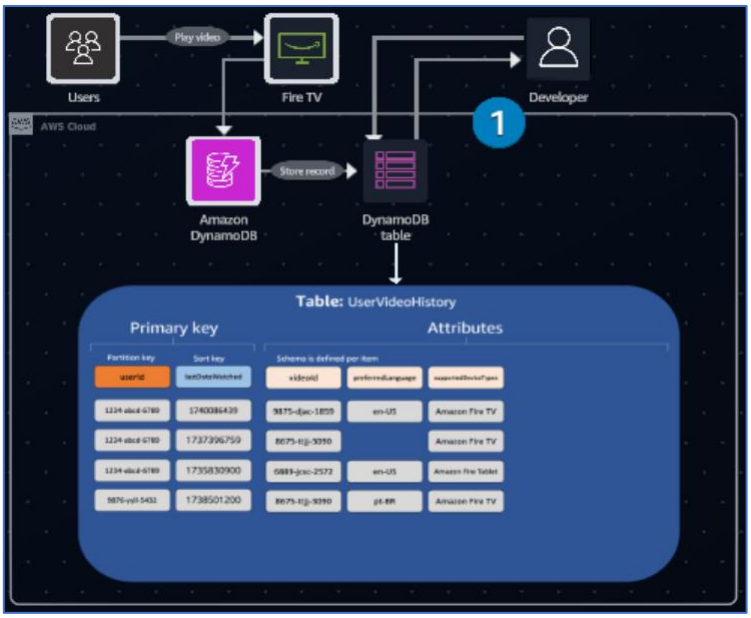
AMAZON DYNAMODB TABLE AND DATA CREATION

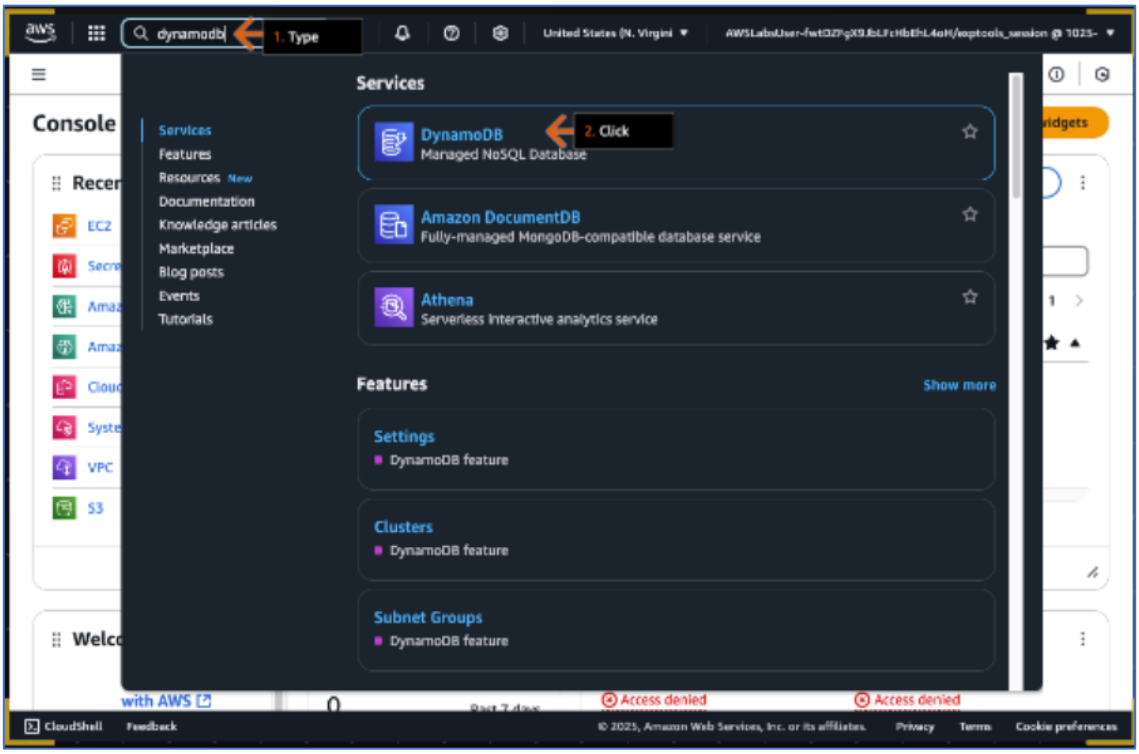
Objectives:

- Create an Amazon DynamoDB table.
- Create a DynamoDB record with metadata attributes.



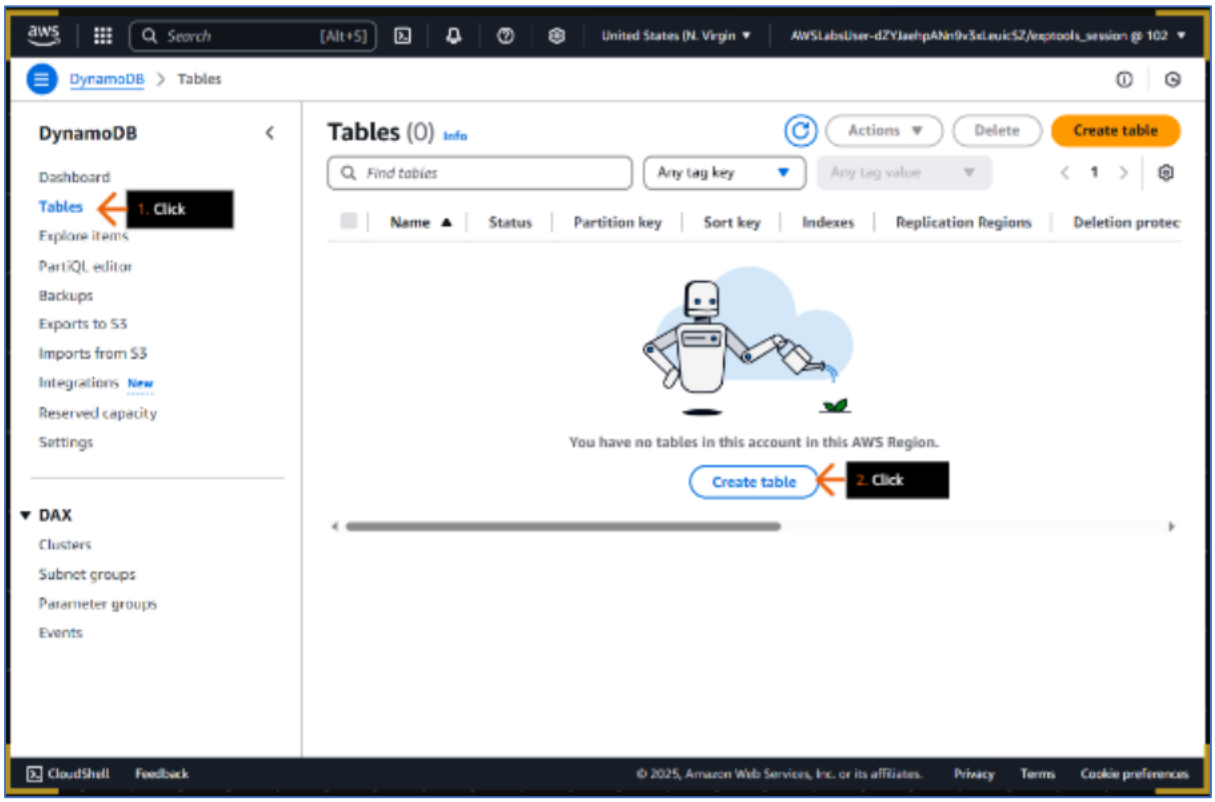
Steps / Procedures / Instructions:

- In the top navigation bar search box, type: dynamodb
- In the search results, under Services, click DynamoDB.



