

Lab 5 Java and MongoDB

- This lab aims to introduce MongoDB, one of the big data storage systems, and how to use Java to connect to MongoDB for CRUD (Create, Retrieve, Update and Delete) operations.
 - Task 1: Connect to MongoDB
 - Task 2: CRUD operations with MongoDB
 - Task 3: Retrieve data from sample datasets

MongoDB

- Use the free cloud MongoDB
 - <https://cloud.mongodb.com/v2/>
 - Register and do some settings, IP is needed (automatically detected by the cloud)
 - View databases
 - View collections (like tables in relational databases)
 - Learn how to connect to cloud MongoDB

MongoDB Cloud Interface

Overview

DEPLOYMENT

Database

Data Lake

SERVICES

Device Sync

Triggers

Data API

Data Federation

Search

Stream Processing

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Database Deployments

Find a database deployment...

Edit Config

Cluster

Connect

View Monitoring

Browse Collections

...

Visualize Your Data

Build dashboards and charts, and embed them in your apps with MongoDB Charts.

Dismiss

Explore Charts

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W 0

Last 6 hours

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Edit Configuration

Command Line Tools

Load Sample Dataset

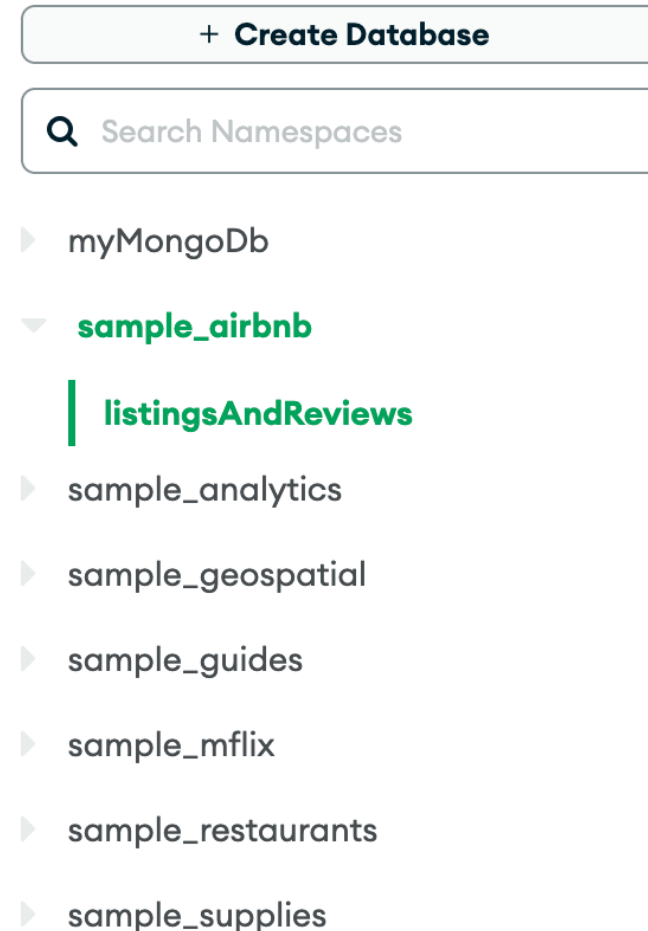
Terminate

Last 6 hours

1.0

Load Sample Datasets

- After registration and login, the database is empty.
- Click '**Load Sample Dataset**' (shown in the previous slide) to populate your database.
- After this you will see a number of databases loaded (you should have one called '**sample_airbnb**').
- Click on any dataset to browse the collections.



Load Sample Dataset – cont'd

The screenshot displays the MongoDB Atlas web interface. The top navigation bar includes 'Project 0', 'Data Services' (highlighted), 'App Services', and 'Charts'. The left sidebar contains a navigation menu with 'Overview', 'DEPLOYMENT', 'Database' (highlighted), 'Data Lake', and 'SERVICES'. The 'Database' section lists several databases, with 'sample_airbnb' selected. The main panel shows the 'sample_airbnb' database details, including a summary table and a list of collections.

Collection Name	Documents	Logical Data Size	Avg Document Size	Storage Size	Indexes	Index Size	Avg Index Size
listingsAndReviews	5555	89.99MB	16.59KB	52.1MB	4	608KB	152KB

Connect using Java

Connect to Cluster0



Connecting with MongoDB Driver

1. Select your driver and version

We recommend installing and using the latest driver version.

Driver	Version
Java ▼	4.3 or later ▼

2. Install your driver

[View MongoDB Java Driver installation instructions.](#)

Connect using Java – cont'd

2. Install your driver

[View MongoDB Java Driver installation instructions.](#)

3. Add your connection string into your application code

☒ View full code sample

```
import com.mongodb.ConnectionString;
import com.mongodb.MongoClientSettings;
import com.mongodb.MongoException;
import com.mongodb.ServerApi;
import com.mongodb.ServerApiVersion;
import com.mongodb.client.MongoClient;
import com.mongodb.client.MongoClients;
import com.mongodb.client.MongoDatabase;
import org.bson.Document;

public class MongoClientConnectionExample {
    public static void main(String[] args) {
        String connectionString = "mongodb+srv://WW-CPT201:<password>@cluster0.9iz

        ServerApi serverApi = ServerApi.builder()
            .version(ServerApiVersion.V1)
            .build();
```

Database Preparation

- Task 1: Connect to MongoDB
- Task 2: CRUD operations with MongoDB
- Task 3: Retrieve data from sample dataset (**sample_airbnb**)

Task 1: Connect to MongoDB

- Set up username and password for your MongoDB
 - The information needs to be provided in your own code.
- Install MongoDB driver
- Read and understand the code in *MongoClientConnectionExample.java*
- Run the program and observe the output.
 - The code tests connection and prints out all databases.
 - Cloud MongoDB only has two default empty databases: admin and local.

Task 2: CRUD operations with MongoDB

- Code for the connection part is the same as that in Task 1.
- Create a database '`myMongoDb`' via cloud MongoDB interface and under '`myMongoDb`' create a collection '`customers`'.
- Read and understand the code in `CRUDExample.java`
- CRUD operations are widely used in RESTful web services.
- Run the program and observe the output.
 - The code tests all four CRUD operations.

Task 3: Retrieve data from sample datasets (5 marks)

- Write a Java file called: *QueryCloudData.java*
- The code should meet the following requirements.
 - Connect to the cloud MongoDB database;
 - Select database *sample_airbnb*, then its collection called "*listingsAndReviews*";
 - Retrieve a record(s) according to a given query;
 - *name="Private Room in Bushwick"*
 - Print the full record.