# Databases and information systems laboratory CS313

IIT Dharwad

Handout 10
$25 - 10 - 2023$

## MongoDB

Follow instructions in the class to set up *MongoDB*.

- Set up an account on `https://www.mongodb.com`
- Create a cluster on a cloud server
- Install mongosh on your computer
- Connect to mongo shell

Questions on Document database. Connect to the cluster that you have created using *Mongoshell* and do the following: [1]

## Create and list database

1. List the databases in the cluster
2. Create a new database called *CompanyDB*.
3. ($\star$) Now list the databases in the cluster. Does it show *CompanyDB*?

[1] ($\star$) refers to questions that you can try on your own

## Insert

1. Use *CompanyDB* from now onwards.
2. Create a new collection called *customers* and insert a document with the following details:

| | |
|---|---|
| name | Alice |
| age | 24 |

3. (⋆) List the databases in the cluster. Does it show *CompanyDB*?
4. List all the collections in the database *CompanyDB*
5. Insert the following documents into the collection *customers*

| | |
|---|---|
| name | Bob |
| name | Charles |
| age | 26 |
| level | 1 |
| name | Darshan |
| age | 27 |

## Find

1. Find all the documents in the collection *customers*
2. Find all *customers* whose age is 27.
3. Find all *customers* whose age is $\geq 25$.
4. (⋆) Find all *customers* whose age is $< 27$.
5. (⋆) Find all *customers* whose age is $\leq 27$.
6. Find all *customers* whose age is $\leq 27$. Display only name
7. Find all *customers* whose age is $\leq 27$. Display only name and age

## Nested documents

1. Insert the following nested document into the collection *customers*

| | | |
|---|---|---|
| name | | Harry |
| age | | 25 |
| address | street | 75, Bd. Saint Germain |
| | city | Paris |
| | Country | France |

2. Find all *customer documents* who live in *Paris*

## Update

1. Change age of the customer *Alice* to 29
2. (⋆)What happens if you do not use `$set` in the previous query?

## Delete

1. Delete the document with *name: Bob*.
2. (⋆) List all documents in the collection *customers* to verify the successful execution of the previous command.
3. Delete the collection *customers* from the database
4. Delete the databse *companyDB* form the database

## Samples

1. Load the sample data set onto the cluster
2. Explore the samle databases in your *mongo shell*

## Exercise (Redis)

1. Insert the following keys and values with the appropriately specified data type for the values

| Key | Value | Data type |
|---|---|---|
| `course:1:title` | Data Management | String |
| `course:1:NumberOfStudents` | 3 | Integer |
| `course:1:textbooks` | Fundamentals of Database Systems<br>No SQL for Mere Mortals | Set |

2. Add the following students with the key `course:1:students` where are values form an ordered sets. Use the grade points (given below) as the score.

| Student Name | grade points |
|---|---|
| Alice | 9.1 |
| Bob | 8.9 |
| Charles | 9.0 |

3. Retrieve all the student names in the key `course:1:students`
4. Find the size of the values with the key `course:1:textbooks`
5. Rename the key `course:1:textbooks` to `course:1:materials`
6. Add a new value *slides* to the key `course:1:materials`
7. Add a new key `course:1:assignment4` with value *Redis and MongoDB*
8. Set the expiration time for the key `course:1:handout10` to 100 seconds
9. List all the keys in the database
10. Delete the key `course:1:NumberOfStudents` along with its value.

## Exercise (MongoDB)

1. List all the databases in the cluster
2. List all the collections in the database `sample_mflix`
3. List the *id and name* of all the houses in `sample_airbnb` databse (there is only one collection) that are in *Australia*
4. List the *id and name* of all the houses in `sample_airbnb` databse (there is only one collection) that have 2 *or more bedrooms*
5. List the *id, name and address* of all the houses in `sample_airbnb` databse (there is only one collection) whose location is exact.