

Amazon DynamoDB: Create and Query NoSQL table

Objective:

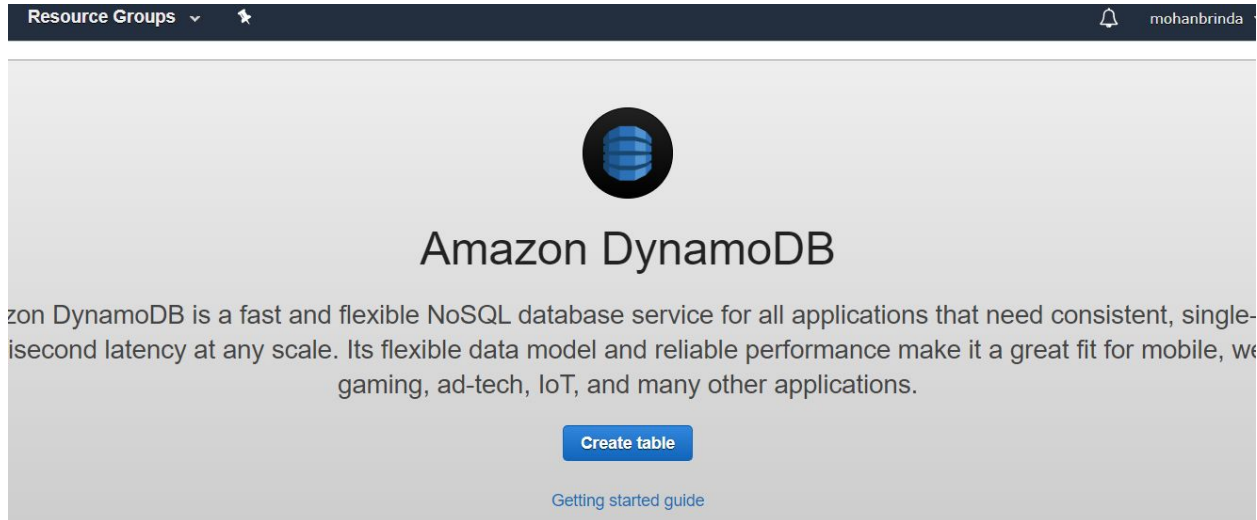
Create a simple table, add, scan and query the data, delete data, and delete the table by using the *Amazon DynamoDB*.

Amazon DynamoDB:

DynamoDB is a fully managed *NOsql* database. It supports document and key-value store models. DynamoDB is a great fit for mobile, web, gaming, IOT and many other applications due to its flexible data model, reliable performance, and automatic scaling of throughput capacity.

Open the Amazon console and search *DynamoDB* service. Open DynamoDB console.

1. Select *Create Table* on the DynamoDB console.



2. Partition Key:

Type the *Singer* for the partition key box.

3. Sort Key:

Since each artist may write many songs, sorting can be enabled with a sort key.

Choose *Add Sort key* and type a *Title* for sort key box.

Create DynamoDB table

Tutorial ?

DynamoDB is a schema-less database that only requires a table name and primary key. The table's primary key is made up of one or two attributes that uniquely identify items, partition the data, and sort data within each partition.

Table name*	<input type="text" value="Music"/>	?
Primary key*	Partition key	
	<input type="text" value="Singer"/>	String ?
	<input checked="" type="checkbox"/> Add sort key	
	<input type="text" value="Title"/>	String ?

4. Enable DynamoDB *auto scaling* for the table. A role is created in DynamoDB when the *Use default settings* check box is unchecked.

Based on the request volume, DynamoDB auto scaling will change the read and write capacity of the table. DynamoDB will manage the auto scaling process on

its own using the AWS Identity and Access Management (AWS IAM) role called *DynamoDBAutoScaleRole*. DynamoDB creates this role the first time when auto scaling is enabled in the account.

Default settings provide the fastest way to get started with your table. You can modify these default settings now or after your table has been created.

