Grup 4
Lab275

Team4: Busra, EmineAkoz, Tuğba, Meltem, Hüseyin, Onur, Mehmet Baran, İbrahim Acar

RDS vs. DynamoDB

RDS: Managed relational (SQL) database. Has several database instance types for different kinds of workloads and supports six database engines – Amazon Aurora, PostgreSQL, MySQL, MariaDB, Oracle Database, and SQL Server.

DynamoDB: Fully managed key-value and document (NoSQL) database

- **Performance:**

RDS: General Purpose Storage is an SSD-backed storage option that delivers at consistent baseline of 3 IOPS per provisioned GB with the ability to burst up to 3,000 IOPS. Provisioned IOPS Storage is an SSD-backed storage option designed to deliver a consistent IOPS rate that you specify when creating a database instance, up to 40,000 IOPS per database Instance. Amazon RDS provisions that IOPS rate for the lifetime of the database instance. Optimized for OLTP database workloads. Magnetic – Amazon RDS also supports magnetic storage for backward compatibility. DynamoDB: Single-digit millisecond read and write performance. Can handle more than 10 trillion requests per day with peaks greater than 20 million request per second, over petabytes ofstorage.

DynamoDB: Accelerator (DAX) is an in-memory cache that can improve the read performance of your DynamoDB tables by up to 10 times – taking the time required for reads from milliseconds to microseconds, even at millions of requests per second. You specify the read and write throughput for each of your tables.

- **Availability and durability**

RDS: Amazon RDS Multi-AZ deployments synchronously replicates your data to a standby instance in a different Availability Zone. Amazon RDS will automatically replace the compute instance powering your deployment in the event of a hardware failure.

DynamoDB: global tables replicate your data automatically across 3 Availability Zones of your choice of AWS Regions and automatically scale capacity to accommodate your workloads.

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- **Backups**

RDS: The automated backup feature enables point-in-time recovery for your database instance. Database snapshots are user-initiated backups of your instance stored in Amazon S3 that are kept until you explicitly delete them.

DynamoDB: Point-in-time recovery (PITR) provides continuous backups of your DynamoDB table data, and you can restore that table to any point in time up to the second during the preceding 35 days. On-demand backups and restore allows you to create full backups of your DynamoDB tables' data for data archiving.

- **Scalability**

RDS: The Amazon Aurora engine will automatically grow the size of your database volume. The MySQL, MariaDB, SQL Server, Oracle, and PostgreSQL engines allow you to scale on-the-fly with zero downtime.RDS also supports storage auto scaling Reads replicas are available in Amazon RDS for MySQL, MariaDB, and PostgreSQL as well as Amazon Aurora.

DynomoDB: Support tables of virtually any size with horizontal scaling.

For tables using on-demand capacity mode, DynamoDB instantly accommodates your workloads a they ramp up or down to any previously reached traffic level. For tables using provisioned capacity, DynamoDB delivers automatic scaling of throughput and storage based on your previously set capacity.

- **Security**

RDS: Isolate your database in your own virtual network. Connect to your on-premises IT infrastructure using industry-standard encrypted IPsec VPNs.You can configure firewall settings and control network access to your database instances. Integrates with IAM.

DynamoDB: Integrates with IAM

- **Encryption**

RDS: Encrypt your databases using keys you manage through AWS KMS. With encryption enabled, data stored at rest is encrypted, as are its automated backups, read replicas, and snapshots.Supports Transparent Data Encryption in SQL Server and Oracle.Supports the use of SSL to secure data in transit.

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DynamoDB: DynamoDB encrypts data at rest by default using encryption keys stored in AWS KMS.

- **Maintenance**

RDS: Amazon RDS will update databases with the latest patches. You can exert optional control over when and if your database instance is patched.

DynamoDb: No maintenance since DynamoDB is serverless.

- **Pricing**

RDS: A monthly charge for each database instance that you launch.Option to reserve a DB instance for a One or three year term and receive discounts in pricing, compared to On-Demand instance pricing.

DynamoDB: Charges for reading, writing, and storing data in your DynamoDb tables, along with any optional features you choose to enable. There are specific billing options for each of DynamoDB's capacity modes.

- **Use cases**

RDS: Traditional applications, ERP, CRM, and e-commerce.

DynamoDB: Internet-scale applications, real-time bidding, shopping carts, and customer Preferences, content management, Personalization, and mobile applications.

