

# Introduction to



# with PyMongo

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# Who am I ?

Love technology and passionate to implement it

Product manager background

Learning programming and IT architectures since May'17

Started with Python in Nov '17

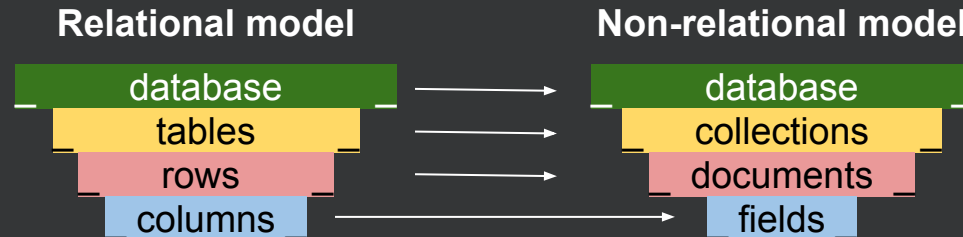
# Introduction to databases

**Database** is an organized collection of data, generally stored and accessed electronically from a computer. From wikipedia

## Database models

**Relational model** organized in tables with rows and columns, with relations between them.

**Non-relational model** organized in collections with documents and fields ( key : value ).



# SQL vs No-SQL comparison

## **SQL** (Structured Query Language)

- Data uses Schema
- Relational
- Data is distributed across multiple tables
- Vertical scaling is possible
- Horizontal scaling is difficult
- Limitations for lots of read write queries per second
- MySQL, SQLite, MS SQL, Oracle, ..

## **No SQL**

- Schema-less
- No relational oriented (few)
- Data is merged in a collection or few collections
- Vertical scaling is possible
- Horizontal scaling is also possible
- Great performance for massive read and write
- MongoDB, Cassandra, Dynamo, ..

# What is MongoDB ?

- MongoDB was founded in 2007, by DoubleClick guys (400,000 ads/second)
- It is free and open-source
- Document-oriented, Non relational database NoSQL
  - Hash-based, schema-less database
    - Keys are a basic data type but in reality stored as strings
    - Document Identifiers (\_id) will be created for each document, field name reserved by system
    - Uses BSON format
      - Based on JSON – B stands for Binary
  - Written in C++
  - Supports APIs in many computer languages
    - JavaScript, Python, Ruby, Perl, Java, Java Scala, C#, C++, ..

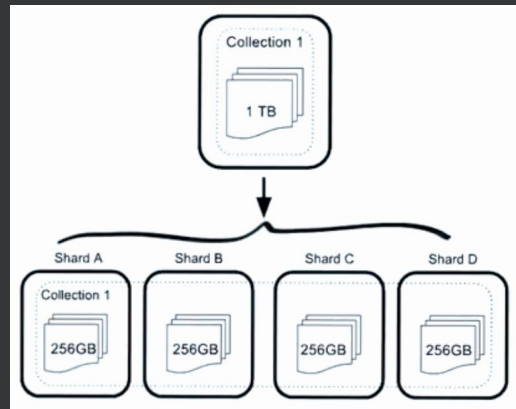
# Why MongoDB ?

- Doesn't require a lot of memory
  - No preallocated buffer pools (except for WiredTiger)
  - Makes use of the filesystem cache to cache data
  - Indexes are loaded in memory
- Flexible data model / schema-less
- Allows high levels of concurrency
- Strong consistency
- Replication ( High availability, data redundancy and failover ) : Easy for scaling reads
- Sharding of data ( Data distribution across machines ) : Easy for scaling writes

