NoSQL Database - MongoDB

What is Mongo?

- MongoDB is an open-source document database.
- Provides

- high performance
- high availability (not 99.999% availability)
- automatic scaling

- non-relational
- can be distributed / partitioned easily

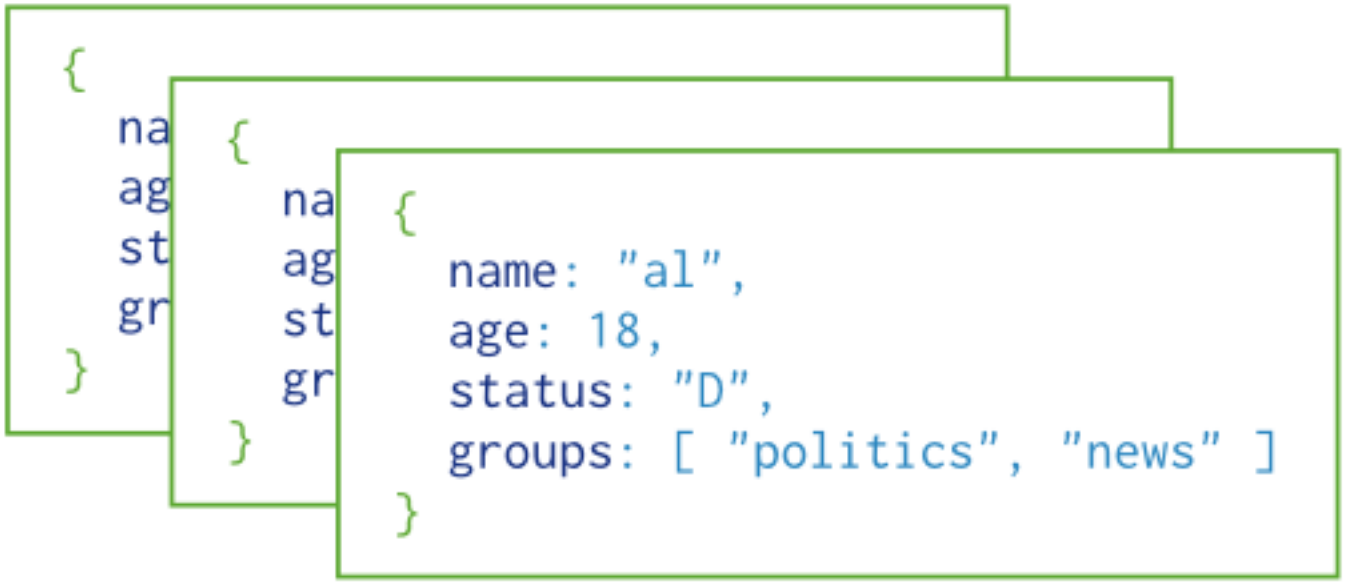
Mongo

- Based on documents *think of it as a record*
- A record in MongoDB is a document, which is a data structure composed of field and value pairs
- Documents are stored in collections *think of it as tables*
- Collections do not require schema specification – dynamic schema.

Mongo – K, V pairs

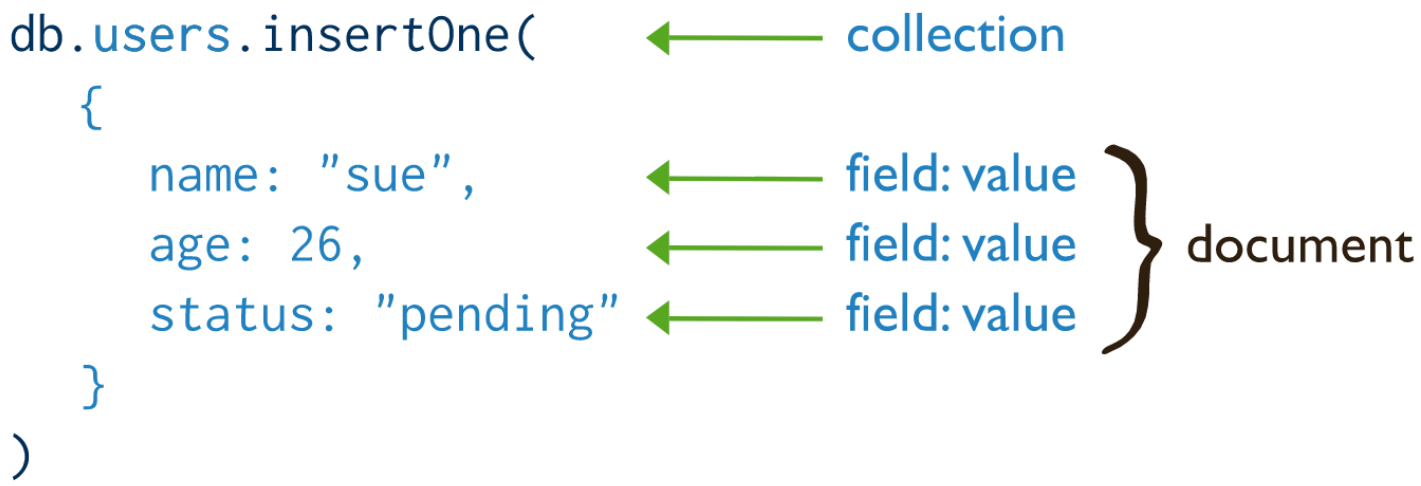
- MongoDB stores data in the form of documents, which are JSON-like field and value pairs
- Other structures that store K-V pairs: e.g. dictionaries, hashes, maps, and associative arrays