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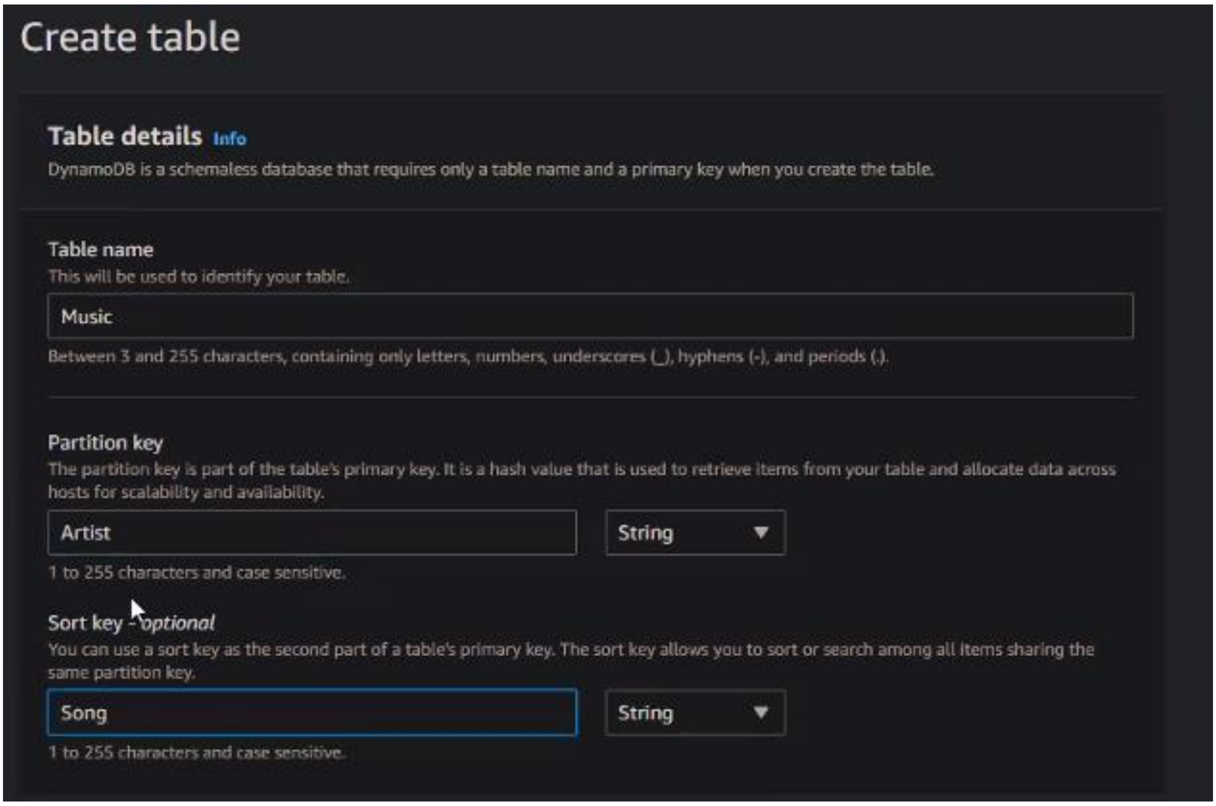
275-LAB DYNAMO DB

- Unlike RDS, we created the table, partition key and sort key without writing a query.