☒ Use default settings

- No secondary indexes.
- Provisioned capacity set to 5 reads and 5 writes.
- Basic alarms with 80% upper threshold using SNS topic "dynamodb".
- Encryption at Rest with DEFAULT encryption type.

i You do not have the required role to enable Auto Scaling by default.
Please refer to [documentation](#).

+ Add tags **NEW!**

Additional charges may apply if you exceed the AWS Free Tier levels for CloudWatch or Simple Notification Service. Advanced alarm settings are available in the CloudWatch management console.

DynamoDB will create the *DynamoDBAutoScaleRole* role for you. Now select *Create*. The Music table appears in the table list with a check box and is ready to be used.

Target utilization	<input type="text" value="70"/>	%	<input type="checkbox"/> Same settings as read	<input type="text" value="70"/>	%
Minimum provisioned capacity	<input type="text" value="5"/>	units		<input type="text" value="5"/>	units
Maximum provisioned capacity	<input type="text" value="40000"/>	units		<input type="text" value="40000"/>	units
<input checked="" type="checkbox"/> Apply same settings to global secondary indexes			<input checked="" type="checkbox"/> Apply same settings to global secondary indexes		

i Please check your IAM permissions to create new service linked role for enabling Auto Scaling.
See [permissions](#).

IAM Role I authorize DynamoDB to scale capacity using the following role:

- ☒ **DynamoDB AutoScaling Service Linked Role**
☐ Existing role with pre-defined policies [\[Instructions\]](#)

Note: If you have the required IAM permissions, a Service Linked Role will automatically be created on your behalf. [Learn more](#)

Role Name*

Encryption At Rest

Select Encryption settings for your DynamoDB table to help protect data at rest. [Learn more](#)

☒ **DEFAULT**

Server-side encryption using AWS owned CMK
(Customer Master Key)

☐ **KMS**

Server-side encryption using AWS managed CMK
(Customer Master Key)

[+ Add tags](#) **NEW!**

Additional charges may apply if you exceed the AWS Free Tier levels for CloudWatch or Simple Notification Service. Advanced alarm settings are available in the CloudWatch management console.

[Cancel](#)

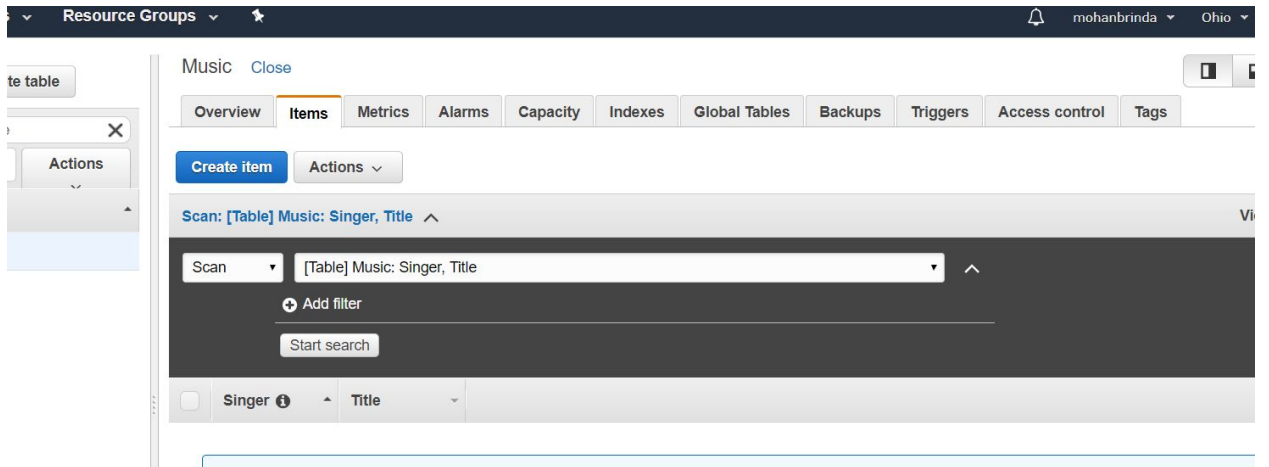
[Create](#)