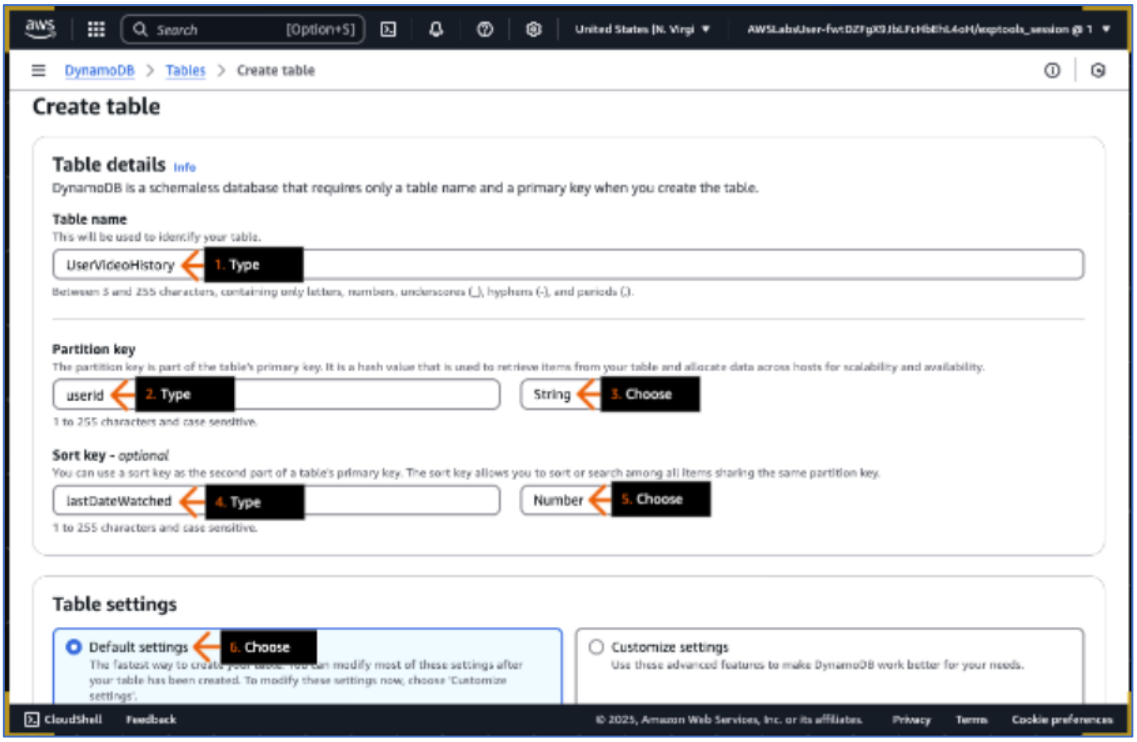
Amazon DynamoDB is a serverless, NoSQL database service that you can use to develop modern applications at any scale. As a serverless database, you only pay for what you use. DynamoDB scales to zero, has no cold starts, no version upgrades, no maintenance windows, no patching, and no downtime maintenance.

- In the left navigation pane, click Tables.
- Click Create table.



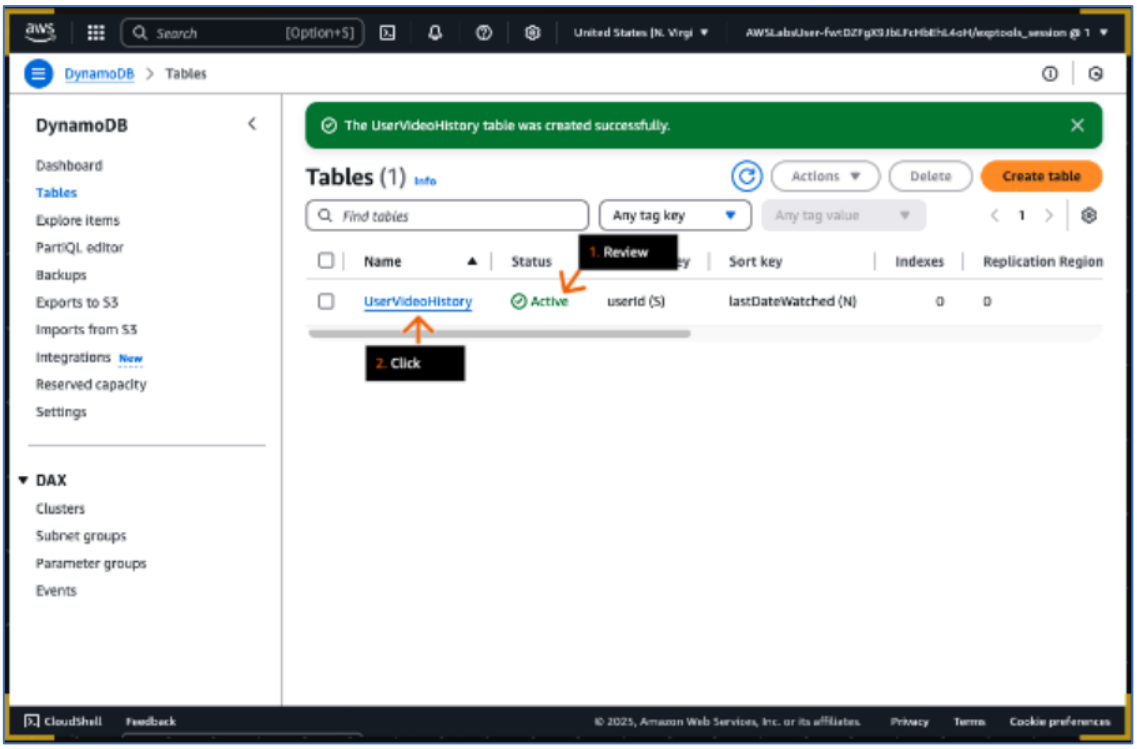
DynamoDB supports both key-value and document data models. As a NoSQL database, DynamoDB has a flexible schema, so each item can have many different attributes. Using a flexible schema, you can quickly adapt as your business requirements change, without the burden of having to redefine the table schema as you would in relational databases.

- In the Table details section, for Table name, type: UserVideoHistory
- For Partition key, in the left text box, type: userId
  - You must type the partition key exactly as shown—userId with an uppercase I—**because keys are case sensitive.**
- On the right dropdown list, choose String.
  - String is the data type.
- For Sort key, in the left text box, type: lastDateWatched
- On the right dropdown list, choose Number.
- In the Table settings section, choose Default settings.
- Scroll down to the bottom of the page, and then click Create table.



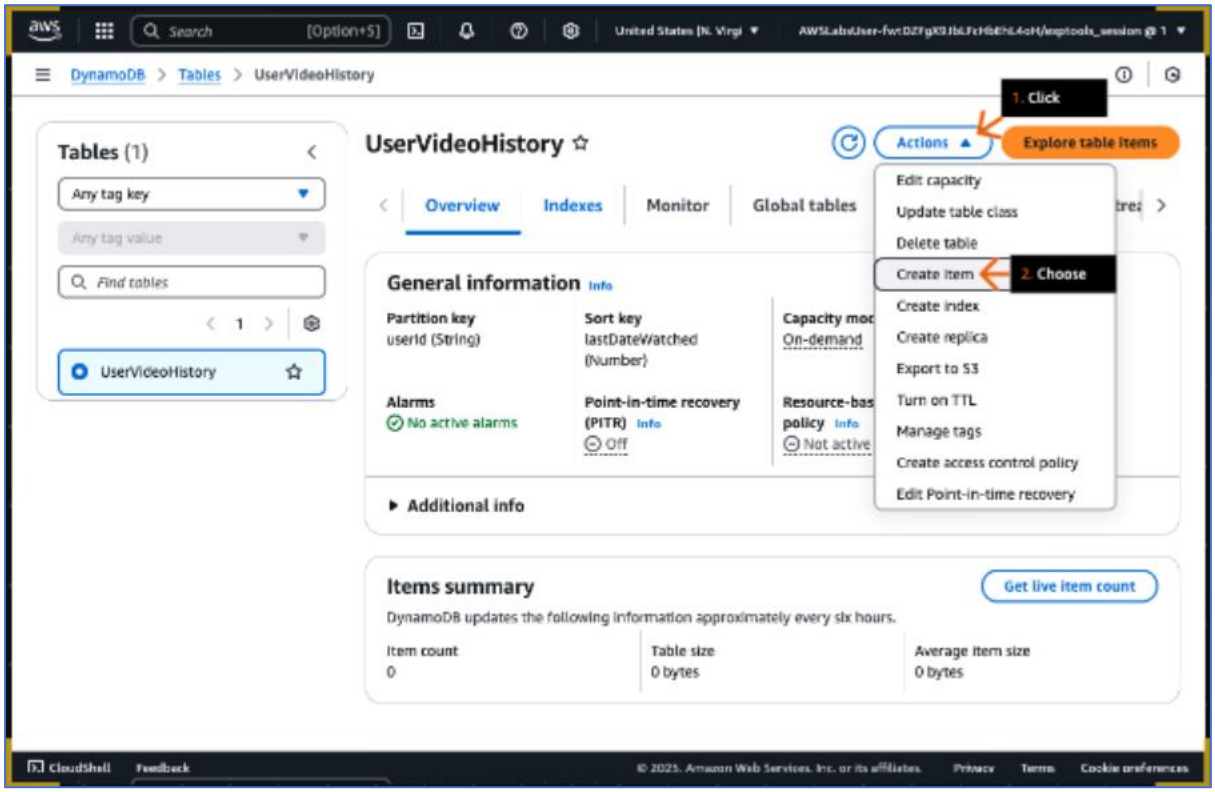
When you create a table, in addition to the table name, you must specify the primary key of the table. The primary key uniquely identifies each item in the table, so no two items can have the same key. If your table has a simple primary key (partition key only), DynamoDB stores and retrieves each item based on its partition key value.