Create table

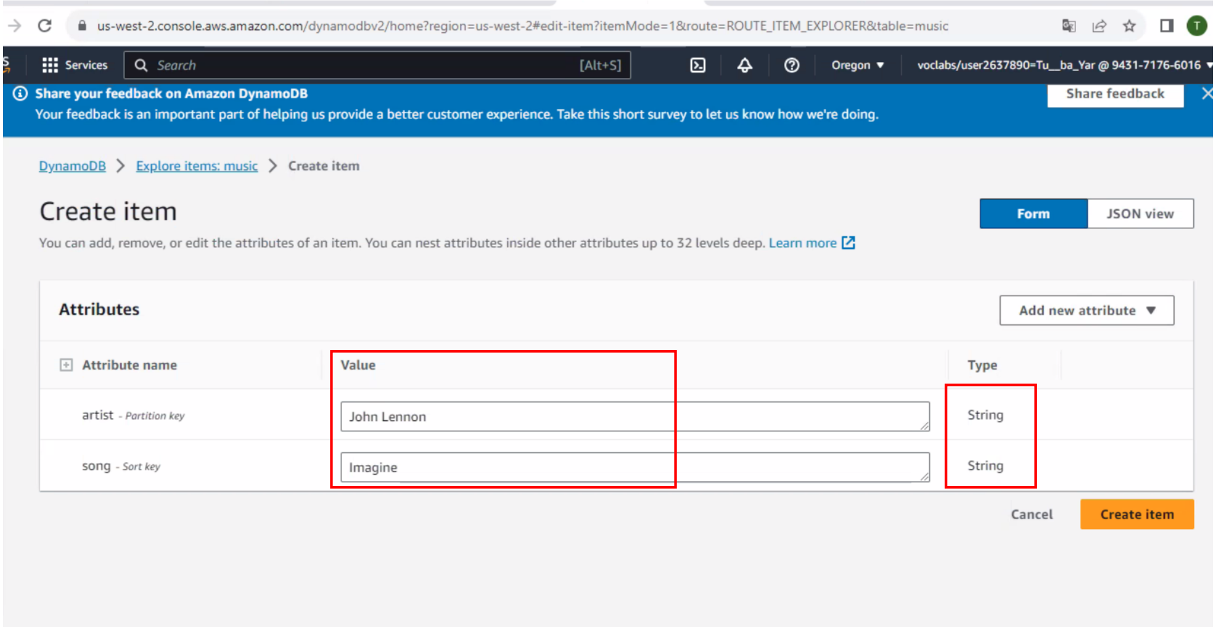
Table details Info
DynamoDB is a schemaless database that requires only a table name and a primary key when you create the table.

Table name
This will be used to identify your table.
Music
Between 3 and 255 characters, containing only letters, numbers, underscores (_), hyphens (-), and periods (.).

Partition key
The partition key is part of the table's primary key. It is a hash value that is used to retrieve items from your table and allocate data across hosts for scalability and availability.
Artist | String
1 to 255 characters and case sensitive.

Sort key - optional
You can use a sort key as the second part of a table's primary key. The sort key allows you to sort or search among all items sharing the same partition key.
Song | String
1 to 255 characters and case sensitive.

- We determined the types by writing the values over the table.



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Your feedback is an important part of helping us provide a better customer experience. Take this short survey to let us know how we're doing.

Share feedback
DynamoDB > Explore items: music > Create item

Create item
You can add, remove, or edit the attributes of an item. You can nest attributes inside other attributes up to 32 levels deep. Learn more

Attributes

Attribute name	Value	Type
artist - *Partition key*	John Lennon	String
song - *Sort key*	Imagine	String