Table created

The screenshot shows the AWS Management Console interface for a DynamoDB table named 'Music'. The left sidebar contains a 'Create table' button and a list of tables with 'Music' selected. The main panel shows the 'Overview' tab with various settings and tabs for 'Items', 'Metrics', 'Alarms', 'Capacity', 'Indexes', 'Global Tables', 'Backups', 'Triggers', 'Access control', and 'Tags'. The 'Recent alerts' section indicates no CloudWatch alarms have been triggered. The 'Stream details' section shows 'Stream enabled' as 'No'. The 'Table details' section lists various attributes: Table name (Music), Primary partition key (Singer (String)), Primary sort key (Title (String)), Point-in-time recovery (DISABLED), Encryption Type (DEFAULT), KMS Master Key ARN (Not Applicable), Time to live attribute (DISABLED), Table status (Active), Creation date (November 23, 2019 at 2:02:23 PM UTC-5), Read/write capacity mode (Provisioned), Last change to on-demand mode (-), and Provisioned read capacity units (5 (Auto Scaling Enabled)).

Table details	
Table name	Music
Primary partition key	Singer (String)
Primary sort key	Title (String)
Point-in-time recovery	DISABLED Enable
Encryption Type	DEFAULT Manage Encryption
KMS Master Key ARN	Not Applicable
Time to live attribute	DISABLED Manage TTL
Table status	Active
Creation date	November 23, 2019 at 2:02:23 PM UTC-5
Read/write capacity mode	Provisioned
Last change to on-demand mode	-
Provisioned read capacity units	5 (Auto Scaling Enabled)

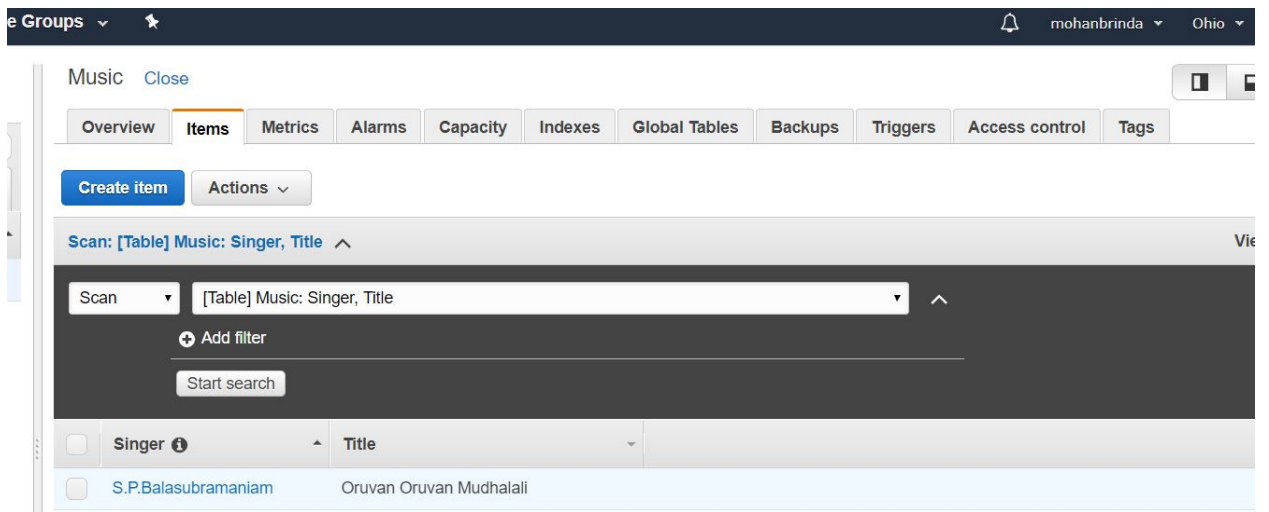
5. Add Data to the NoSQL Table. Select the **Items tab** and choose **Create item**.