- In the Tables section, under Status, review the status of the table.
  - Wait for the status to change to Active.
- When active, click the table name.



DynamoDB stores data in partitions. A. partition is an allocation of storage for a table, backed by solid state drives (SSDs) and automatically replicated across multiple Availability Zones within an AWS Region.

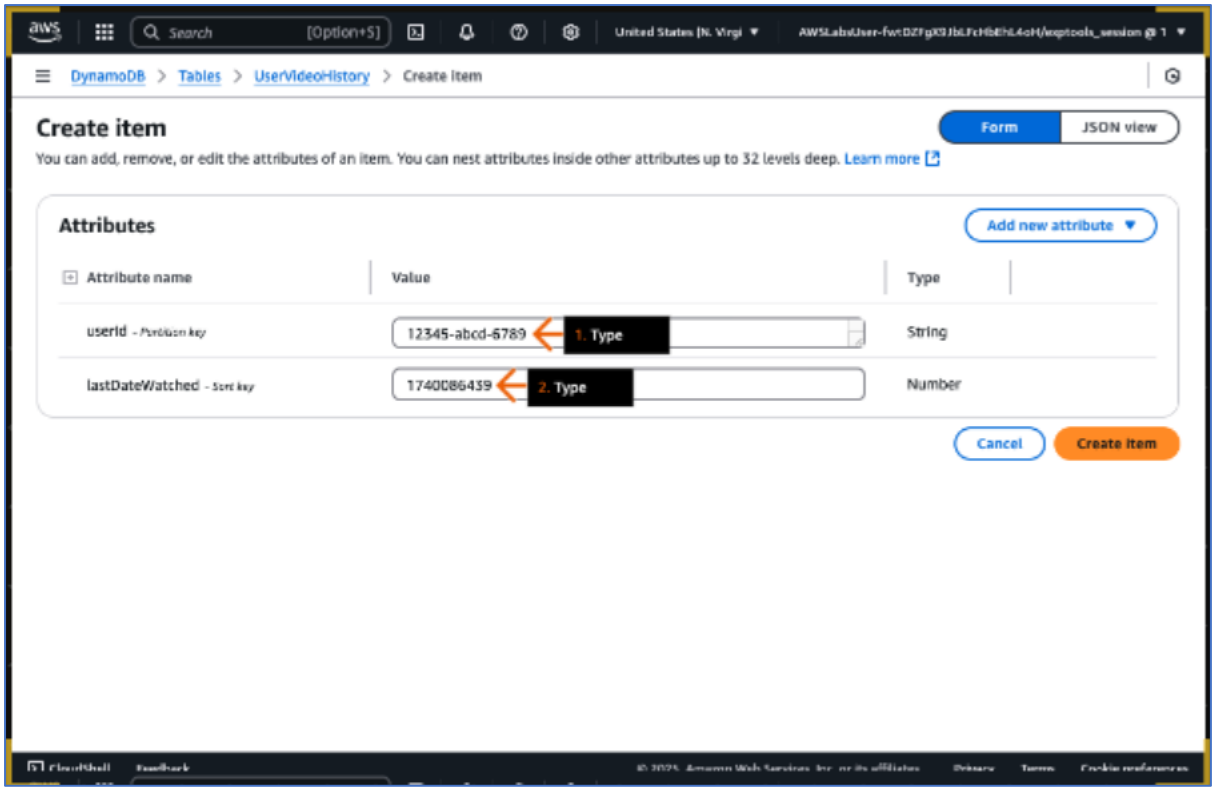
- Click Actions to expand the dropdown list.
- Choose Create item.



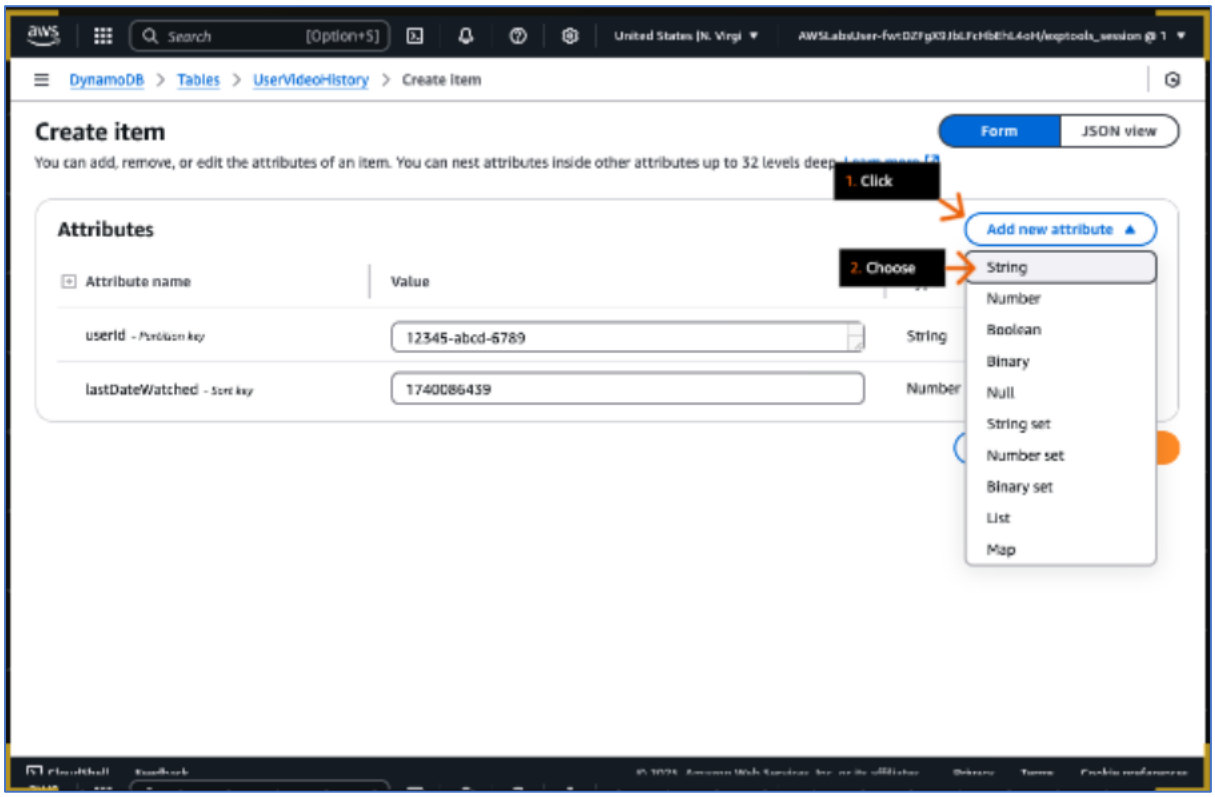
A DynamoDB table contains multiple items, where each item represents a group of attributes that is uniquely identifiable among all other items in the table. Items are similar to rows, records, or tuples in relational database systems.

- For userId, under Value, type: 12345-abcd-6789
- For lastDateWatched, under Value, type: 1740086439
    - This is a UNIX timestamp.

To write an item to the table, DynamoDB uses the value of the partition key as input to an intemal hash function. The output value from the hash function determines the partition in which the item will be stored.