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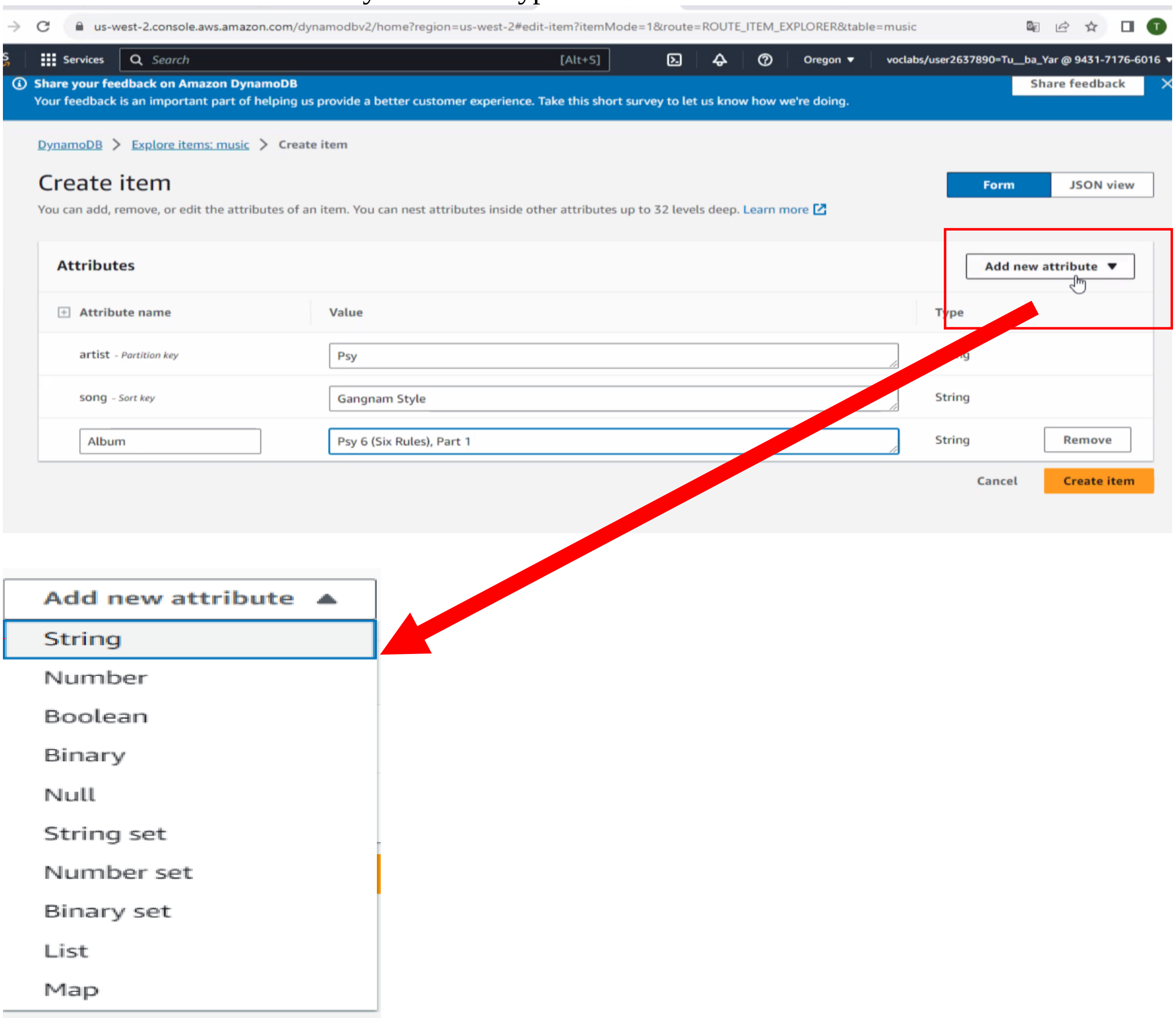
- We were able to easily select the types from add new attribute.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DynamoDB > Explore items: music > Create item

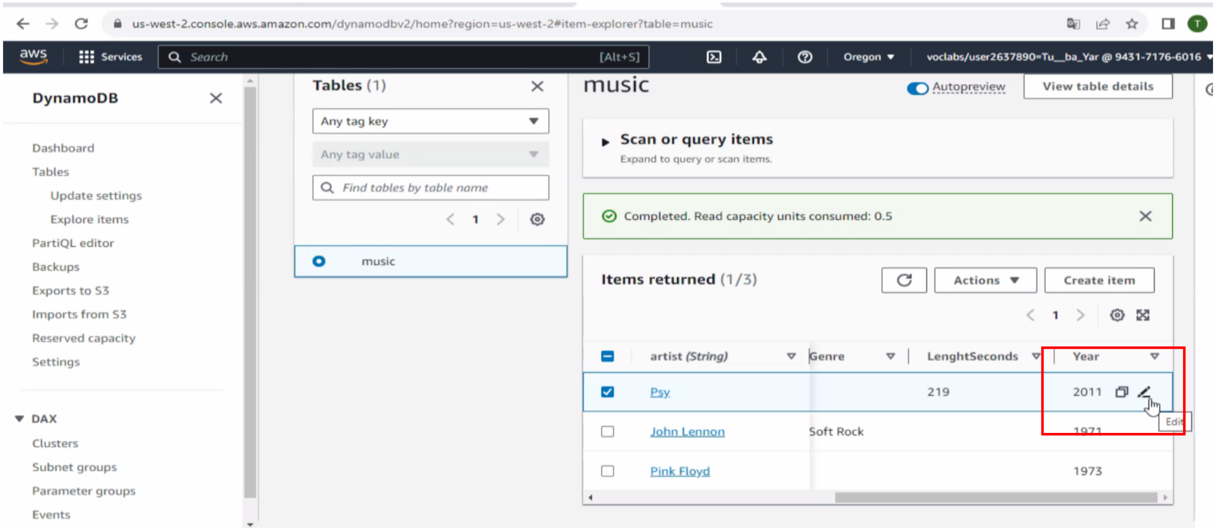
Create item

You can add, remove, or edit the attributes of an item. You can nest attributes inside other attributes up to 32 levels deep. Learn more

Attributes

Attribute name	Value	Type
artist - *Partition key*	Psy	g
song - *Sort key*	Gangnam Style	String
Album	Psy 6 (Six Rules), Part 1	String

- We edited the arrangement using pencil.


us-west-2.console.aws.amazon.com/dynamodbv2/home?region=us-west-2#item-explorer?table=music

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Tables (1)

music

Scan or query items
Expand to query or scan items.