In the data entry window, enter the following text:

- For the Singer attribute, type *S.P.Balasubramaniam*.
- For the Title attribute, type *Oruvan Oruvan Mudhalali*.

Choose Save to save the item.



Repeat the process in order to add a few more items to the *Music* table:

- Singer: *Sujatha Mohan*; Title: *Netru Illatha Matram*
- Singer: *A.R.Rahman*; Title: *Vande Mataram*
- Singer: *A.R.Rahman*; Title: *Jai Ho*
- Singer: *Chitra*; Title: *Malargal Keetean*

Resource Groups ▼ ★ 🔔 mohanbrinda ▼

Music Close

Overview **Items** Metrics Alarms Capacity Indexes Global Tables Backups Triggers Access control Tags

Create item Actions ▼

Scan: [Table] Music: Singer, Title ^

Scan ▼ [Table] Music: Singer, Title ▼ ^

+ Add filter

Start search

<input type="checkbox"/>	Singer ! ^	Title ▼
<input type="checkbox"/>	A.R.Rahman	Jai Ho
<input type="checkbox"/>	A.R.Rahman	Vande Mataram
<input type="checkbox"/>	Chitra	Malargal Keetean
<input type="checkbox"/>	S.P.Balasubramaniam	Oruvan Oruvan Mudhalali
<input type="checkbox"/>	Sujatha Mohan;	Netru Illatha Matram

Query the NoSQL Table

In DynamoDB, query operations are efficient and use keys to find data. Scan operations traverse the entire table. Search for data in the table using query operations.

In the drop-down list in the dark gray banner above the items, change Scan to Query.

Resource Groups ▼ ★ 🔔 mohanbrinda

Music Close

Overview **Items** Metrics Alarms Capacity Indexes Global Tables Backups Triggers Access control Tags

Create item Actions ▼

Scan: [Table] Music: Singer, Title ^

Query ▼ [Table] Music: Singer, Title ^

Partition key Singer String = Enter value

Sort key Title String = Enter value

+ Add filter

Sort ☐ Ascending ☐ Descending

Attributes ☐ All ☐ Projected

Start search Cancel changes

<input type="checkbox"/> Singer ⓘ	Title
<input type="checkbox"/> A.R.Rahman	Jai Ho
<input type="checkbox"/> A.R.Rahman	Vande Mataram
<input type="checkbox"/> Chitra	Malargal Keetean
<input type="checkbox"/> S.P.Balasubramaniam	Oruvan Oruvan Mudhalali

The console can be used to query the *Music* table in various ways.

In the Singer box, type *S.P.Balasubramaniam*, and choose Start search. All songs performed by *S.P.Balasubramaniam* are displayed.

Another query:

- In the Singer box, type *A.R.Rahman*, and choose Start search. All songs performed by *A.R.Rahman* are displayed.

roups

mohanbrinda

Music

Overview

Items

Metrics

Alarms

Capacity

Indexes

Global Tables

Backups

Triggers

Access control

Tags

Create item

Actions

Query: [Table] Music: Singer, Title

Query

[Table] Music: Singer, Title

Partition key

Singer

String

=

S.P.Balasubramaniam

Sort key

Title

String

=

Enter value

+

Add filter

Sort

Ascending

Descending

Attributes

All

Projected

Start search

☐

Singer

Title

☐

S.P.Balasubramaniam

Oruvan Oruvan Mudhalali

Overview

Items

Metrics

Alarms

Capacity

Indexes

Global Tables

Backups

Triggers

Access control

Tags

Create item

Actions

Query: [Table] Music: Singer, Title

Query

[Table] Music: Singer, Title

Partition key

Singer

String

=

A.R.Rahman

Sort key

Title

String

=

Enter value

+

Add filter

Sort

Ascending

Descending

Attributes

All

Projected

Start search

☐

Singer

Title

☐

A.R.Rahman

Jai Ho

☐

A.R.Rahman

Vande Mataram

Another query to narrow down the search results:

- In the Singer box, type *S.P.Balasubramaniam*
- In the Title box, select Begins with from the drop-down list and type *O*
- Choose Start search. Only "*Oruvan Oruvan Muthalali*" performed by *SS.P.Balasubramaniam* is displayed.

