

INFOSOFT IT SOLUTIONS

Training | Projects | Placements

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Amazon DynamoDB

Introduction to Amazon DynamoDB

- Overview of DynamoDB as a fully managed NoSQL database service
- Key features and benefits of DynamoDB
- Use cases and applications of DynamoDB in modern cloud architectures

Data Model in DynamoDB

- Understanding NoSQL data modeling concepts
- DynamoDB data types (Scalar types, Document types, Set types)
- Partition keys, sort keys, and composite primary keys

DynamoDB Tables

- Creating and managing DynamoDB tables

- Table capacity modes (Provisioned and On-Demand)
- Managing table settings and indexes

DynamoDB Indexes

- Local Secondary Indexes (LSI) vs. Global Secondary Indexes (GSI)
- Creating and managing indexes
- Querying and scanning data using indexes

Data Operations

- Inserting and updating items (PutItem, UpdateItem)
- Retrieving items (GetItem, BatchGetItem)
- Deleting items (DeleteItem, BatchDeleteItem)

Querying and Scanning

- Querying data using Query operation
- Scanning data using Scan operation
- Filtering and pagination of query results

Transactions

- ACID properties in DynamoDB transactions
- Implementing transactions using TransactWriteItems and TransactGetItems
- Handling concurrency and isolation levels

Data Modeling Strategies

- Best practices for designing DynamoDB schemas
- Optimizing for partition key and sort key selection
- Denormalization vs. normalization approaches

Performance Optimization

- Capacity planning and provisioning (Read and Write Capacity Units)
- Auto-scaling and on-demand capacity modes
- Monitoring and optimizing DynamoDB performance metrics

Backup and Restore

- Backup strategies using On-Demand and Continuous backups
- Point-in-time recovery (PITR) options
- Exporting and importing data (AWS Data Pipeline, AWS Glue)

Security and Authentication

- Identity and Access Management (IAM) roles and policies
- Encryption at rest and in transit (AWS KMS)
- Fine-grained access control using IAM policies and DynamoDB conditions

Global Tables

- Multi-region replication and global data distribution
- Configuring and managing Global Tables for high availability

- Consistency models in Global Tables

Integration with Other AWS Services

- Integrating DynamoDB with AWS Lambda for serverless computing
- Stream processing with DynamoDB Streams
- Using DynamoDB with Amazon S3, Amazon EMR, and other services

Application Development

- SDKs and APIs for DynamoDB (AWS SDKs, AWS CLI)
- Developing applications with DynamoDB (Java, Python, Node.js)
- Error handling and retries in DynamoDB operations

Monitoring and Logging

- CloudWatch metrics and alarms for DynamoDB
- Monitoring DynamoDB performance with CloudWatch
- Logging DynamoDB API calls with AWS CloudTrail

Cost Optimization

- Understanding DynamoDB pricing components
- Cost-effective strategies for capacity planning
- Optimizing data storage and access patterns

Migration and Modernization

- Migrating from traditional databases to DynamoDB
- Modernizing applications with DynamoDB
- Best practices for database migrations to DynamoDB

Compliance and Governance

- Compliance considerations (GDPR, HIPAA, etc.)
- Auditing and monitoring DynamoDB access
- Implementing governance policies and controls

Case Studies and Practical Applications

- Real-world examples of DynamoDB deployments
- Industry-specific use cases (e-commerce, gaming, IoT)
- Lessons learned and best practices from case studies

Training and Certification

- AWS certification paths for DynamoDB
- Training resources and courses for developers and administrators
- Continuing education and professional development opportunities