

Roll no. 31145

Assignment No. 9

Connect to mongodb database:

```
mongo --host 10.10.10.55 --port 27017 te31145_db
```

Create a new collection:

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

View all collections:

```
show collections
```

Insert one document:

```
db.students.insertOne({  
    name: "Song Jonng-ki",  
    age: 19,  
    course: "Computer Engineering",  
    marks: 95  
})
```

```
> db.students.insertOne({  
...   name: "Song Jonng-ki",  
...   age: 19,  
...   course: "Computer Engineering",  
...   marks: 95  
... })  
{  
    "acknowledged" : true,  
    "insertedId" : ObjectId("68d21ad8dd230b045e48d04e")  
}
```

Insert multiple documents:

```
db.students.insertMany([  
    { name: "Kim Seon-ho", age: 21, course: "IT", marks: 88 },  
    { name: "Lee Do-hyun", age: 22, course: "ECE", marks: 92 },  
    { name: "Park Bo-gum", age: 20, course: "Mechanical", marks: 85 }  
])
```

```
> db.students.insertMany([  
...   { name: "Kim Seon-ho", age: 21, course: "IT", marks: 88 },  
...   { name: "Lee Do-hyun", age: 22, course: "ECE", marks: 92 },  
...   { name: "Park Bo-gum", age: 20, course: "Mechanical", marks: 85 }  
... ])  
{  
    "acknowledged" : true,  
    "insertedIds" : [  
        ObjectId("68d21b13dd230b045e48d04f"),  
        ObjectId("68d21b13dd230b045e48d050"),  
        ObjectId("68d21b13dd230b045e48d051")  
    ]  
}
```

Read/Find all documents:

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

```
> db.students.find()  
{ "_id" : ObjectId("68d21ad8dd230b045e48d04e"), "name" : "Song Jonng-ki", "age" : 19, "course" :  
  "Computer Engineering", "marks" : 95 }  
{ "_id" : ObjectId("68d21b13dd230b045e48d04f"), "name" : "Kim Seon-ho", "age" : 21, "course" :  
  "IT", "marks" : 88 }  
{ "_id" : ObjectId("68d21b13dd230b045e48d050"), "name" : "Lee Do-hyun", "age" : 22, "course" :  
  "ECE", "marks" : 92 }  
{ "_id" : ObjectId("68d21b13dd230b045e48d051"), "name" : "Park Bo-gum", "age" : 20, "course" :  
  "Mechanical", "marks" : 85 }
```

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

```
> db.students.find().pretty()
[{
    "_id" : ObjectId("68d21ad8dd230b045e48d04e"),
    "name" : "Song Jonng-ki",
    "age" : 19,
    "course" : "Computer Engineering",
    "marks" : 95
},
{
    "_id" : ObjectId("68d21b13dd230b045e48d04f"),
    "name" : "Kim Seon-ho",
    "age" : 21,
    "course" : "IT",
    "marks" : 88
},
{
    "_id" : ObjectId("68d21b13dd230b045e48d050"),
    "name" : "Lee Do-hyun",
    "age" : 22,
    "course" : "ECE",
    "marks" : 92
},
{
    "_id" : ObjectId("68d21b13dd230b045e48d051"),
    "name" : "Park Bo-gum",
    "age" : 20,
    "course" : "Mechanical",
    "marks" : 85
}]
```

Find with condition:

```
db.students.find({ age: 20 }).pretty()
```

```
> db.students.find({ age: 20 }).pretty()
{
    "_id" : ObjectId("68d21b13dd230b045e48d051"),
    "name" : "Park Bo-gum",
    "age" : 20,
    "course" : "Mechanical",
    "marks" : 85
}
```

Logical Operators:

- \$and

```
db.students.find({ $and: [ { age: 19 }, { marks: { $gt: 90 } } ] }).pretty()
```

```
> db.students.find({ $and: [ { age: 19 }, { marks: { $gt: 90 } } ] }).pretty()
{
    "_id" : ObjectId("68d21ad8dd230b045e48d04e"),
    "name" : "Song Jonng-ki",
    "age" : 19,
    "course" : "Computer Engineering",
    "marks" : 95
}
```

- \$or

```
db.students.find({ $or: [ { course: "IT" }, { marks: { $gt: 90 } } ] }).pretty()
```

```
> db.students.find({ $or: [ { course: "IT" }, { marks: { $gt: 90 } } ] }).pretty()
{
    "_id" : ObjectId("68d21ad8dd230b045e48d04e"),
    "name" : "Song Jonng-ki",
    "age" : 19,
    "course" : "Computer Engineering",
    "marks" : 95
},
{
    "_id" : ObjectId("68d21b13dd230b045e48d04f"),
    "name" : "Kim Seon-ho",
    "age" : 21,
    "course" : "IT",
    "marks" : 88
},
{
    "_id" : ObjectId("68d21b13dd230b045e48d050"),
    "name" : "Lee Do-hyun",
    "age" : 22,
    "course" : "ECE",
    "marks" : 92
}
```

