Batch and Streaming Migration
  - * Schema Transformation and Validation

- 5 **Administration and Monitoring**:

  - Administering Spanner instances (backup, restore, import, export).
  - Monitoring databases and applications.
  - * Database Monitoring
  - * Application Monitoring
  - * Capacity Planning and Scalability
  - Managing changes to database schemas without downtime.

- 6 **Advanced Schema Design**:

  - Best practices for schema design.
  - Optimizing schemas for performance and scalability.
  - Using interleaved tables and secondary indexes effectively.

- 7 **Query Optimization**:

  - Advanced query execution plans.
  - Index usage and maintenance.
  - Techniques for optimizing complex queries.

- 8 **Data Modeling**:

  - Modeling hierarchical data.
  - Managing large datasets.
  - Best practices for data partitioning and sharding.

- 9 **Transaction Management**:

  - Deep dive into Spanner's consistency models.
  - Advanced transaction isolation levels.
  - Managing multi-region transactions.

- 10 **Performance Tuning**:

  - Monitoring and diagnosing performance issues.
  - Tuning Spanner instances and configurations.
  - Utilizing query execution statistics.

- 11 **Security and Compliance**:

  - Implementing advanced security features.
  - Managing roles and permissions.
  - Ensuring compliance with data protection regulations.

- 12 **Backup and Recovery**:

  - Strategies for effective backup and restore.
  - Implementing disaster recovery plans.
  - Using Spanner's native backup capabilities.

- 13 **Integration and Migration**:

- Integrating Spanner with other Google Cloud services.
- Migrating from other databases to Spanner.
- Using dataflow and other tools for data movement.

- 14 **Use Cases and Patterns**:

  - Real-world use cases of Spanner.
  - Design patterns for common applications.
  - Case studies and success stories.