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RDBMS → Relational database management system → data is stored in the form of tables.

Examples of RDBMS → MySQL, MariaDB, PgSQL etc.

SQL → Structured Query Language

NoSQL

NoSQL stands for Not only SQL.

NoSQL is a category of databases, which stores data in non-relational fashion i.e. NoSQL generally doesn't store data in tables. The name NoSQL is given because in most of the NoSQL databases, we don't write SQL like queries for inserting, deleting, updating, and fetching data.

Examples of NoSQL: MongoDB, CouchBase, Cassandra, ReThinkDB etc.

Types of NoSQL databases:

- Graph Databases → Neo4j
- Key - Value Databases → Redis
- Document Database → MongoDB
- There are more as well

JSON

JSON stands for Javascript object notation.

It is no where actually related to JS. That means if you make a JSON file, JS cant do much with it.

MongoDB

Links: <https://www.mongodb.com/json-and-bson>

MongoDB is a document based database, which internally stores data in the form of BSON, but we as normal developers can send or receive data in form of JSON, internally mongodb manages the conversion of JSON-BSON and BSON-JSON automatically.

Now when we used to store data in any RDBMS say MySQL, data was stored in tables. Tables used to represent real life entity. Inside a table, we had many rows. Rows used to represent one data record. Columns inside table used to represent properties of the entity.

Now in mongodb, we store data in form of documents (JSON like).

So here, a real life entity is represented by **Collections**. What table is for RDBMS is collections for mongodb. In simple terms, collections are group of JSON documents.

One record in a collection is called as **Document**. What row is for RDBMS is document for mongodb.

A document is nothing but a JSON (internally BSON), a JSON has multiple key-value pairs. The key of JSON represent the property of the entity. So what column is for RDBMS, key (from key-value pair) is for mongodb .

Installing MongoDB:

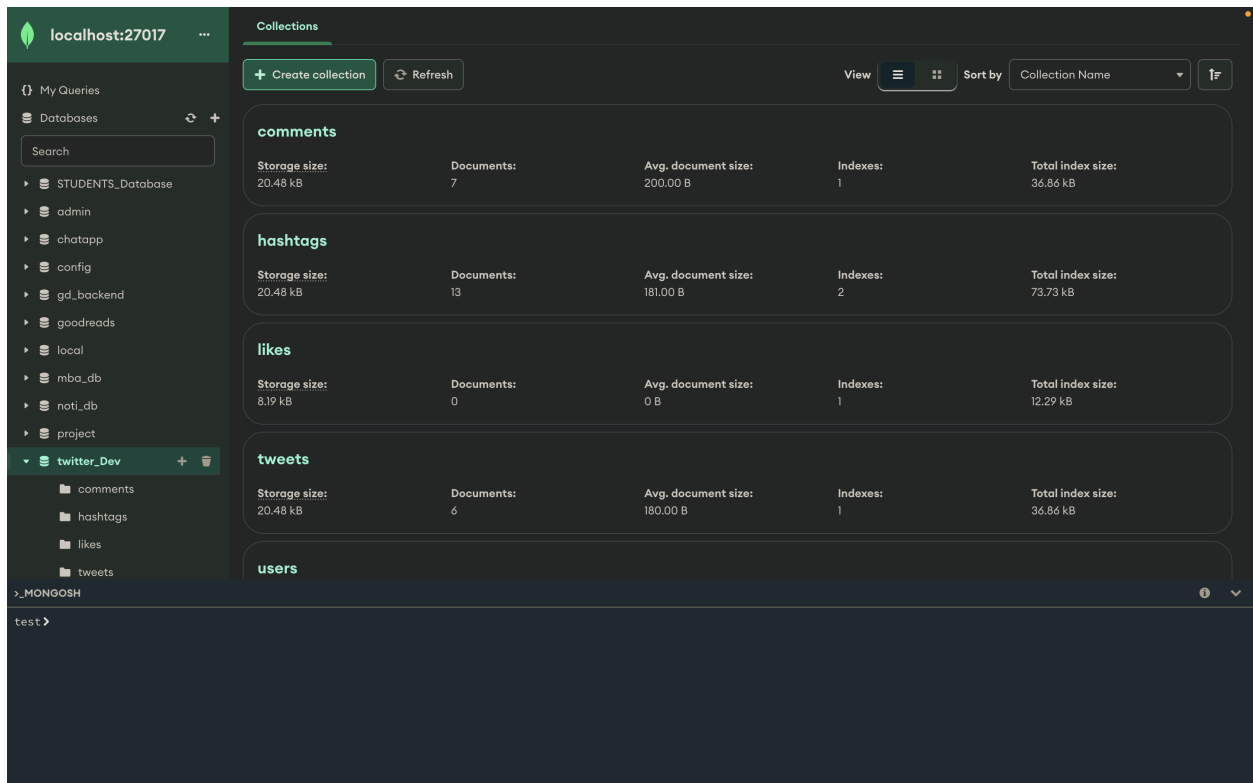
Link: <https://medium.com/@LondonAppBrewery/how-to-download-install-mongodb-on-windows-4ee4b3493514>

Using MongoDB

Open MongoDB in terminal:

Write `mongosh` in your terminal, and it will open the mongodb console.