The screenshot shows the AWS Glue console interface. At the top, there's a navigation bar with 'groups' and a user profile 'mohanbrinda'. Below this, a 'Music' section is open, showing tabs for 'Overview', 'Items', 'Metrics', 'Alarms', 'Capacity', 'Indexes', 'Global Tables', 'Backups', 'Triggers', 'Access control', and 'Tags'. The 'Items' tab is selected. A 'Create item' button and an 'Actions' dropdown are visible. The main area displays a query: 'Query: [Table] Music: Singer, Title'. Below this, a query builder interface is shown with the following fields:

Field	Value
Query	[Table] Music: Singer, Title
Partition key	Singer String = S.P.Balasubramaniam
Sort key	Title String Begins with O
Sort	Ascending (selected) Descending
Attributes	All (selected) Projected

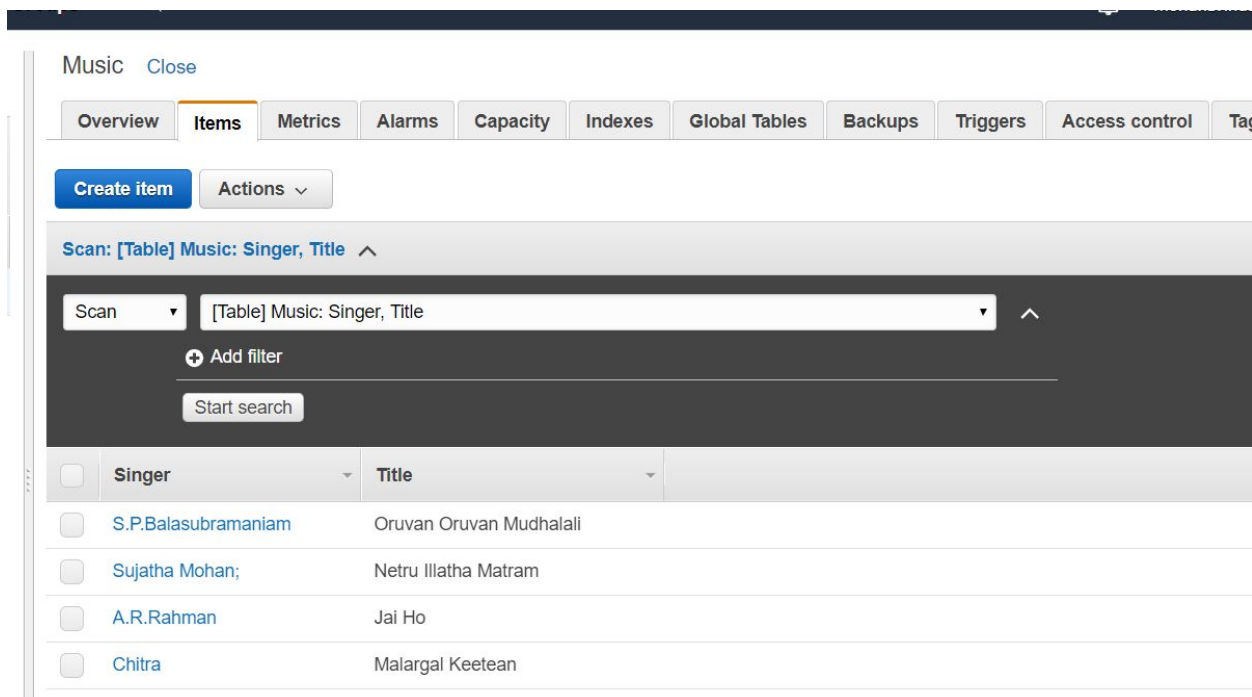
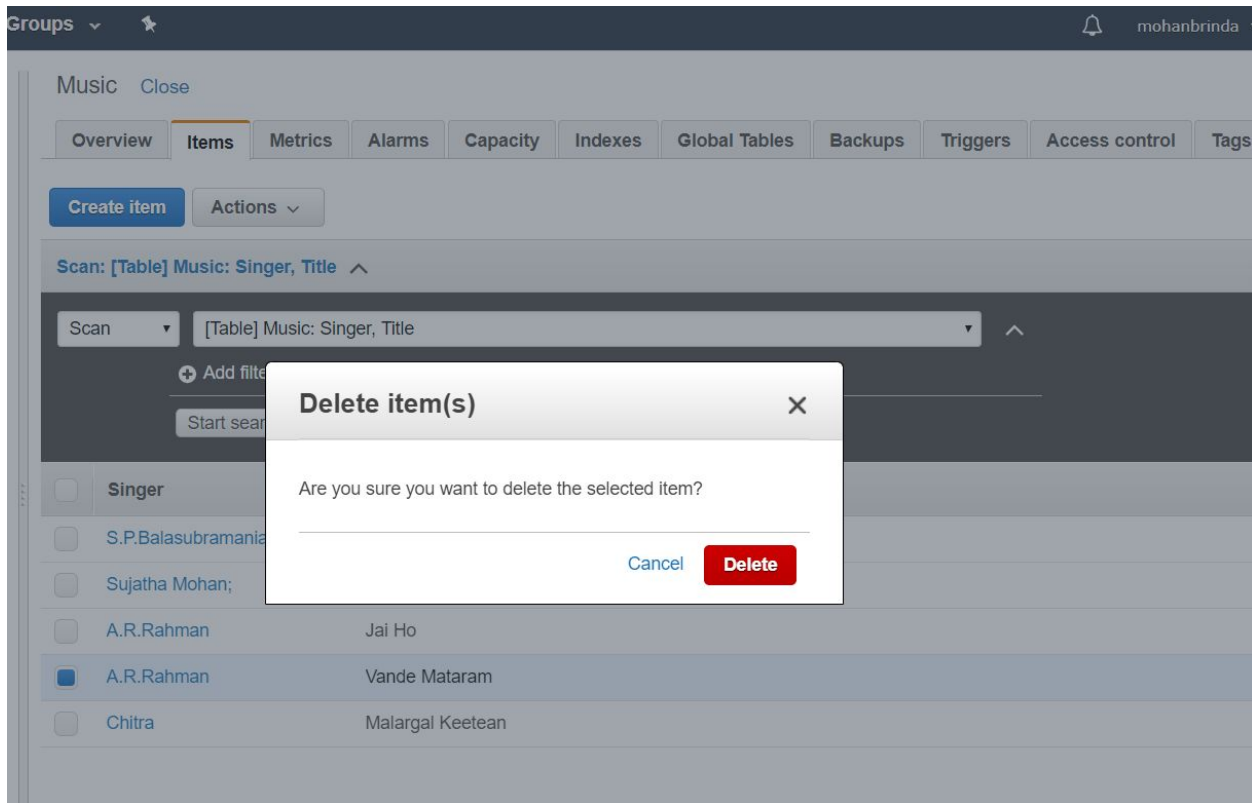
Below the query builder, there's a 'Start search' button. At the bottom, a table displays the search results:

Singer	Title
S.P.Balasubramaniam	Oruvan Oruvan Muthalali

Delete an existing item

Change the Query drop-down list back to *Scan*.

