# DBMSL ASSIGNMENT – 9

MongoDB Queries: Design and Develop MongoDB Queries using CRUD operations.
( Use CRUD operations, SAVE method, logical operators, etc. )

## CREATE – insertOne(), insertMany()

```
te31446_db> db.students.insertOne(
{ _id: 1, name: "Alice", age: 20, department: "CS", marks: 85 }
)
{ acknowledged: true, insertedId: 1 }

te31446_db> db.students.insertMany([
...    { _id: 2, name: "Bob", age: 22, department: "EE", marks: 75 },
...    { _id: 3, name: "Charlie", age: 21, department: "ME", marks: 80 }
... ])
{ acknowledged: true, insertedIds: { '0': 2, '1': 3 } }
```

## READ – find(), findOne()

```
te31446_db> db.students.find()
[
  { _id: 1, name: 'Alice', age: 20, department: 'CS', marks: 85 },
  { _id: 2, name: 'Bob', age: 22, department: 'EE', marks: 75 },
  { _id: 3, name: 'Charlie', age: 21, department: 'ME', marks: 80 }
]

te31446_db> db.students.find({ department: "CS" })
[ { _id: 1, name: 'Alice', age: 20, department: 'CS', marks: 85 } ]

te31446_db> db.students.findOne({ _id: 1 })
{ _id: 1, name: 'Alice', age: 20, department: 'CS', marks: 85 }
```

## UPDATE – updateOne(), updateMany()

```
te31446_db> db.students.updateOne(
...    { _id: 1 },
...    { $set: { marks: 90 } }
... )
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}

te31446_db> db.students.find()
[
  { _id: 1, name: 'Alice', age: 20, department: 'CS', marks: 90 },
  { _id: 2, name: 'Bob', age: 22, department: 'EE', marks: 75 },
  { _id: 3, name: 'Charlie', age: 21, department: 'ME', marks: 80 }
]

te31446_db> db.students.updateMany(
...    { department: "CS" },
...    { $inc: { marks: 5 } }   // increment marks by 5
... )
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
```

```
te31446_db> db.students.find()
[
  { _id: 1, name: 'Alice', age: 20, department: 'CS', marks: 95 },
  { _id: 2, name: 'Bob', age: 22, department: 'EE', marks: 75 },
  { _id: 3, name: 'Charlie', age: 21, department: 'ME', marks: 80 }
]
```

## SAVE ALTERNATIVE – { upsert: true }

```
te31446_db> db.students.updateOne(
...    { _id: 5 },
...    { $set: { name: "Riya", age: 19, department: "Civil", marks: 70 } },
...    { upsert: true }
... )
{
  acknowledged: true,
  insertedId: 5,
  matchedCount: 0,
  modifiedCount: 0,
  upsertedCount: 1
}

te31446_db> db.students.find()
[
  { _id: 1, name: 'Alice', age: 20, department: 'CS', marks: 95 },
  { _id: 2, name: 'Bob', age: 22, department: 'EE', marks: 75 },
  { _id: 3, name: 'Charlie', age: 21, department: 'ME', marks: 80 },
  { _id: 5, age: 19, department: 'Civil', marks: 70, name: 'Riya' }
]
```

## DELETE – deleteOne(), deleteMany()

```
te31446_db> db.students.deleteOne({ _id: 3 })
{ acknowledged: true, deletedCount: 1 }

te31446_db> db.students.find()
[
  { _id: 1, name: 'Alice', age: 20, department: 'CS', marks: 95 },
  { _id: 2, name: 'Bob', age: 22, department: 'EE', marks: 75 },
  { _id: 5, age: 19, department: 'Civil', marks: 70, name: 'Riya' }
]

te31446_db> db.students.deleteMany({ department: "EE" })
{ acknowledged: true, deletedCount: 1 }

te31446_db> db.students.find()
[
  { _id: 1, name: 'Alice', age: 20, department: 'CS', marks: 95 },
  { _id: 5, age: 19, department: 'Civil', marks: 70, name: 'Riya' }
]
```

