**Experiment 1:**

a) Execute the Commands of MongoDB and operations in MongoDB : Insert, Query, Update, Delete and Projection. (Note: use any collection)

**Create Database:**

use myStudentDatabase

**Create 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 }] }

]

})