You can also use MongoDB Compass software, to open the same terminal directly.



List all databases in mongodb

To list all the databases stored in your mongodb we can use the below commands:

```
show databases;
```

We can also use the below command:

```
show dbs;
```

```

test> show databases;
STUDENTS_Database  88.00 KiB
admin              40.00 KiB
chatapp            72.00 KiB
config             108.00 KiB
gd_backend         416.00 KiB
goodreads          416.00 KiB
local              104.00 KiB
mba_db             504.00 KiB
noti_db            72.00 KiB
project            76.00 KiB
twitter_Dev        360.00 KiB
test> show dbs;
STUDENTS_Database  88.00 KiB
admin              40.00 KiB
chatapp            72.00 KiB
config             108.00 KiB
gd_backend         416.00 KiB
goodreads          416.00 KiB
local              104.00 KiB
mba_db             504.00 KiB
noti_db            72.00 KiB
project            76.00 KiB
twitter_Dev        360.00 KiB
test>

```

How to select a particular DB to work on?

To select a particular db and start querying on it we can use

```
use name_of_database;
```

```

test> use twitter_dev;
switched to db twitter_dev
twitter_dev>

```

How to print all the collections stored in a database ?

To print all the collections we can use:

```
show collections;
```

Make sure, we run this command after executing `use some_db` otherwise we wont be having db selected.

```
test> use twitter_Dev
switched to db twitter_Dev
twitter_Dev> show collections;
comments
hashtags
likes
tweets
users
twitter_Dev> █
```

How to print all the documents of a collection ?

To print all the documents of a collection we can use:

```
db.collectionname.find();
```

```
twitter_Dev> db.users.find()
[
  {
    _id: ObjectId("63dbd40bf0de15a03e5b4e36"),
    email: 'admin@gmail.com',
    password: '$2b$09$5XrMSqZhBSmgUjFjCV0z8uxxcquPVVeVkJGJ/PXr93k3yWDR0nIN5q',
    name: 'admin',
    createdAt: ISODate("2023-02-02T15:17:31.347Z"),
    updatedAt: ISODate("2023-02-02T15:17:31.347Z"),
    __v: 0
  }
]
twitter_Dev> █
```

How to create a new database ?

To create a new database we can do:

```
use new_database_name;
```

The `use` command creates a new database if there is no already present db with the same name, otherwise if there is a db with the same name, it just selects it.

```
twitter_Dev> show dbs;
STUDENTS_Database  88.00 KiB
admin              40.00 KiB
chatapp            72.00 KiB
config             108.00 KiB
gd_backend         416.00 KiB
goodreads          416.00 KiB
local              104.00 KiB
mba_db             504.00 KiB
noti_db            72.00 KiB
project            76.00 KiB
twitter_Dev        360.00 KiB
twitter_Dev> use University;
switched to db University
University>
```

Now what will happen is, after creating a DB, if we try to do `show dbs;` then it will not list our newly created database. Because, if mongoddb sees that there is no valid collection added in the database, and the db is empty, it doesn't list it.

```
twitter_Dev> use University;
switched to db University
University> show dbs;
STUDENTS_Database  88.00 KiB
admin              40.00 KiB
chatapp            72.00 KiB
config             108.00 KiB
gd_backend         416.00 KiB
goodreads          416.00 KiB
local              104.00 KiB
mba_db             504.00 KiB
noti_db            72.00 KiB
project            76.00 KiB
twitter_Dev        360.00 KiB
University>
```

So how to add a new collection ?

How to add a new collections ?

To create a new collection we can do:

```
db.createCollection("name_of_the_collection")
```

Make sure we execute this command after `use some_db_name`

```
University> db.createCollection("students")
{ ok: 1 }
University> show dbs;
STUDENTS_Database  88.00 KiB
University         8.00 KiB
admin              40.00 KiB
chatapp            72.00 KiB
config             108.00 KiB
gd_backend          416.00 KiB
goodreads          416.00 KiB
local              104.00 KiB
mba_db             504.00 KiB
noti_db            72.00 KiB
project            76.00 KiB
twitter_Dev        360.00 KiB
University>
```

In normal RDBMS, while create a table, we have to define what will be the column of the table. Why we are not defining properties of a collection on mongodb ?

This is because, mongodb doesn't restrict us by any means for defining documents of a collection. Two documents of the same collection can posses different type of properties.

How to add a new record to a collection ?

To add a new record we can do:

```
db.collectionName.insertOne({key1: value1, key2: value2 ....})
```

```
University> show collections;
students
University> db.students.insertOne({name: "Sanket", standard: "12", marks: 94, age: 17, rollno: 2312});
{
  acknowledged: true,
  insertedId: ObjectId("646f5b049972c11f1018d1e1")
}
University> db.students.find()
[
  {
    _id: ObjectId("646f5b049972c11f1018d1e1"),
    name: 'Sanket',
    standard: '12',
    marks: 94,
    age: 17,
    rollno: 2312
  }
]
University>
```