## Replication



## Sharding



# Installing MongoDB server (not required for workshop)

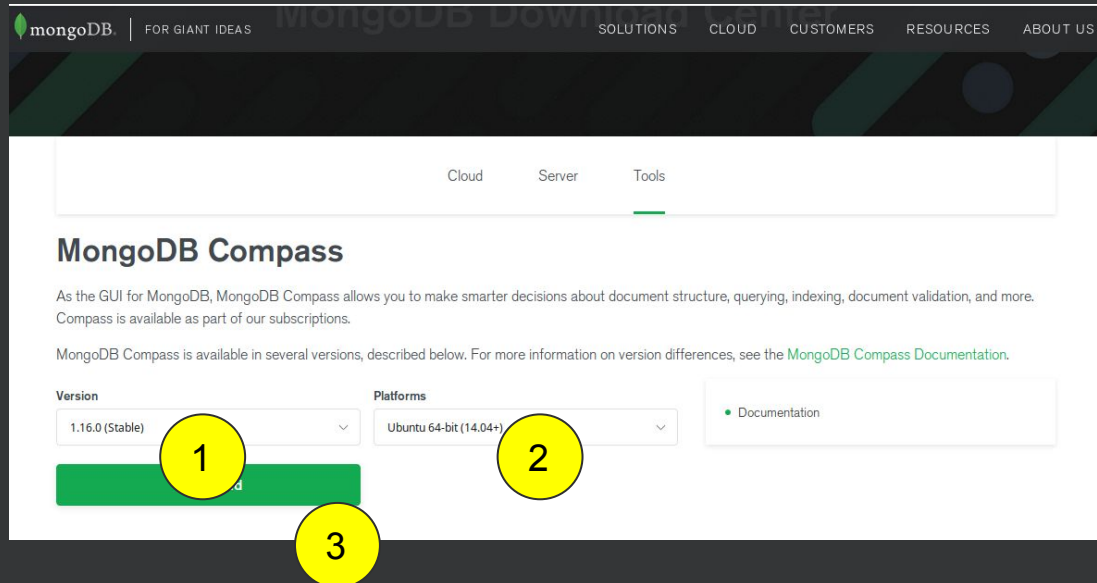
- Go to MongoDB community server [link](#) and select Version and Operating System
- Create a folder called data to store the database. (Win c:/data )

The screenshot shows the MongoDB Download Center interface. At the top, there's a navigation bar with links: SOLUTIONS, CLOUD, CUSTOMERS, RESOURCES, and ABOUT. The main heading is "MongoDB Download Center". Below this, there are tabs for "Cloud", "Server", and "Tools", with "Server" being the active tab. The text "Select the server you would like to run:" is displayed. There are two main options: "MongoDB Community Server" (highlighted with a green bar and labeled "FEATURE RICH. DEVELOPER READY.") and "MongoDB Enterprise Server" (labeled "ADVANCED FEATURES. PERFORMANCE GRADE."). Below these, there are three numbered yellow circles indicating the steps: 1. "Version" dropdown menu showing "4.0.4 (current)". 2. "OS" dropdown menu showing "Ubuntu 14.04 LTS x64". 3. "Package" dropdown menu showing "TGZ". A green "Download" button is next to the package selection. Below the button, the download URL is shown: [https://fastdl.mongodb.org/linux/mongodb-linux-x86\\_64-ubuntu1404-4.0.4.tgz](https://fastdl.mongodb.org/linux/mongodb-linux-x86_64-ubuntu1404-4.0.4.tgz). On the right side, there is a list of links: Release notes, Changelog, All version binaries, Installation instructions, Download source (tgz), and Download source (zip).



# Optional, install Mongo GUI

- MongoDB offers an graphic interface to facilitate the database analysis
- Go to MongoDB Compass [link](#) and select Version and Platform.



# Reference

- [Mongo University](#) many official free courses and exams.
- [MongoDB - Tutorials and Tech](#)
- [SQL to MongoDB Mapping Chart comparison](#)
- How to install Mongo [MongoDB en 20 minutos](#) (first 2 minutes of video )

# Workshop

- Go to workshop

[https://github.com/Giffy/MongoDB\\_PyMongo\\_Tutorial](https://github.com/Giffy/MongoDB_PyMongo_Tutorial)