Update one document:

```
db.students.updateOne(  
  { name: "Song Jonng-ki" },  
  { $set: { name: "Song Joong-ki", marks: 98 } }  
)  
  
> db.students.updateOne(  
...   { name: "Song Jonng-ki" },  
...   { $set: { name: "Song Joong-ki", marks: 98 } }  
... )  
{ "acknowledged" : true, "matchedCount" : 1, "modifiedCount" : 1 }  
> db.students.find().pretty()  
{  
  {  
    "_id" : ObjectId("68d21ad8dd230b045e48d04e"),  
    "name" : "Song Joong-ki",  
    "age" : 19,  
    "course" : "Computer Engineering",  
    "marks" : 98  
  }  
  {  
    "_id" : ObjectId("68d21b13dd230b045e48d04f"),  
    "name" : "Kim Seon-ho",  
    "age" : 21,  
    "course" : "IT",  
    "marks" : 88  
  }  
  {  
    "_id" : ObjectId("68d21b13dd230b045e48d050"),  
    "name" : "Lee Do-hyun",  
    "age" : 22,  
    "course" : "ECE",  
    "marks" : 92  
  }  
  {  
    "_id" : ObjectId("68d21b13dd230b045e48d051"),  
    "name" : "Park Bo-gum",  
    "age" : 20,  
    "course" : "Mechanical",  
    "marks" : 85  
  }  
}
```

Update multiple documents:

```
db.students.updateMany(  
  { marks: { $gt: 90 } },  
  { $set: { course: "Updated Course" } }  
)  
  
> db.students.updateMany(  
...   { marks: { $gt: 90 } },  
...   { $set: { course: "Updated Course" } }  
... )  
{ "acknowledged" : true, "matchedCount" : 2, "modifiedCount" : 2 }  
> db.students.find().pretty()  
{  
  {  
    "_id" : ObjectId("68d21ad8dd230b045e48d04e"),  
    "name" : "Song Joong-ki",  
    "age" : 19,  
    "course" : "Updated Course",  
    "marks" : 98  
  }  
  {  
    "_id" : ObjectId("68d21b13dd230b045e48d04f"),  
    "name" : "Kim Seon-ho",  
    "age" : 21,  
    "course" : "IT",  
    "marks" : 88  
  }  
  {  
    "_id" : ObjectId("68d21b13dd230b045e48d050"),  
    "name" : "Lee Do-hyun",  
    "age" : 22,  
    "course" : "Updated Course",  
    "marks" : 92  
  }  
  {  
    "_id" : ObjectId("68d21b13dd230b045e48d051"),  
    "name" : "Park Bo-gum",  
    "age" : 20,  
    "course" : "Mechanical",  
    "marks" : 85  
  }  
}
```

Delete One:

```
db.students.deleteOne({ name: "Lee Do-hyun" })
```

```
> db.students.deleteOne({ name: "Lee Do-hyun" })
{ "acknowledged" : true, "deletedCount" : 1 }
> db.students.find().pretty()
{
    "_id" : ObjectId("68d21ad8dd230b045e48d04e"),
    "name" : "Song Joong-ki",
    "age" : 19,
    "course" : "Updated Course",
    "marks" : 98
}
{
    "_id" : ObjectId("68d21b13dd230b045e48d04f"),
    "name" : "Kim Seon-ho",
    "age" : 21,
    "course" : "IT",
    "marks" : 88
}
{
    "_id" : ObjectId("68d21b13dd230b045e48d051"),
    "name" : "Park Bo-gum",
    "age" : 20,
    "course" : "Mechanical",
    "marks" : 85
}
```

Delete Many:

```
db.students.deleteMany({ marks: { $lt: 90 } })
```

```
> db.students.deleteMany({ marks: { $lt: 90 } })
{ "acknowledged" : true, "deletedCount" : 2 }
> db.students.find().pretty()
{
    "_id" : ObjectId("68d21ad8dd230b045e48d04e"),
    "name" : "Song Joong-ki",
    "age" : 19,
    "course" : "Updated Course",
    "marks" : 98
}
```

Select specific fields:

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

Sorting:

```
db.students.find().sort({ marks: -1 }).pretty() // descending by marks
db.students.find().sort({ age: 1 }).pretty() // ascending by age
```

Limit number of results:

```
db.students.find().limit(2).pretty()
```

Skip documents:

```
db.students.find().skip(1).limit(2).pretty()
```

Upsert:- Update if exists, insert if not:

```
db.students.updateOne(  
  { name: "New Student" },  
  { $set: { age: 18, course: "New Course", marks: 90 } },  
  { upsert: true }  
)
```

Count documents:

```
db.students.countDocuments({ marks: { $gt: 90 } })
```

or

```
db.students.find({ marks: { $gt: 90 } }).count()
```

Aggregate / Average:

```
db.students.aggregate([  
  { $group: { _id: null, avgMarks: { $avg: "$marks" } } }  
)
```

Indexing:

```
db.students.createIndex({ name: 1 })
```

For pattern matching:

```
db.students.find({ name: /Song/ }).pretty()
```