

Experiment 7:

Install an Open Source NoSQL Database MongoDB & perform basic CRUD(Create, Read, Update & Delete) operations.

Execute MongoDB basic Queries using CRUD operations.

Solution:

Install MongoDB Community Edition on Windows

Download Page: https://fastdl.mongodb.org/windows/mongodb-windows-x86_64-8.0.9-signed.msi

Create Database:

```
use myStudentDatabase
```

Create a Collection in the Database:

```
db.createCollection("students")
```

Insert:

Insert One Document:

```
db.students.insertOne({ name: "Amy", age: 20, department: "AIML" })  
db.students.insertOne({ _id: 1, name: "Arya", age: 22, department: "CSE" })
```

Insert Multiple Documents:

```
db.students.insertMany([  
  { _id: 2, name: "Chirag", age: 24, department: "ECE" },  
  { _id: 3, name: "Sai", age: 23, department: "AIML" },  
  { _id: 4, name: "Shiva", age: 22, department: "CSE" }  
)
```

Query:

```
db.students.find()
```

Update:

Update One Document:

```
db.students.updateOne(
```

```
{ _id: 2 },  
{ $set: { age: 25 } }  
)
```

Update Multiple Documents:

```
db.students.updateMany(  
  { department: "ECE" },  
  { $set: { age: 23 } }  
)
```

Delete:

Delete One Document:

```
db.students.deleteOne({ _id: 3 })
```

Delete Multiple Documents:

```
db.students.deleteMany({ department: "ECE" })
```

Projection:

Project Specific Fields (Include Only name and department):

```
db.students.find({}, { name: 1, department: 1, _id: 0 })
```

Exclude a Field (Exclude age):

```
db.students.find({}, { age: 0 })
```

Projection with Query (Find students from CSE but only return name and age)

```
db.students.find({ department: "CSE" }, { name: 1, age: 1, _id: 0 })
```

b) Illustration of Where Clause, AND,OR operations in MongoDB.

WHERE Clause (Filtering Documents)

```
db.students.find({ department: "CSE" })
```

AND Operation (\$and)

Find students who belong to CSE and have age 22.

```
db.students.find(  
  $and: [  
    { department: "CSE" },
```

```
{ age: 22 }  
]  
})
```

Equivalent shorthand (MongoDB implicitly applies \$and if multiple fields are specified in the query):

```
db.students.find({ department: "CSE", age: 22 })
```

OR Operation (\$or)

Find students who are either from CSE or have age 24.

```
db.students.find({  
  $or: [  
    { department: "CSE" },  
    { age: 24 }  
  ]  
})
```

Combining AND and OR

Find students who are from CSE and either age 22 or 23.

```
db.students.find({  
  $and: [  
    { department: "CSE" },  
    { $or: [{ age: 22 }, { age: 23 }] }  
  ]  
})
```