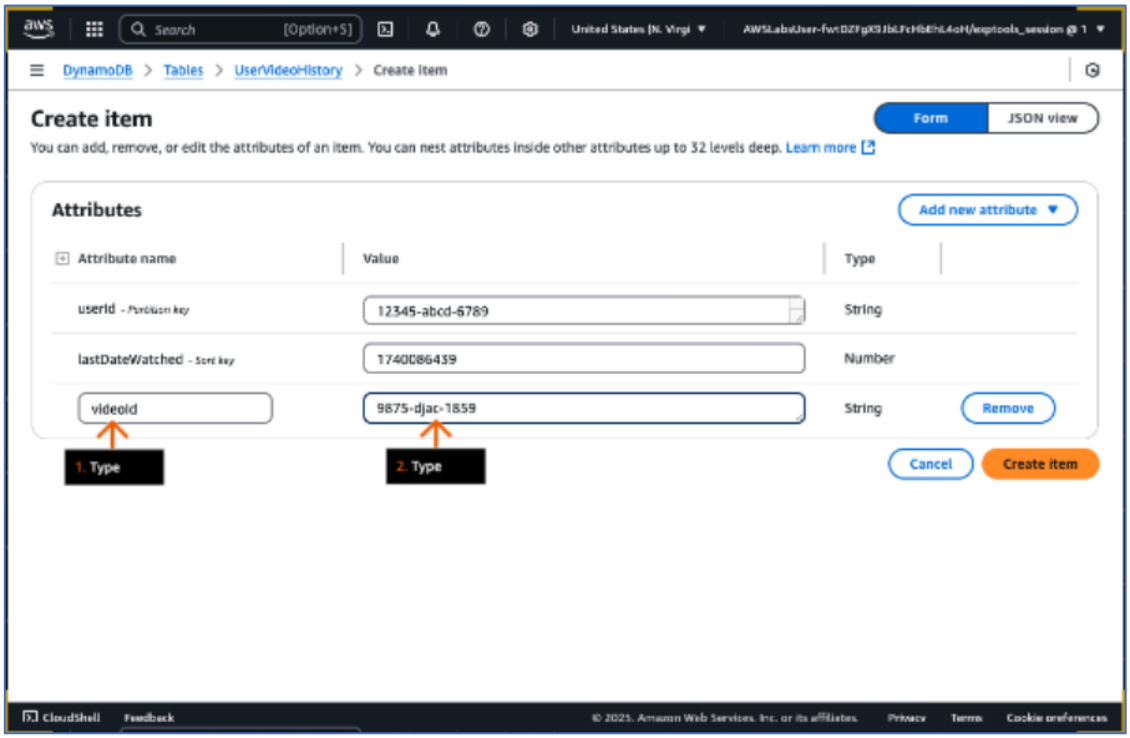


- To add another attribute, click Add new attribute to expand the menu.
- Choose String.

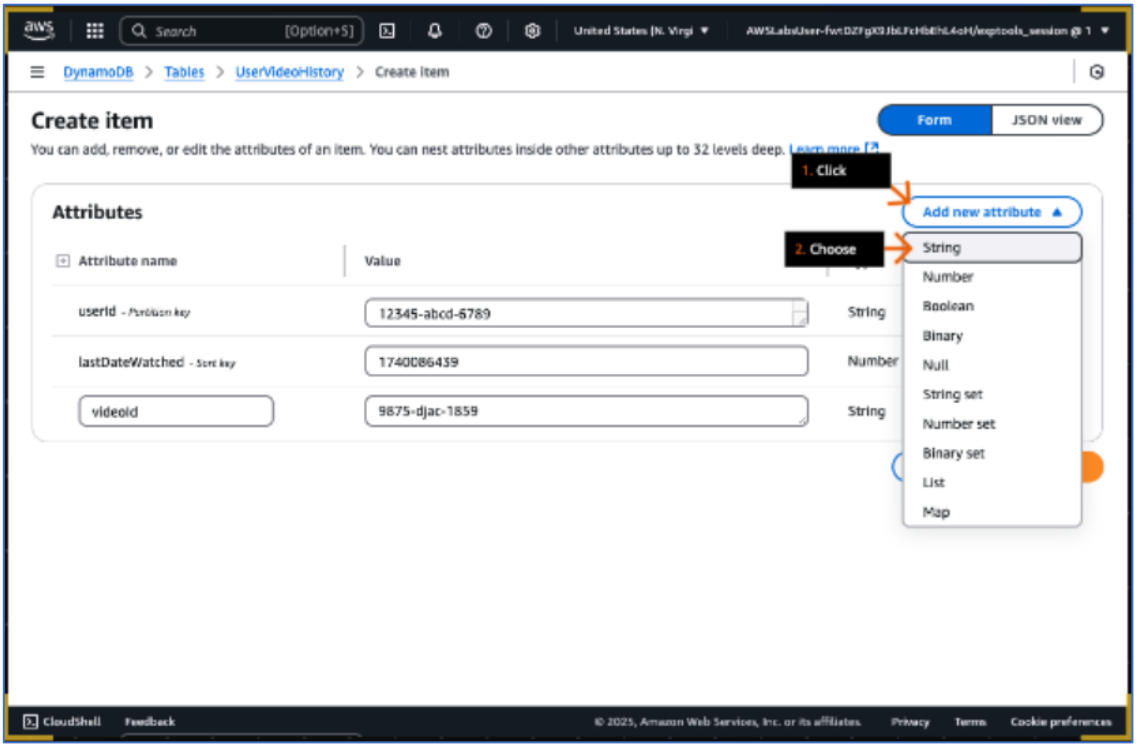


Each item in a DynamoDB table is composed of one or more attributes, which are similar to fields or columns in other database management systems.

- For the new attribute, under Attribute name, type: videoId
- Under Value, type: 9875-djac-1859



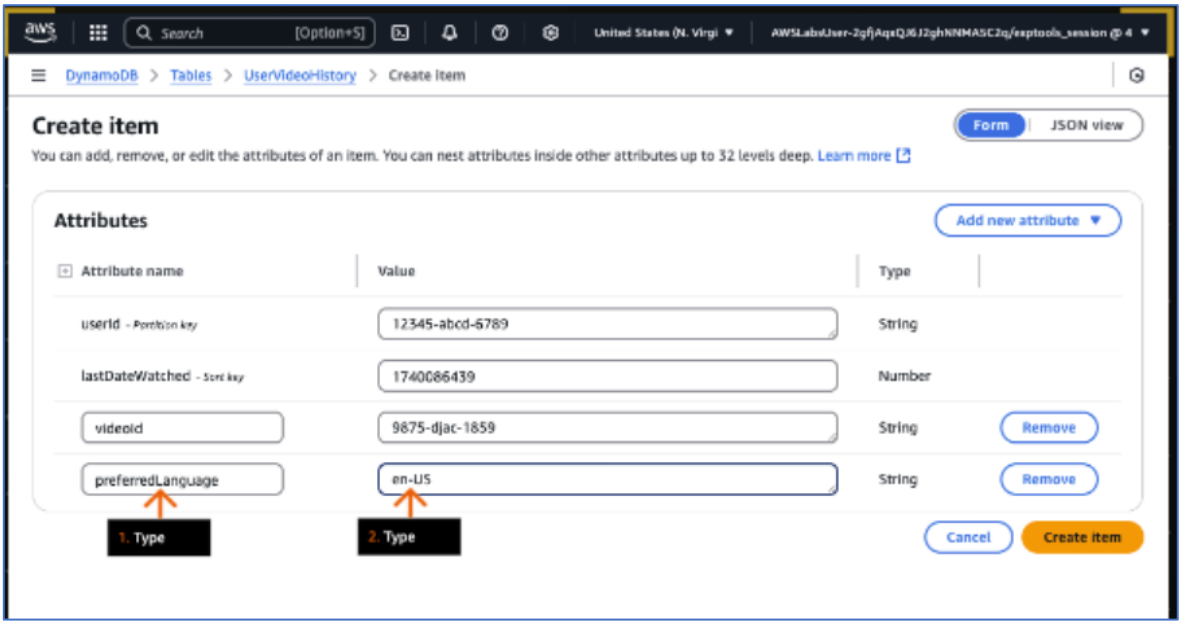
- Click Add new attribute.
- Choose String.