Completed. Read capacity units consumed: 0.5

Items returned (1/3)

artist (String)	Genre	LenghtSeconds	Year
Psy		219	2011
John Lennon	Soft Rock		1971
Pink Floyd			1973

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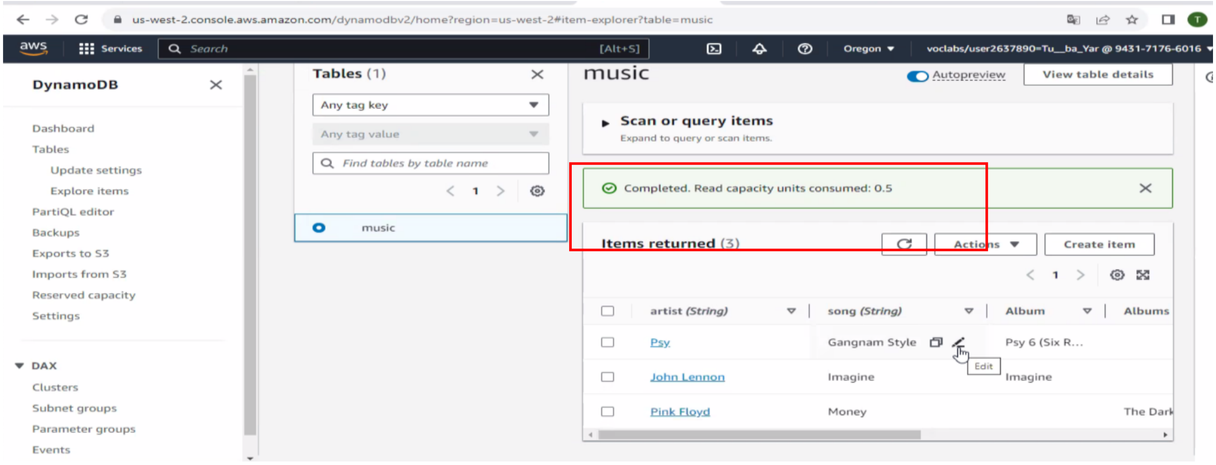
- ➢ Create item time.



music

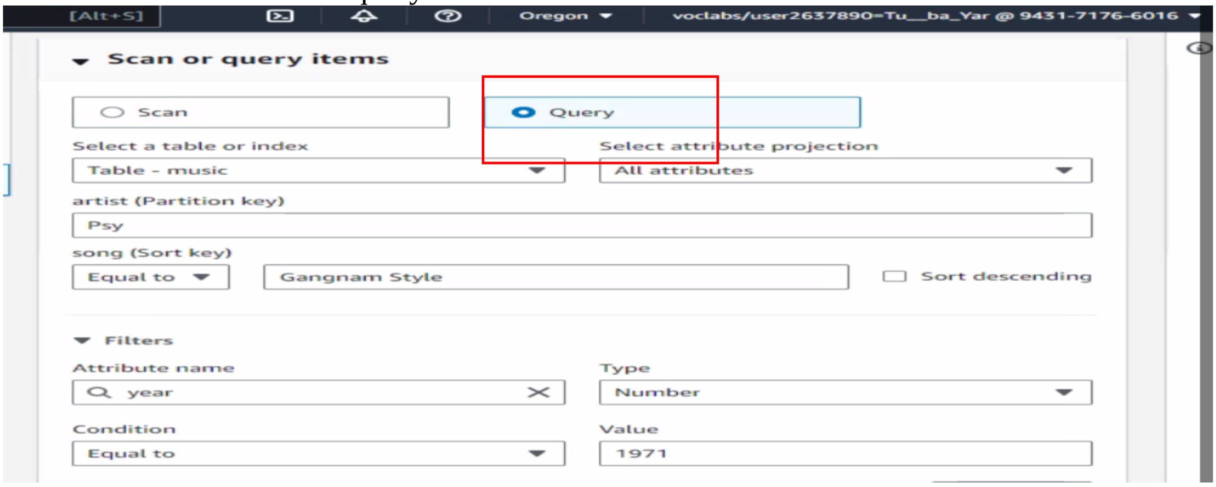
Scan or query items
Expand to query or scan items.

