

Assignment No B3

Title: MongoDB – Map-reduces operations:

Implement Map reduces operation with suitable example using MongoDB.

Objective: Understand map reduce operations in MongoDB

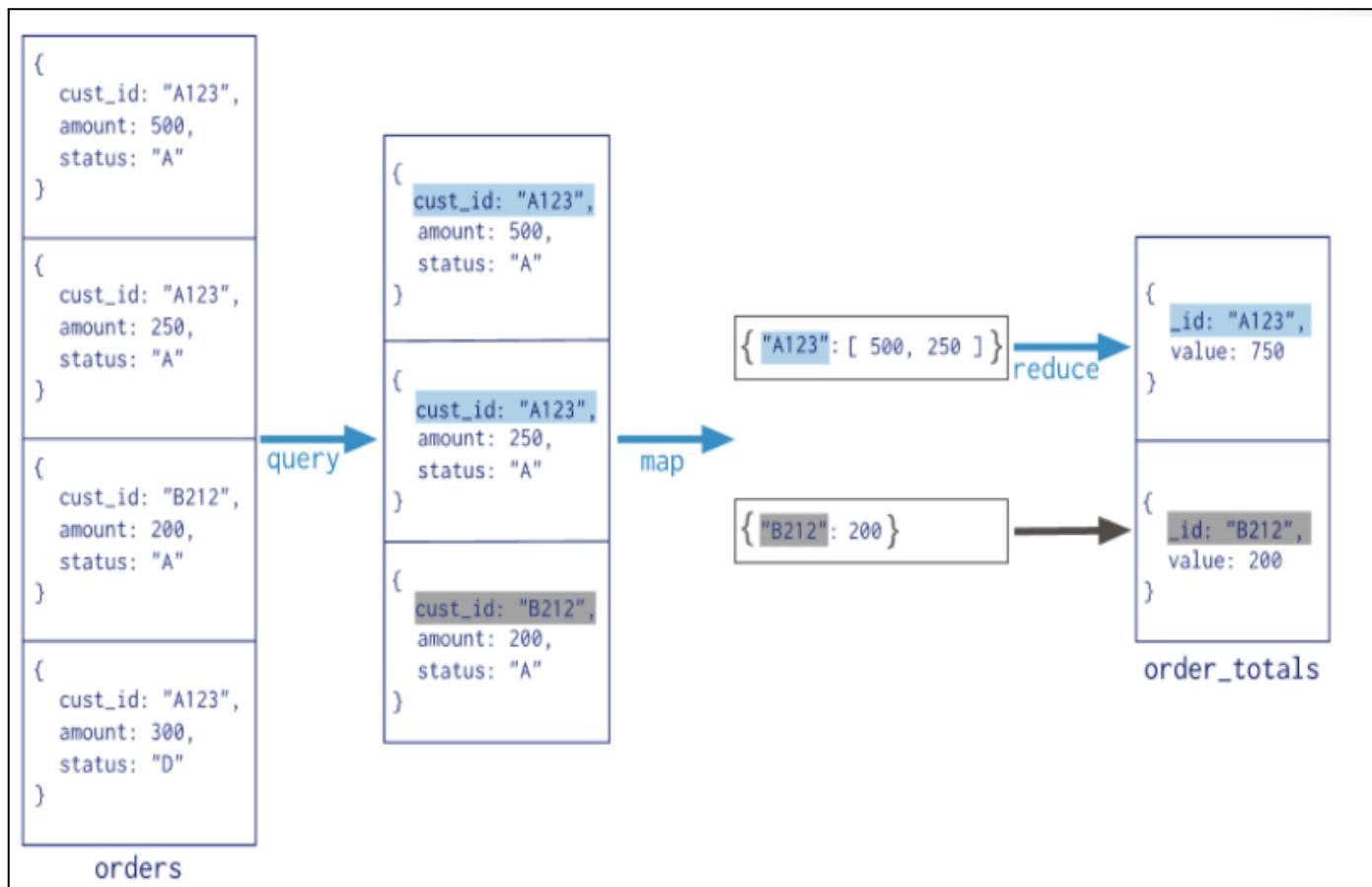
Theory:

Map-Reduce

- Map-reduce is a data processing paradigm for condensing large volumes of data into useful aggregated results. For mapreduce operations, MongoDB provides the mapReduce database command.
- Consider the following map-reduce operation:

```
Collection
↓
db.orders.mapReduce(
  map → function() { emit( this.cust_id, this.amount ); },
  reduce → function(key, values) { return Array.sum( values ) },
  {
    query → query: { status: "A" },
    output → out: "order_totals"
  }
)
```

MapReduce:



Map-Reduce:

In very simple terms, the mapReduce command takes 2 primary inputs, the mapper function and the reducer function.

A Mapper will start off by reading a collection of data and building a Map with only the required fields we wish to process and group them into one array based on the key.

And then this key value pair is fed into a Reducer, which will process the values.

Map-Reduce Syntax:

```
db.collection.mapReduce(  
  function() {emit(key, value);},  
  function(key,values) {return reduceFunction},  
  {  
    out: collection,  
    query: document,  
    sort: document,  
    limit: number  
  }  
)
```

Map-Reduce Syntax Explanation:

The above map-reduce function will query the collection, and then map the output documents to the emit key-value pairs. After this, it is reduced based on the keys that have multiple values. Here, we have used the following functions and parameters.

- Map: – It is a JavaScript function. It is used to map a value with a key and produces a key-value pair.
- Reduce: – It is a JavaScript function. It is used to reduce or group together all the documents which have the same key.
- Out: – It is used to specify the location of the map-reduce query output.
- Query: – It is used to specify the optional selection criteria for selecting documents.
- Sort: – It is used to specify the optional sort criteria.
- Limit: – It is used to specify the optional maximum number of documents which are desired to be returned.

Conclusion: We understood the concept of Map Reduce in MongoDB.