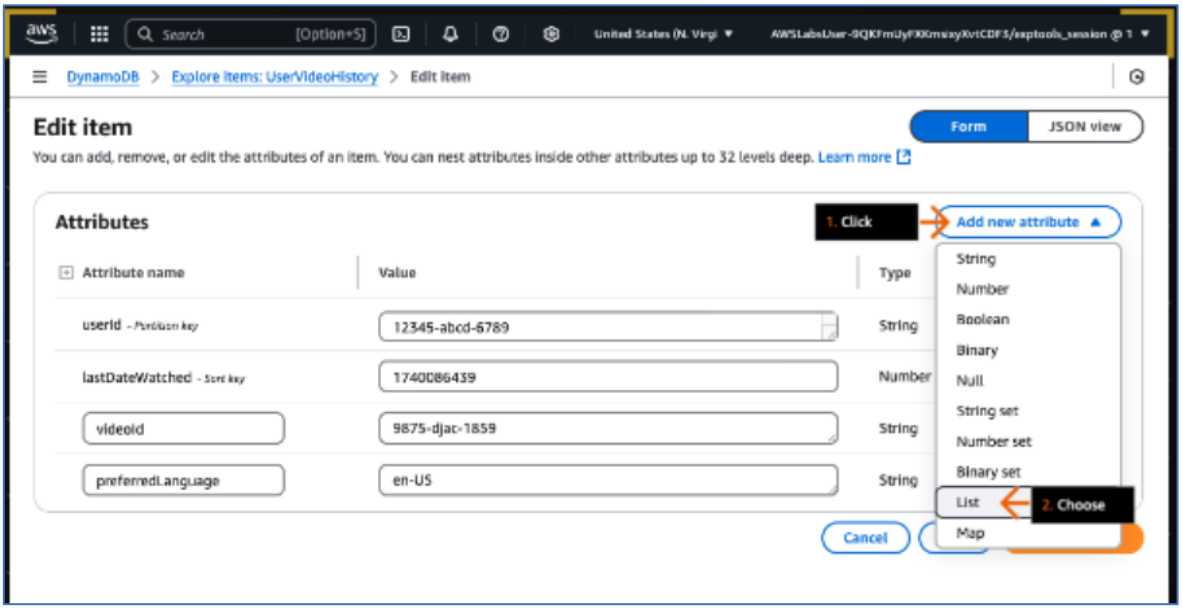
DynamoDB supports many different data types for attributes within a table.
They can be categorized as follows: -

- ❖ Scalar types-A scalar type can represent exactly one value.
  The scalar types are number, string, binary, Boolean, and null
- ❖ Document types-A document type can represent a complex structure with nested attributes, such as what you would find in a JSON document.
  The document types are list and map.
- ❖ Set types-A set type can represent multiple scalar values.
  The set types are string set, number set, and binary set.

- For the new attribute, under Attribute name, type: preferredLanguage
- Under Value, type: en-US

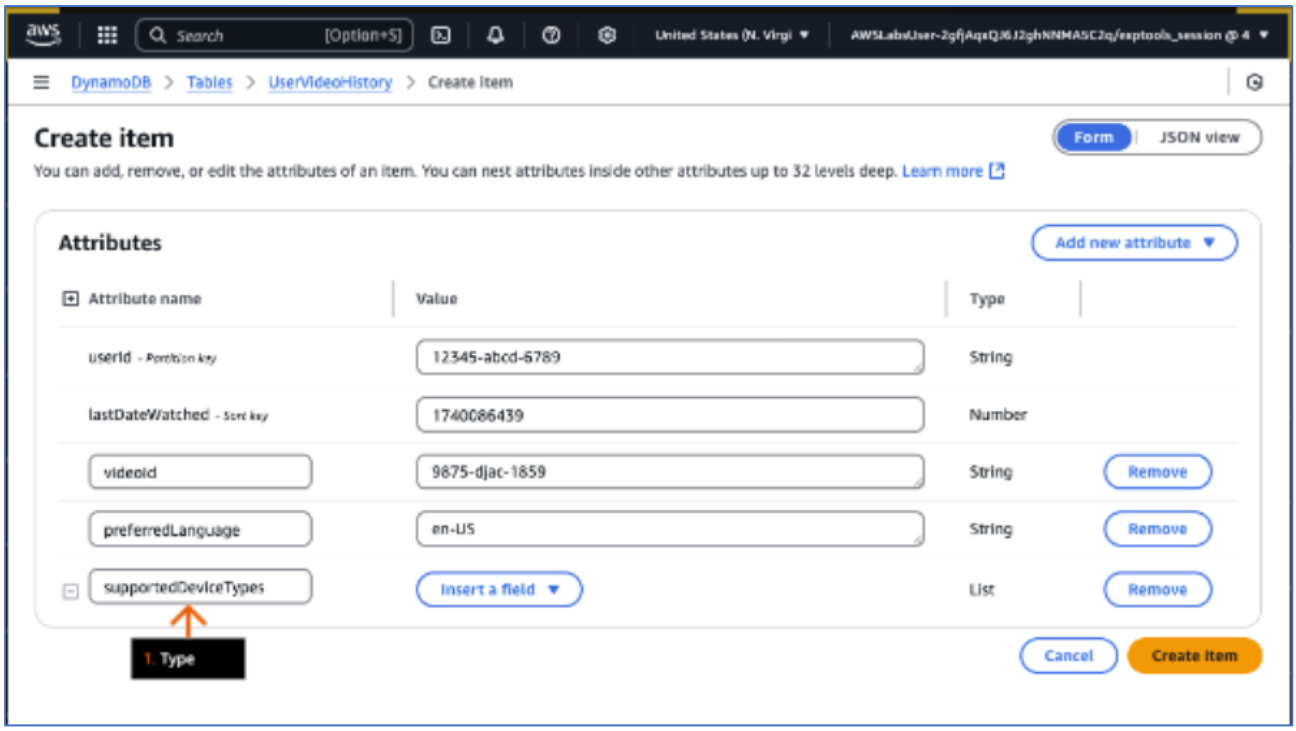


- Click Add new attribute.
- Choose List.

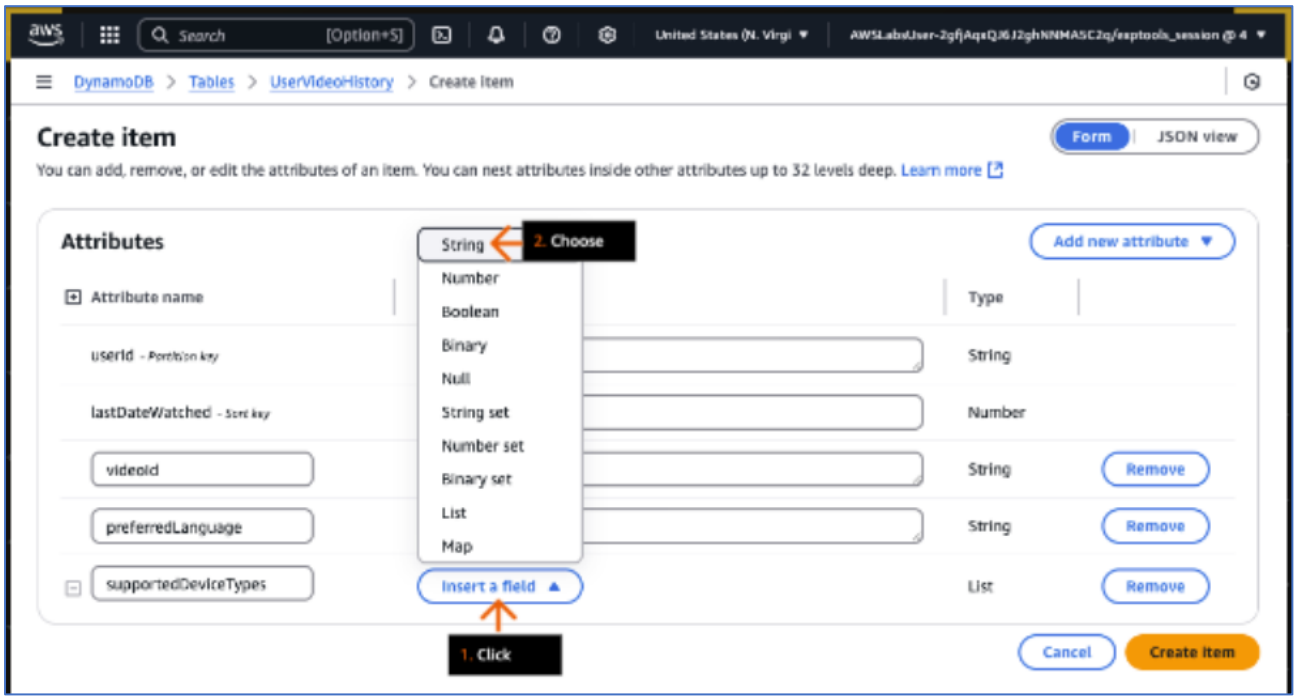


A list type attribute can store as an ordered collection of values. There are no restrictions on the data types that can be stored in a list element, and the elements in a list element do not have to be of the same type.