Completed. Read capacity units consumed: 0.5

Items returned (3)

artist (String)	song (String)	Album	Albums
Psy	Gangnam Style	Psy 6 (Six R...	
John Lennon	Imagine	Imagine	
Pink Floyd	Money		The Dark

- ➢ Unlike RDS, we don't need to write any query. We call the artist name and song name from the table with query.



Scan or query items

○ Scan ● Query

Select a table or index: Table - music

Select attribute projection: All attributes

artist (Partition key): Psy

song (Sort key): Equal to | Gangnam Style

□ Sort descending

Filters

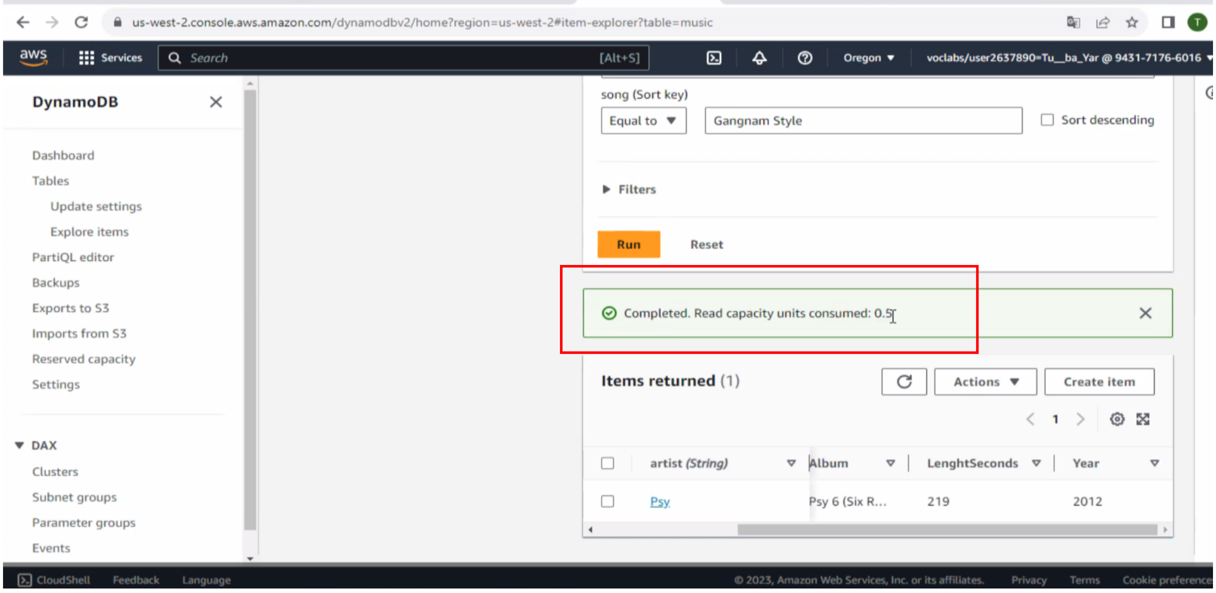
Attribute name: year

Type: Number

Condition: Equal to

Value: 1971

- ➢ After pressing run, it shows us the time completed.



