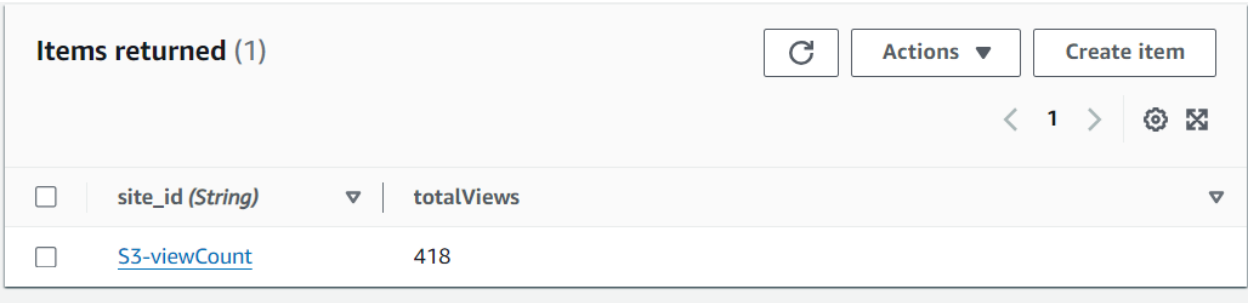
# DynamoDB and DynamoDB Streams

As discussed in the start of this section, databases can broadly be categorized into two categories: SQL and NoSQL, with NoSQL offerings being famous for their flexibility and ability to store and organize structured as well as unstructured and semi-structured data, well DynamoDB is one such a database, offered to us by Amazon as a fully managed DBaaS, meaning that we will not have to handle tasks like hardware provisioning, setup, configuration, or scaling.

With support for both key-value and document data models, DynamoDB organizes data into tables, with each table consisting of items (analogous to rows) and attributes (akin to columns). It is especially great for the handling of large amounts of data with high availability, and is ideal for applications requiring consistent, low-latency data access without compromising on performance or scalability.




A simple example of a DynamoDB table with two key-value fields, site_id and totalViews

Querying in DynamoDB also works quite differently than with conventional SQL-based relational databases, using fields called Partition Keys and Sort Keys. Partition keys are the primary key of the DynamoDB table, uniquely identifying

each item in the table while sort keys are an extension of primary keys, allowing us to uniquely identify items with the same primary key. Sort keys can be thought of as a sub-primary key, as they are a composite key consisting of both a partition key and a sort key enabling us to differentiate between different items with the same partition key.

Additionally, DynamoDB also has multiple interesting additions that can enhance the capabilities and functionality of the service, of which there are two in particular which I feel deserve special attention: **DynamoDB Streams** and **DynamoDB Accelerator**.

DynamoDB Streams is a feature of DynamoDB that captures real-time data modifications in DynamoDB tables, enabling applications to respond promptly to updates. This feature facilitates use cases such as real-time analytics, cross-region replication. Note however, that DynamoDB streams is not enabled by default and instead must be manually enabled if it is to be taken advantage of.

DynamoDB Accelerator or DAX for short (as it is often commonly referred to), on the other hand is not a feature of DynamoDB but rather a separate service designed to improve the performance of DynamoDB tables by providing an in-memory caching layer specifically for said tables. This is particularly useful for read-heavy workloads as frequently requested data can be stored in the DAX cache and applications can fetch said data without having to repeatedly ping DynamoDB for it, greatly reducing the load on the DynamoDB tables.