Collections



CRUD Operations

- Inserting data:
- One at a time:



- Bulk Import: mongoimport command
  can work with JSON, CSV, and other formats

CRUD Operations

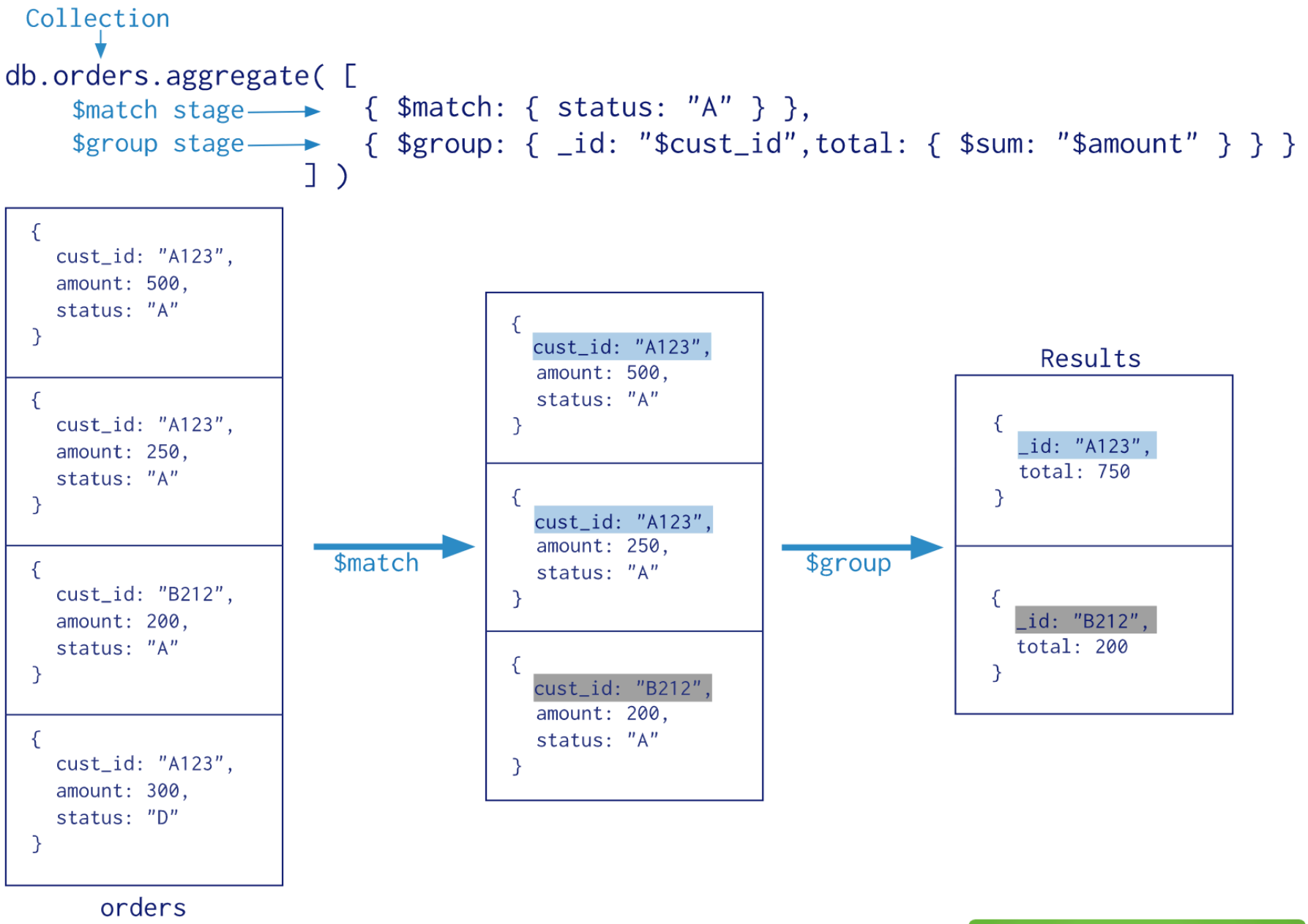
- Getting data:
- db.collections.find({filter conditions})

```
db.users.find(
    { age: { $gt: 18 } },
    { name: 1, address: 1 }
).limit(5)
```

