

# MongoDB Introduction

Team Emertxe





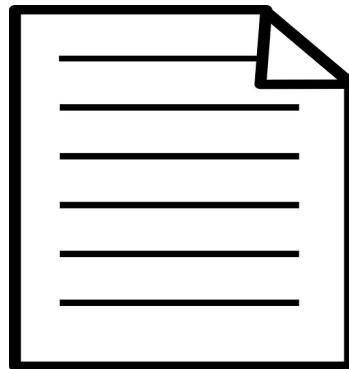
# Introduction to MongoDB

# What is MongoDB?

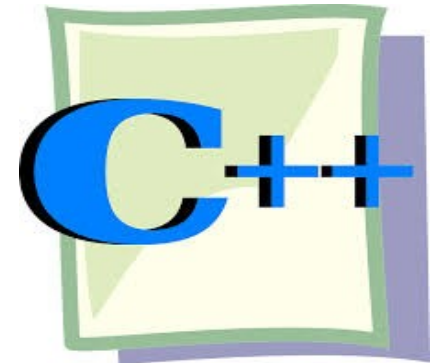
Open-Source



Document-Oriented



Written in C++



# MongoDB Overview

- MongoDB is open-source cross-platform document oriented database developed and supported by company named 10gen.
- MongoDB is a NoSQL (Not only SQL or non relational database) .
- MongoDB provides high performance , high availability and automatic scaling.
- MongoDB uses JSON-like documents with schemas.

# History



- MongoDB was developed in 2007 by Dwight Merriman and Eliot Horowitz.
- MongoDB was developed as a PAAS (Platform as a service) initially.
- In 2009, the company shifted to an open source development model, with the company offering commercial support and other services.
- In 2013, 10gen changed its name to MongoDB Inc.

# What is NoSQL ?

- Next generation database
- Non relational database
- Open Source
- Distributed Architecture
- Horizontally scalable
- Schema free
- Can manage huge amount of data

# SQL vs NoSQL

- SQL database are relational databases.
- SQL Databases are table based.
- SQL Databases have predefined schema.
- SQL databases are vertically scalable.
- NoSQL database are non relational or distributed database.
- NoSQL Databases are document based , key-value pairs.
- NoSQL Databases have dynamic schema for unstructured data.
- NoSQL databases are horizontally scalable.

# SQL vs NoSQL

- SQL databases uses structured query language for defining and manipulating data.
- Good for complex query.
- Example  
MySQL , Oracle , Sqlite , MS-SQL

- NoSQL databases are unstructured query language and queries are focused on collection of documents.
- Not good for complex query.
- Example  
MongoDB , BigTable , Redis



# RDBMS vs MongoDB

RDBMS	MongoDB
Database	Database
Table	Collection
Row	Document
Column	Field
Primary Key	_id field is always primary key.
Index	Index
Join	Embedding , Linking

# Feature

- Map reduce and Aggregation tools
- Data Replication and Reliability
- Rich Query Language
- Open-source
- Efficient Horizontal scalability
- Schema less database
- Full index support for High Performance
- No complex Join

# Main Feature

(Rich Query Language , Indexing)



- Rich Query Language

MongoDB supports a rich query language to support read and write operations.

- Indexing

Fields in MongoDB document can be indexed with primary and secondary indices .