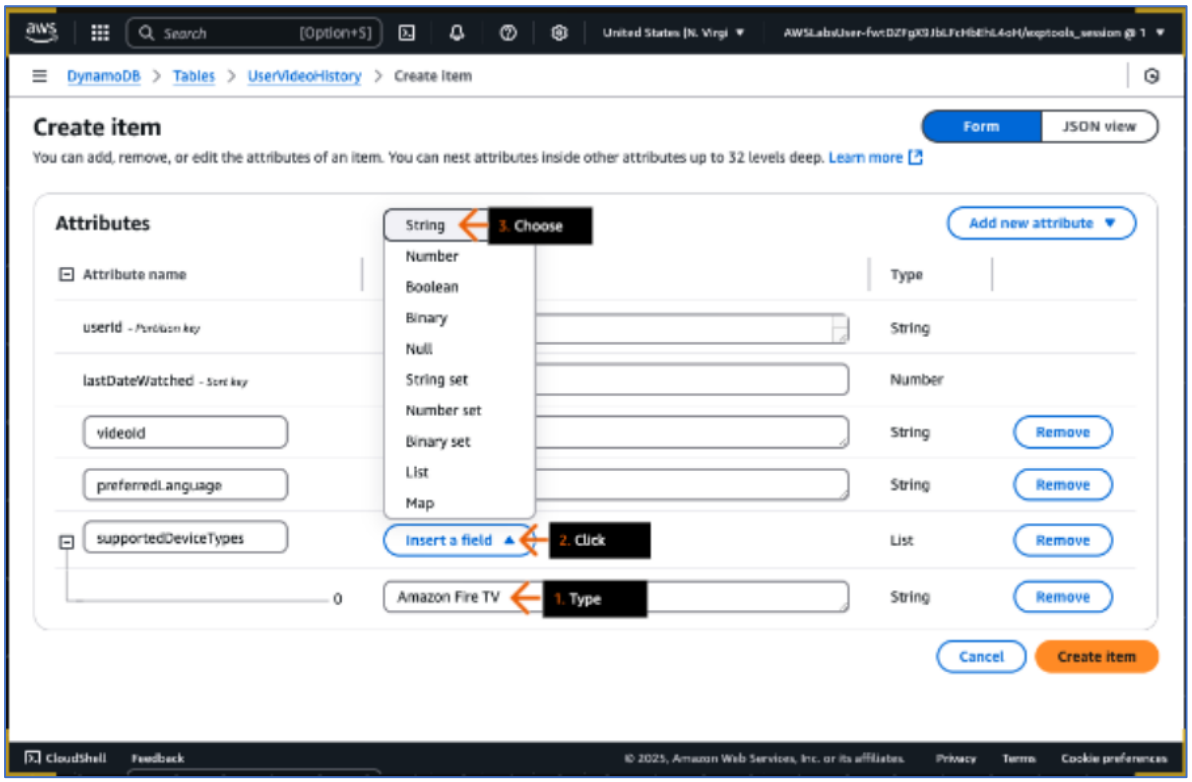
- For the new attribute, under Attribute name, type: supportedDeviceTypes



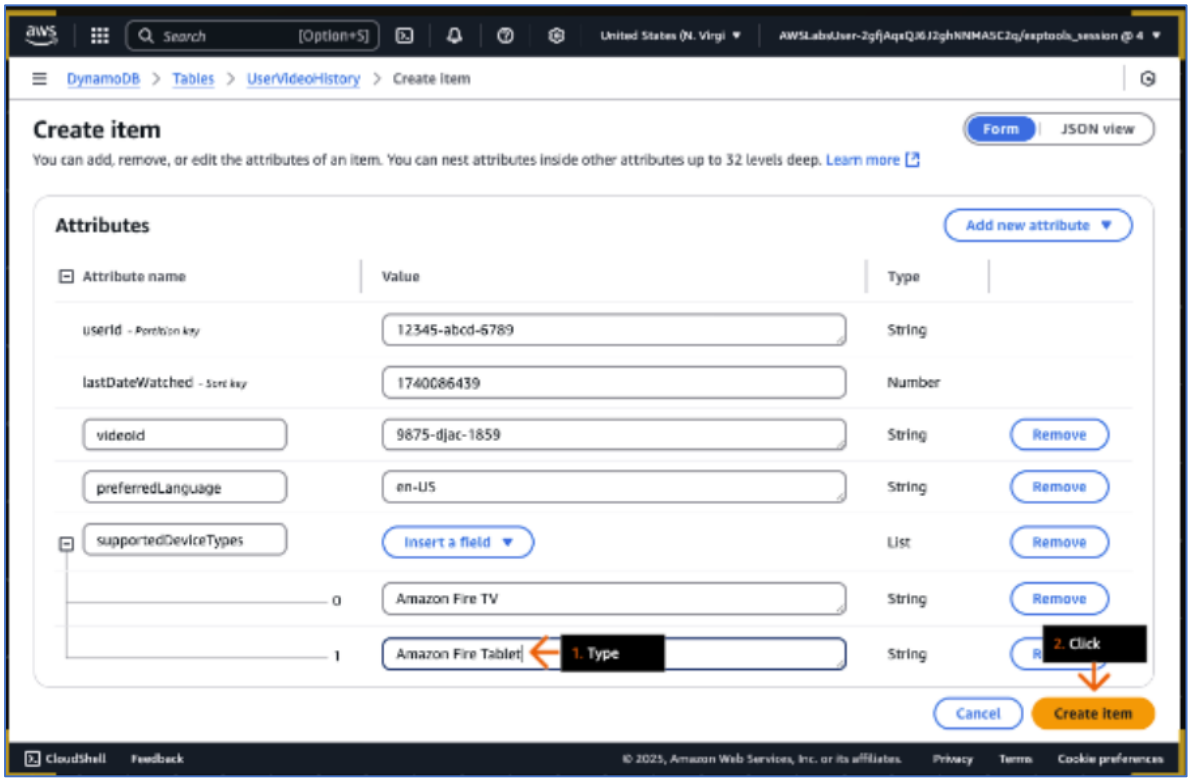
- Under Value, click Insert a field to expand the menu.
- Choose String.



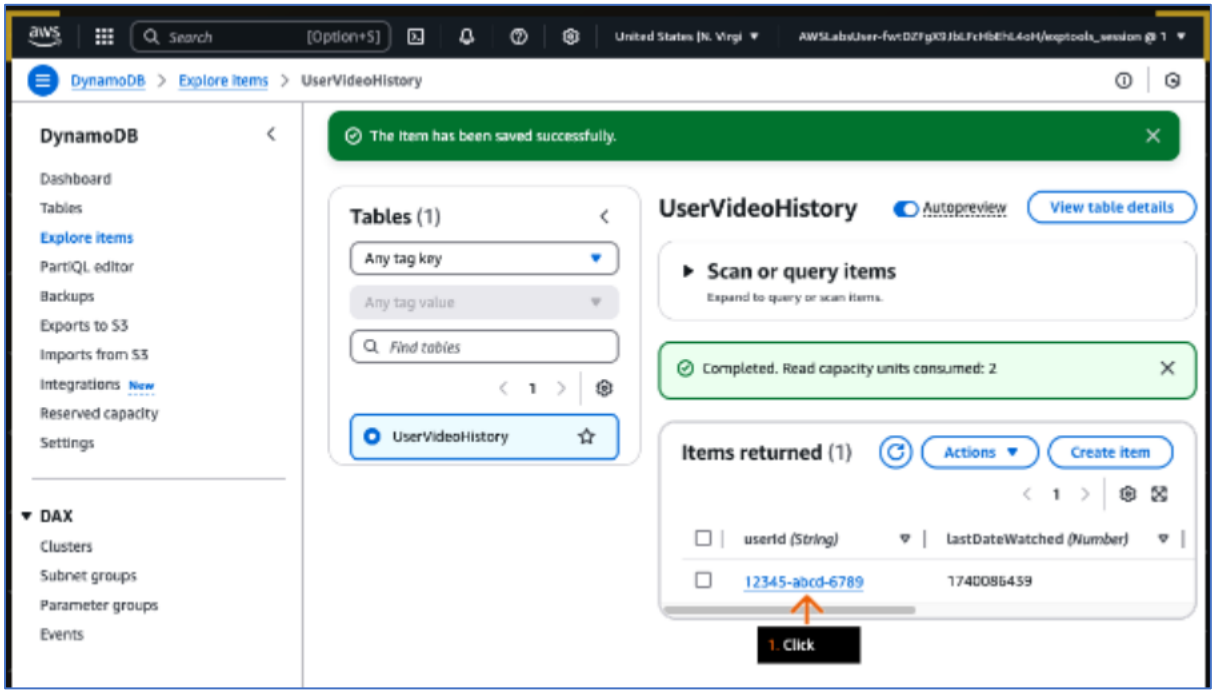
- In the new text box, type: Amazon Fire TV
- Click Insert a field.
- Choose String.