Aggregate Operations

- MongoDB's aggregation framework is modeled on the concept of data processing pipelines. Documents enter a multi-stage pipeline that transforms the documents into an aggregated result.
- Operations occur in pipelines one after the other.

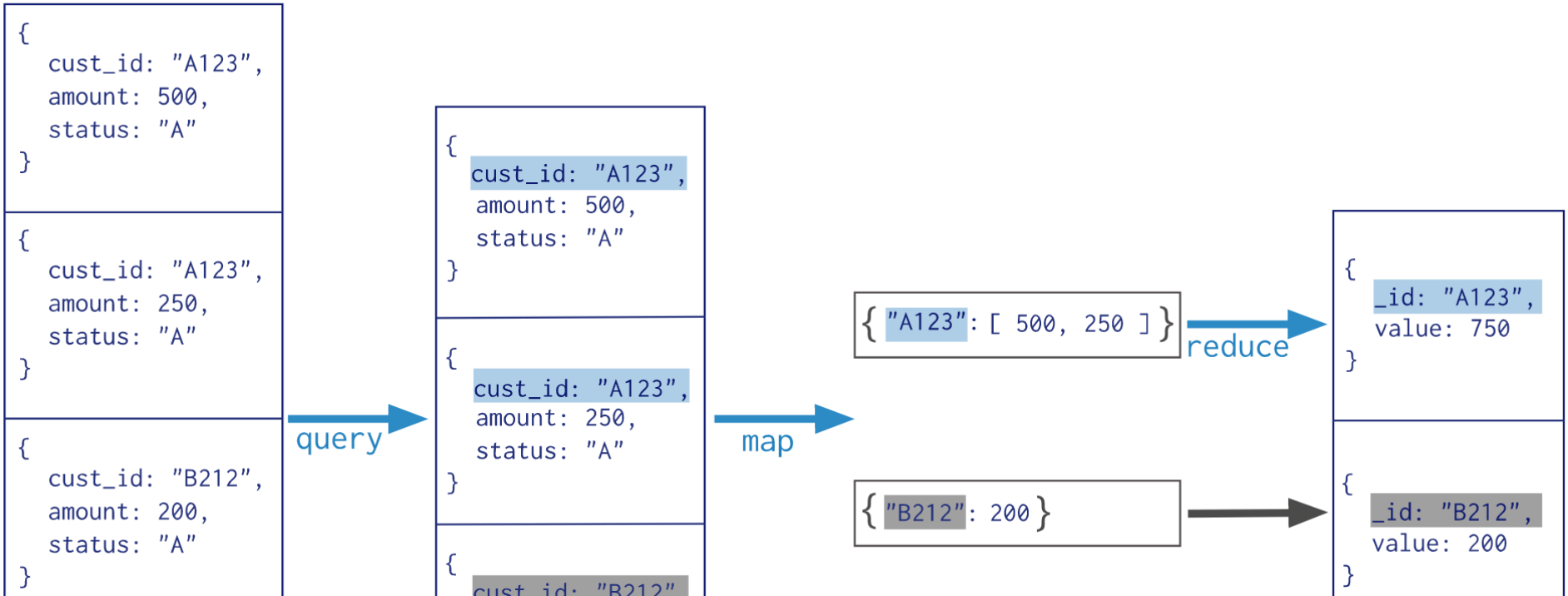
Aggregate Operations



MapReduce Operations

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"
                     }
                 )
```



NoSQL vs SQL databases

https://www.mongodb.com/nosql-explained

Summary of commands

http://docs.mongodb.org/master/reference/mongo-shell/

Mongo Commands

- show databases
- use test
- show tables
- db.restaurants.count()

More commands here:

http://docs.mongodb.org/getting-started/shell/query/