song (Sort key): Equal to | Gangnam Style

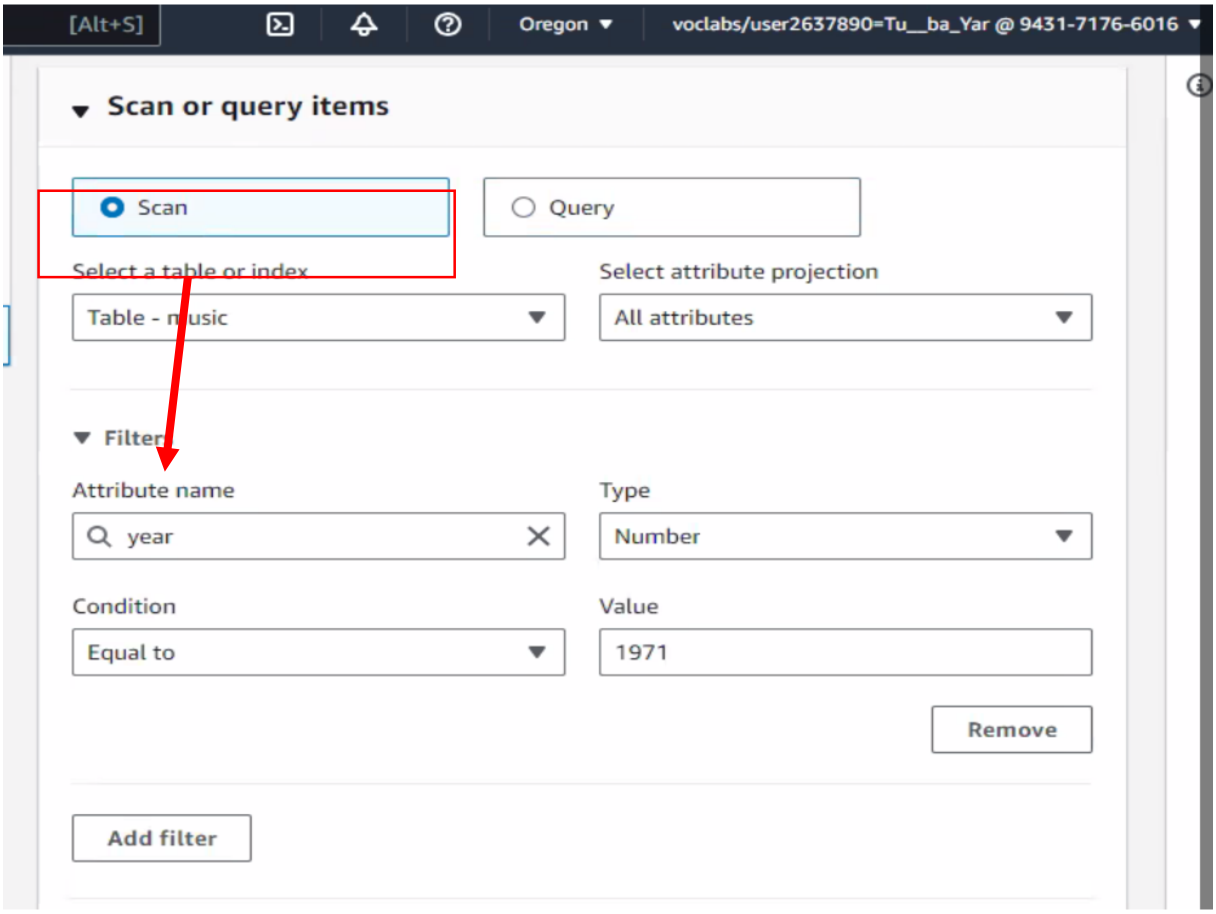
□ Sort descending

Completed. Read capacity units consumed: 0.5

Items returned (1)

artist (String)	Album	LenghtSeconds	Year
Psy	Psy 6 (Six R...	219	2012

- We edit the filters with scan.



▼ Scan or query items

● Scan ○ Query

Select a table or index: Table - music

Select attribute projection: All attributes

▼ Filters

Attribute name: year

Type: Number

Condition: Equal to

Value: 1971

- We can rename and change types.