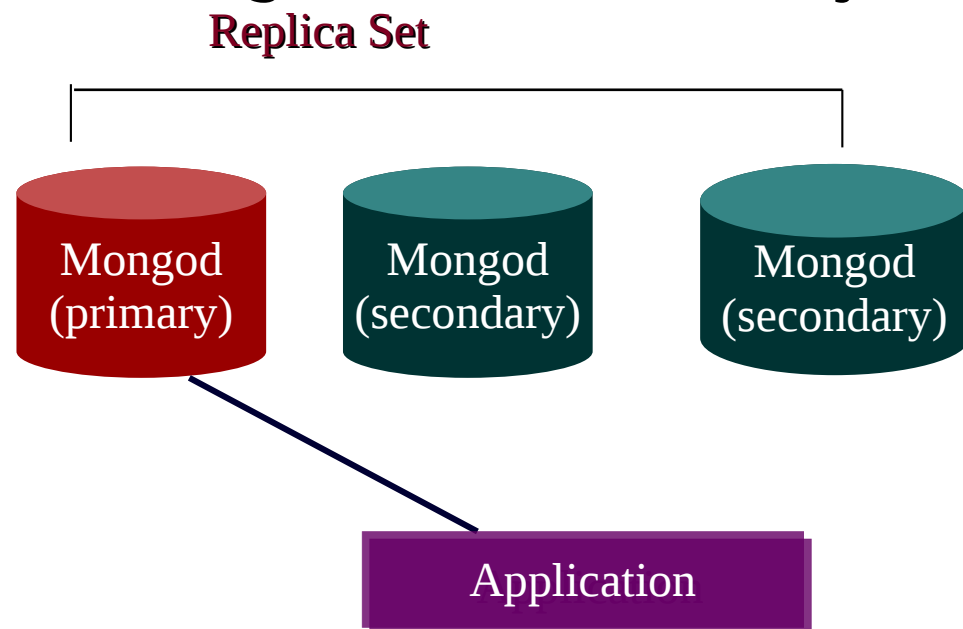
# Main Features

## (Replication)



- Replication

MongoDB provides high availability with replica sets. A replica set is a group of MongoDB servers that maintain the same data set providing redundancy and increasing data availability.

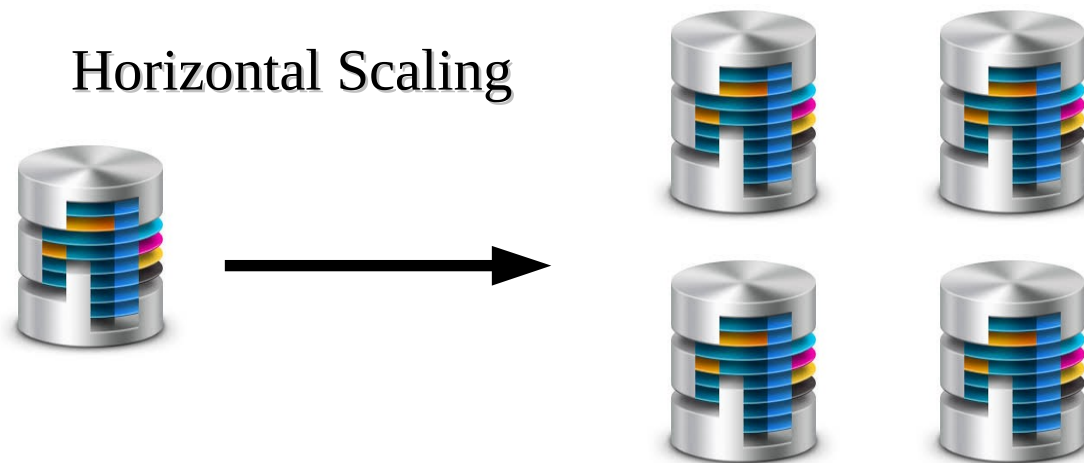


# Main Features

## (Horizontal Scalability)

- **Horizontal Scalability**

MongoDB scales horizontally using sharding. The user chooses a shard key , which determines how the data collection will be distributed.



# Main Feature

- Aggregation

Map Reduce can be used for batch processing of data and aggregation operation. The aggregation framework enables user to obtain the kind of results for which SQL GROUP BY clause is used.



# Main Feature

- File Storage

MongoDB can be used as a file system with load balancing and data replication features over multiple machines for storing files.



# Why we use MongoDB?

- Document-oriented
- Simple query language
- High performance.
- Highly available.
- Easily scalable





Installing Environment

# Installing MongoDB

- Import the public GPG key by the package management system

```
sudo apt-key adv --keyserver hkp://keyserver.ubuntu.com:80 --recv  
0C49F3730359A14518585931BC711F9BA15703C6
```

- Create a list for MongoDB (Ubuntu 14.04)

```
echo "deb [ arch=amd64 ] http://repo.mongodb.org/apt/ubuntu  
trusty/mongodb-org/3.4 multiverse" | sudo tee  
/etc/apt/sources.list.d/mongodb-org-3.4.list
```

# Installing MongoDB

- Reload local package database

```
$ sudo apt-get update
```

- Install the MongoDB packages

```
$ sudo apt-get install -y mongodb-org
```

# Installing MongoDB

The MongoDB instance stores its data files in `/var/lib/mongodb` and its log files in `/var/log/mongodb` by default and runs using the `mongodb` user account.

- Start MongoDB

```
$ sudo service mongod start
```

```
$ sudo mongod
```

- Stop MongoDB

```
$ sudo service mongod stop
```



# References



- <https://www.wikimedia.org/>
- <https://docs.mongodb.com/manual/>

# Stay connected

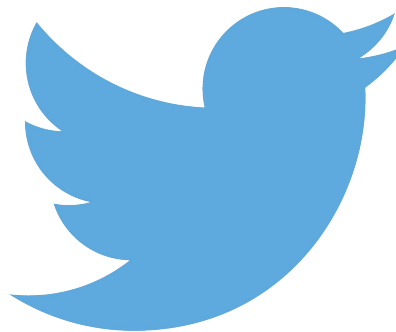


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