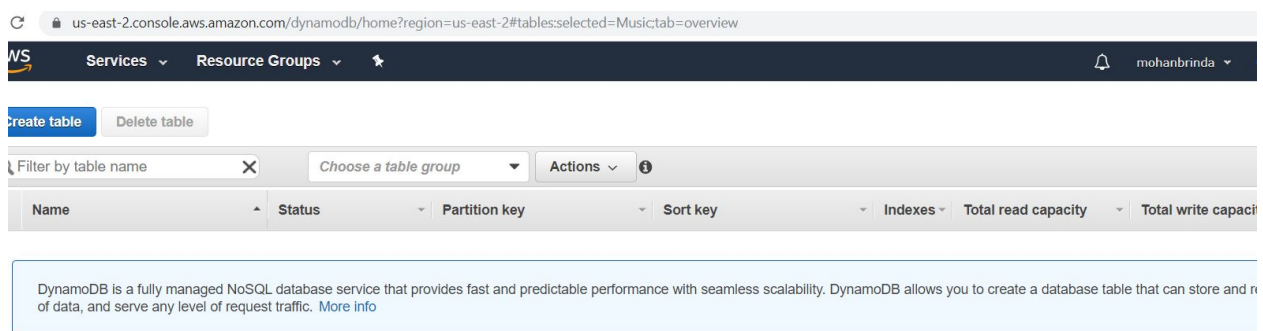
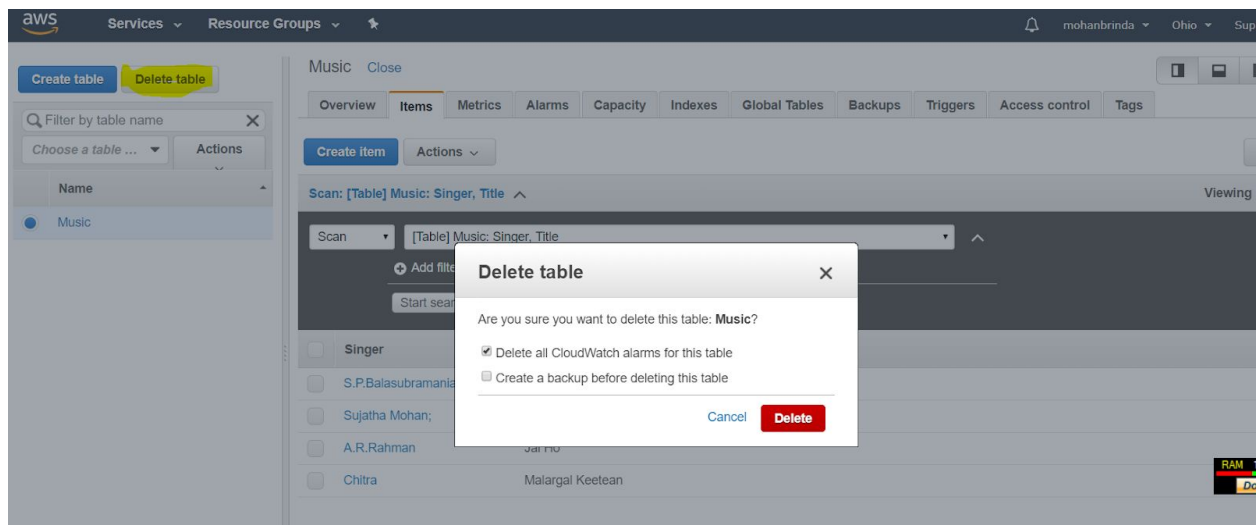
Select the check box next to *A.R.Rahman*. In the *Actions* drop-down list, choose *Delete* and the item is deleted from the table.



Delete the NOSQL Music Table

It is a best practice to delete tables that are no longer requires in order to avoid charges.

- In the *DynamoDB console*, choose the option next to the Music table and then choose *Delete table*.
- In the confirmation dialog box, choose *Delete*.



References:

aws.amazon.com