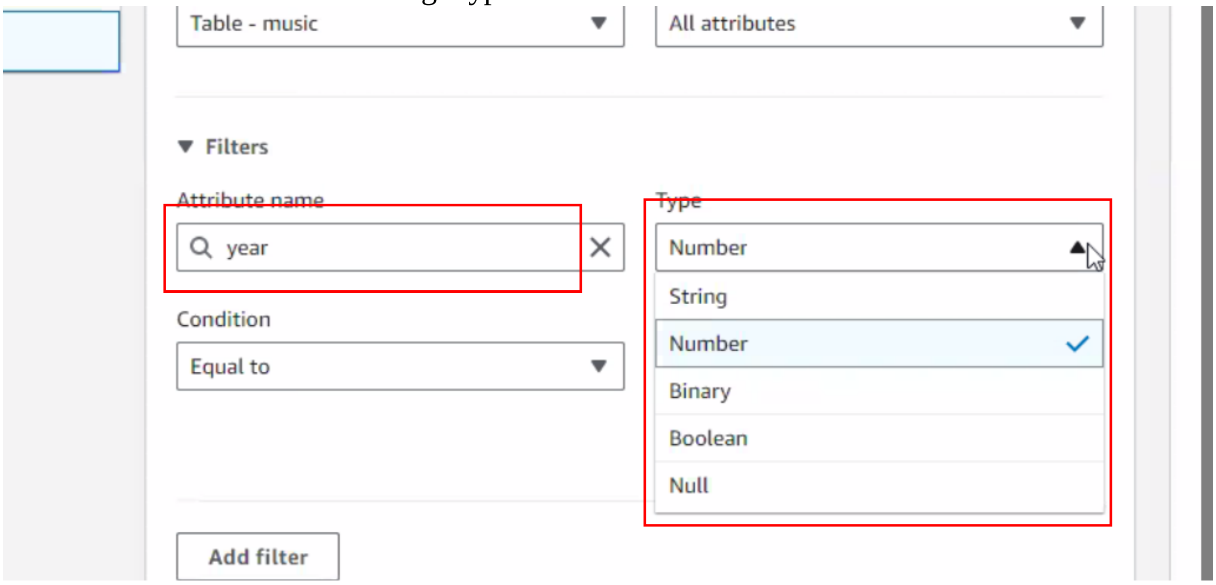


Table - music

All attributes

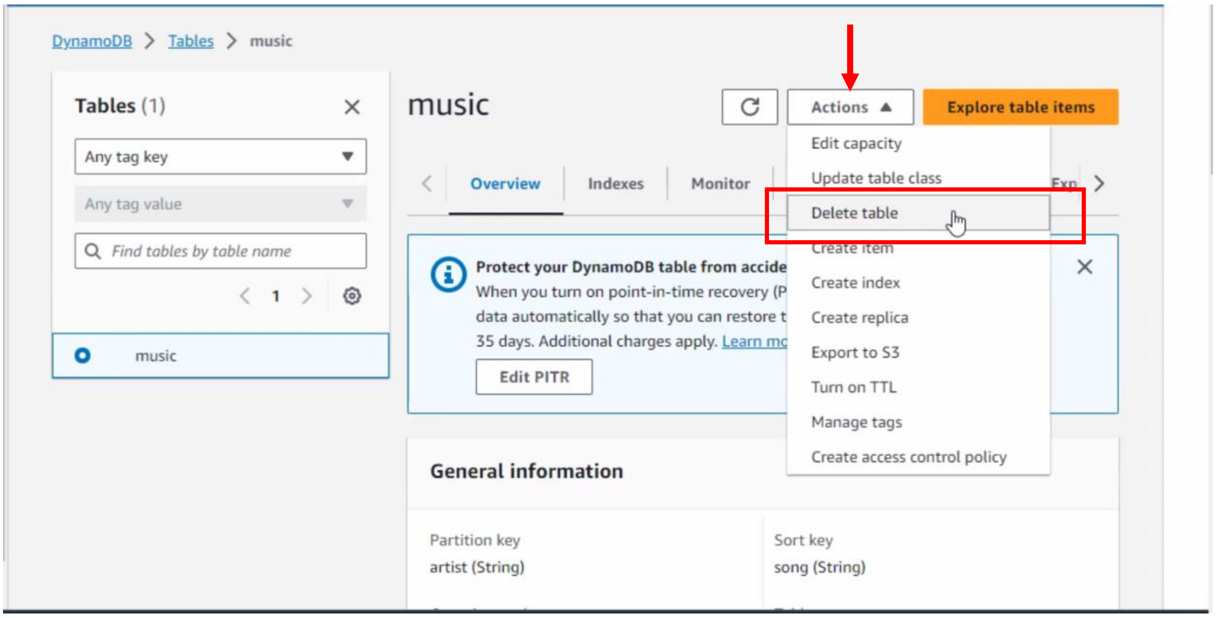
▼ Filters

Attribute name: year

Type: Number

Condition: Equal to

- We deleted the created table by pressing delete.



Protect your DynamoDB table from accide
When you turn on point-in-time recovery (P
data automatically so that you can restore t
35 days. Additional charges apply. Learn mo

Partition key
artist (String)

Sort key
song (String)

References:

1
Amazon

2
https://cloudacademy.com/blog/amazon-rds-vs-dynamodb-12-differences/

3
https://tutorialsdojo.com/amazon-rds-vs-dynamodb/