- In the new text box, type: Amazon Fire Tablet
- Click Create item.

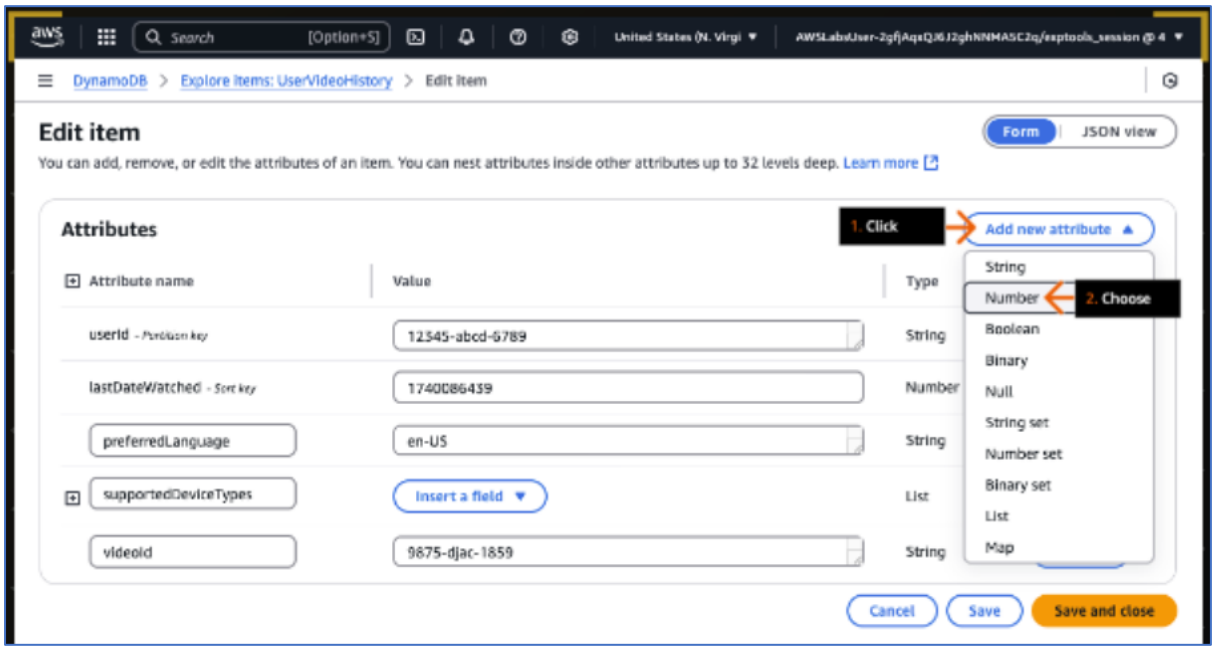


- In the Items returned section, under userId, click 12345-abcd-6789.
    - You can now edit the record again.



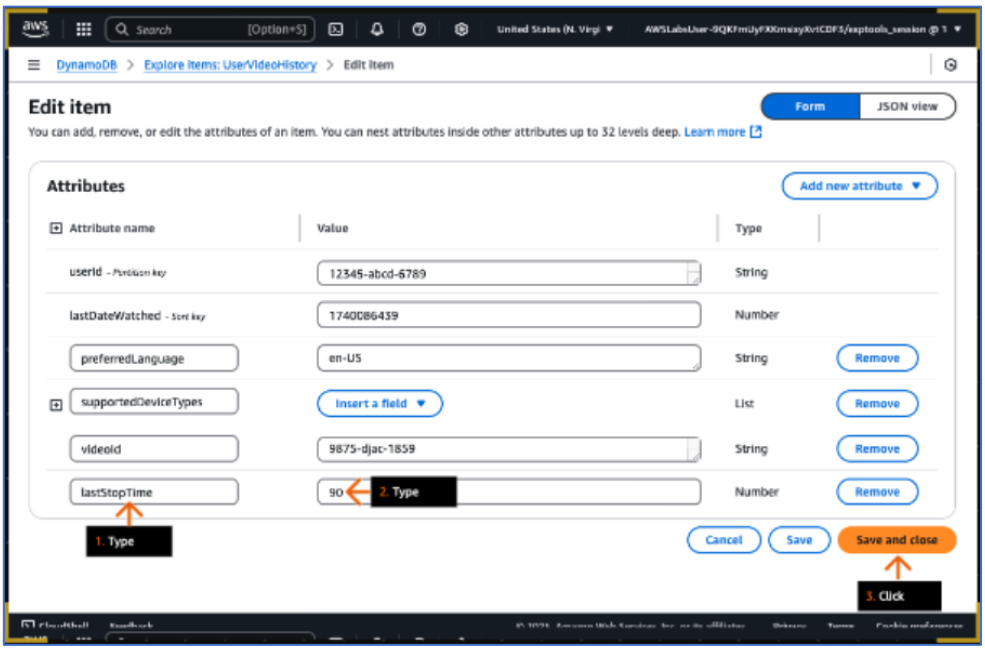
After you've created a record, you can still edit it, including the contents of the record and its attributes.

- Click Add new attribute.
- Choose Number.

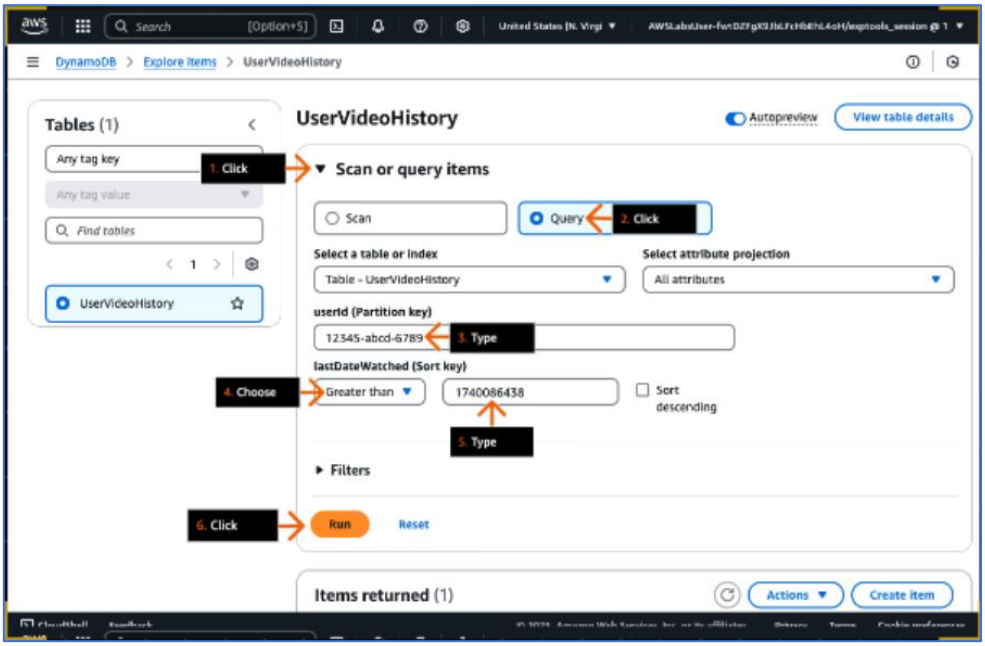


DynamoDB is schemaless, so you can add attributes to the table for any new or existing record.

- For the new attribute, under Attribute name, type: lastStopTime
- Under Value, type: 90
    - The lastStopTime attribute with a Number data type stores the total time in seconds for video viewing. This data might be used for a resume feature in your application.
- Click Save and close.

