13.DynamoDB

Session 1 : DynamoDB Theory

Database Types :

1. Unstructured Data : It has information that either does not have a pre-defined data model or is not organised in a pre-defined manner
• Unstructred information is typically text heavy,but may contain data such as dates,numbers and facts as well.Examples include email messages,word processing,documents,videos,photos,audio files,presentations,webpages

2.Semi-Structured Data : It is information that does not reside in a relational database but that does have some organisational proerties that make it easy to analyse...Eg : XML & JSON

3.Structured Data : It refers to information with high degree of organization,such that inclusion in a relational database is seamless and readily searchable by simple,straight forward search engine algorithims or other search operations
• All data which can be stored in database SQL in table with rows and colums.They have relational key and can be easily mapped into pre-defined fields

Dynamo DB Table :

• A table is a collection of data items
• Like all other DB,dynamodb stores data in tables

Items :

• Each table contains multiple items
• An Item is a group of attributes that is uniquely identifiable among all of the other items
• An item consist of a primary or composite key and a flexible number of attributes
• Items in Dynamodb are similar into Rows,Records in other db

Attributes :

• Each itme is composed of one or more attributes
• An attributes consist of the attribute name and a value or a set of values
• An attribute is a fundamental data elemant,something that does not need to be broken down any further
• Aggregate size of an item cannot exceed 400KB including key and all attributes
• If the item size is more than 400KB, then we can upload the item in S3 bucket and then we can add the URL from S3 bucket in the table

•Dynamodb allows low latency read/write access to items ranging from 1 byte to 400KB
• Dynamodb can be used to store pointers to S3 stored objects,or items of sizes larger than 400KB too if needed
• Dynamodb stores data indexed by a primary key-We can specify the primary key when we create the table
• Each item in the table has a unique identifier or primary key that distinguishes the item from all the others in the table
• The primary key is the only required attributes for items in a table
• Dynamodb tables are Schemaless
□ Which means that neither the attributes nor their data types need to be defined beforehand
□ Each item can have its own distinct attribute

DynamoDB - Read Capacity Unit :

• One read capacity unit represents one strongly consistent read per second or two eventually.Consistent reads per seconds for an item upto 4KB in size
• If we need to read an item that is larger than 4KB,DynamoDB will need to consume additional read capacity units
• The total number of read capacity units required depends on the item size,and whether we want an eventually consistent or strongly consistent read

DynamoDB - Write Capacity Unit :

• One write capacity unit represents one write per second for an item upto 1KB in size
• If we need to write an item that is larger than 1KB,DynamoDb will need to consume additional write capacity units
• The total number of write capacity units required depends on the item size

DynamboDb - Pricing :

• Reads are cheaper than writes when using DynamoDB
• We pay for :
□ Each tables provisioned read/write throughput(hourly rate)
□ We are charged for provisioned throughput regardless whether we use it or not
□ Indexed data storage
□ Internet data transfer(if crosses a region)
□ Free tier per account(accross all tables) of 25 read capacity units and 25 write capacity units per month

• DynamoDB can do 10000 write capacity units/sec or 10000 read capacity units per second per table

DynamoDB Limits :

• 256 tables per account per region
• No limits on the size of any table

LAB :

Session 2 : DynamoDB Demo