



# mongoDB®

NoSQL Database

# Introduction

- MongoDB is a document database
- Designed for ease of development and scaling
- Offers a Community and Enterprise version of the database

# Components and Utilities

## Components:

- `mongod` - The database server.
- `mongos` - Sharding router.
- `mongo` - The database shell (uses interactive javascript).

## Utilities:

- `MongoDB Compass` - The GUI for mongoDB



# Document Database

MongoDB is document based database

- Records in MongoDB are Documents
- A document is a data structure and composed of key value pair
- These documents are similar to JSON objects
- Also, the values of fields may include other documents, arrays, and arrays of documents



# Document Example

```
{
  _id: <ObjectId>,
  username: "123xyz",
  contact: {
    phone: "123-456-7890",
    email: "xyz@example.com"
  },
  access: {
    level: 5,
    group: "dev"
  }
}
```

Embedded sub-  
document

Embedded sub-  
document

# Installation

# Installation

- <https://docs.mongodb.com/manual/installation/>



# MongoDB CRUD Operations



# MongoDB CRUD Operations

## Create Operations:

- `db.<collection name>.insert()`
- `db.<collection name>.insertOne()`
- `db.<collection name>.insertMany()`

# MongoDB CRUD Operations

## Create Operations:

```
db.users.insertOne(  ← collection
{
  name: "sue",        ← field: value
  age: 26,            ← field: value
  status: "pending"   ← field: value
}                    } document
)
```

# MongoDB CRUD Operations

## Read Operations:

- `db.<collection name>.find()`
- `db.<collection name>.findOne()`

# MongoDB CRUD Operations

## Read Operations:

```
db.users.find(  
  { age: { $gt: 18 } },  
  { name: 1, address: 1 }  
) .limit(5)
```

- ← collection
- ← query criteria
- ← projection
- ← cursor modifier

# MongoDB CRUD Operations

## Update Operations:

- `db.<collection name>.update()`
- `db.<collection name>.updateOne()`
- `db.<collection name>.updateMany()`

# MongoDB CRUD Operations

## Update Operations:

```
db.users.updateMany(  
  { age: { $lt: 18 } },  
  { $set: { status: "reject" } }  
)
```

← collection  
← update filter  
← update action

# MongoDB CRUD Operations

## Delete Operations:

- `db.<collection name>.delete()`
- `db.<collection name>.deleteOne()`
- `db.<collection name>.deleteMany()`

# MongoDB CRUD Operations

## Delete Operations:

```
db.users.deleteMany(  
  { status: "reject" }  
)
```

← collection  
← delete filter



# Query Documents

# Query Documents

- <https://docs.mongodb.com/manual/tutorial/query-documents/>

# Why and When to Use MongoDB



# Why and When to Use MongoDB

- <https://www.mongodb.com/why-use-mongodb#:~:text=Companies%20and%20development%20teams%20of,of%20both%20data%20and%20traffic.>



# Resources

- <https://docs.mongodb.com/manual/introduction/>
- <https://docs.mongodb.com/manual/tutorial/getting-started/>
- <https://docs.mongodb.com/manual/tutorial/update-documents/>
- <https://docs.mongodb.com/manual/tutorial/query-documents/>
- <https://github.com/mongodb/mongo-rust-driver>

# Summary