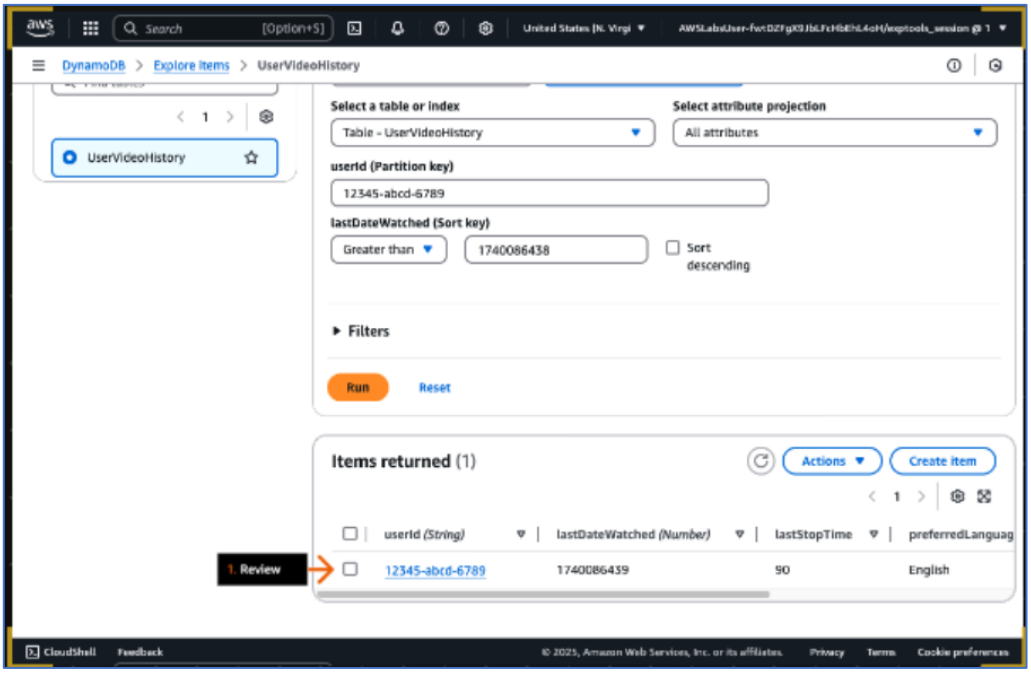


- Click to expand Scan or query items.
- Choose Query.
- For userId (Partition key), type: 12345-abcd-6789
- For lastDateWatched (Sort Key), on the left dropdown list, choose Greater than.
- In the right text box, type: 1740086438
- Click Run.

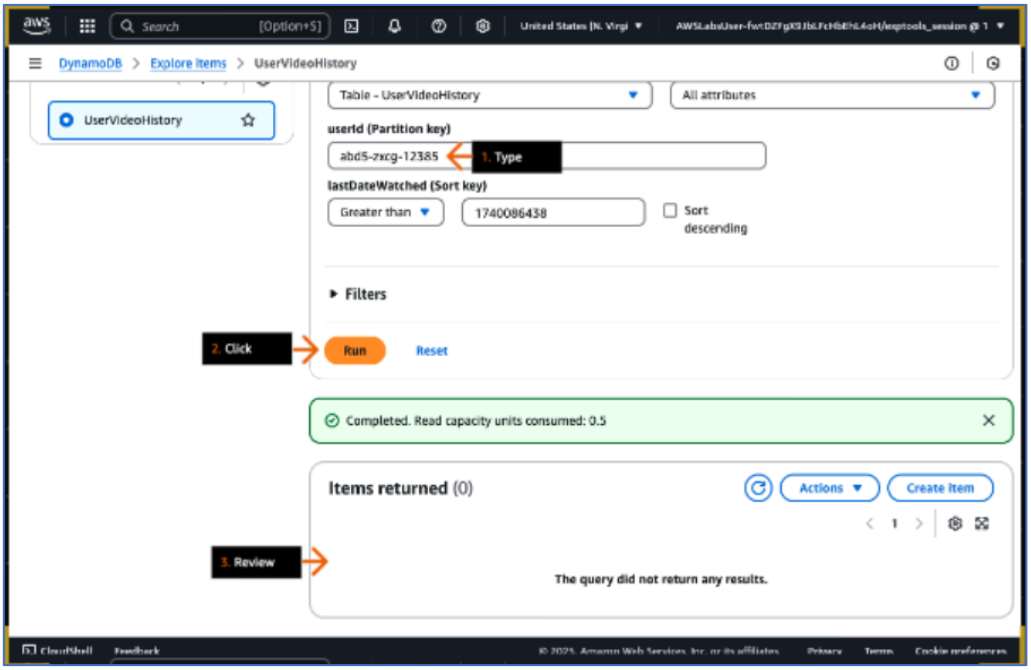


The Query operation in DynamoDB finds items based on primary key values. You must provide the name of the partition key attribute and a single value for that attribute. The query returns all items with that partition key value. Optionally, you can provide a sort key attribute and use a comparison operator to refine the search results.

- In the Items returned section, review the returned record.

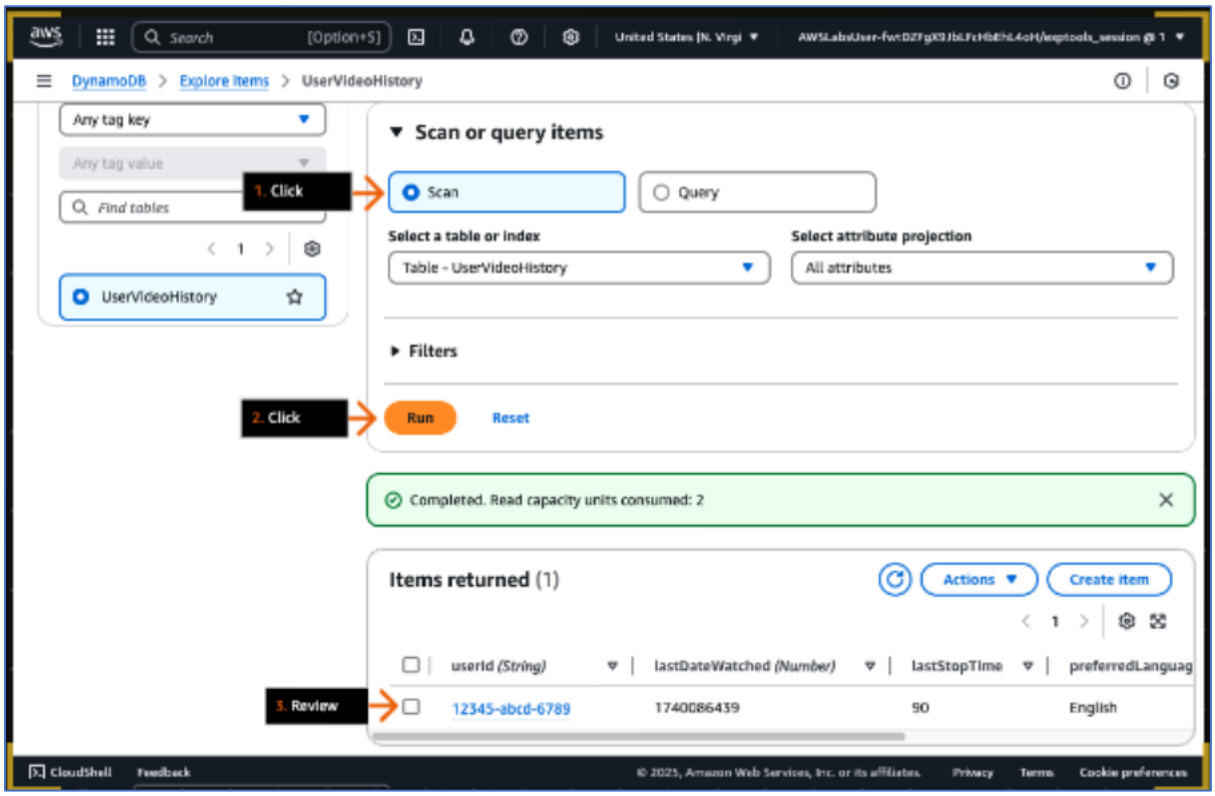


- To change the query criteria, for userId, type: abd5-zxcg-12385
- Click Run.
- In the Items returned section, review the results.
    - Nothing is returned because no record matches the partition key.



When running a Query operation, the table looks for an exact match for the partition key and uses the sort key (if provided) as way to further limit the results.

- For Scan or query items, choose Scan.
- Click Run.
- In the Items returned section, review the results.
    - All items in your DynamoDB table are listed.



The Scan operation returns one or more items and item attributes by accessing every item in a table or a secondary index.
If the total number of scanned items exceeds the maximum dataset size limit of 1 MB, the scan stops and results are returned to the user as a LastEvaluatedKey value, to continue the scan in a subsequent operation.
The results also include the number of items exceeding the limit. A scan can result in no table data meeting the filter criteria.

Conclusion:

You have successfully created an Amazon DynamoDB table and inserted a record with metadata attributes, achieving the objectives effectively.