## DROP COLLECTION

```
te31446_db> db.students.drop()
true
```

## INSERT 10 SAMPLE DOCUMENTS

```
te31446_db> db.students.insertMany([
...     { _id: 1, name: "Alice", age: 20, department: "CS", marks: 85 },
...     { _id: 2, name: "Bob", age: 22, department: "EE", marks: 75 },
...     { _id: 3, name: "Charlie", age: 21, department: "ME", marks: 80 },
...     { _id: 4, name: "David", age: 23, department: "CS", marks: 90 },
...     { _id: 5, name: "Eva", age: 20, department: "Bio", marks: 88 },
...     { _id: 6, name: "Fiona", age: 22, department: "Civil", marks: 70 },
...     { _id: 7, name: "George", age: 21, department: "EE", marks: 65 },
...     { _id: 8, name: "Hannah", age: 23, department: "ME", marks: 78 },
...     { _id: 9, name: "Ian", age: 20, department: "CS", marks: 82 },
...     { _id: 10, name: "Judy", age: 22, department: "Civil", marks: 74 }
... ])
{
  acknowledged: true,
  insertedIds: {
    '0': 1,
    '1': 2,
    '2': 3,
    '3': 4,
    '4': 5,
    '5': 6,
    '6': 7,
    '7': 8,
    '8': 9,
    '9': 10
  }
}

te31446_db> db.students.find()
[
  { _id: 1, name: 'Alice', age: 20, department: 'CS', marks: 85 },
  { _id: 2, name: 'Bob', age: 22, department: 'EE', marks: 75 },
  { _id: 3, name: 'Charlie', age: 21, department: 'ME', marks: 80 },
  { _id: 4, name: 'David', age: 23, department: 'CS', marks: 90 },
  { _id: 5, name: 'Eva', age: 20, department: 'Bio', marks: 88 },
  { _id: 6, name: 'Fiona', age: 22, department: 'Civil', marks: 70 },
  { _id: 7, name: 'George', age: 21, department: 'EE', marks: 65 },
  { _id: 8, name: 'Hannah', age: 23, department: 'ME', marks: 78 },
  { _id: 9, name: 'Ian', age: 20, department: 'CS', marks: 82 },
  { _id: 10, name: 'Judy', age: 22, department: 'Civil', marks: 74 }
]
```

## LOGICAL OPERATORS

### $and

```
// Find students who are in "CS" department AND have marks greater than 80

te31446_db> db.students.find({
...     $and: [
...       { department: "CS" },
...       { marks: { $gt: 80 } }
...     ]
... })
[
  { _id: 1, name: 'Alice', age: 20, department: 'CS', marks: 85 },
  { _id: 4, name: 'David', age: 23, department: 'CS', marks: 90 },
  { _id: 9, name: 'Ian', age: 20, department: 'CS', marks: 82 }
]
```

## $or

```
// Find students who are either in "EE" department OR age is 22

te31446_db> db.students.find({
...    $or: [
...       { department: "EE" },
...       { age: 22 }
...    ]
... })
[
  { _id: 2, name: 'Bob', age: 22, department: 'EE', marks: 75 },
  { _id: 6, name: 'Fiona', age: 22, department: 'Civil', marks: 70 },
  { _id: 7, name: 'George', age: 21, department: 'EE', marks: 65 },
  { _id: 10, name: 'Judy', age: 22, department: 'Civil', marks: 74 }
]
```

## $not

```
// Find students who are NOT in "CS" department

te31446_db> db.students.find({
... department: { $not: { $eq: "CS" }}
... })
[
  { _id: 2, name: 'Bob', age: 22, department: 'EE', marks: 75 },
  { _id: 3, name: 'Charlie', age: 21, department: 'ME', marks: 80 },
  { _id: 5, name: 'Eva', age: 20, department: 'Bio', marks: 88 },
  { _id: 6, name: 'Fiona', age: 22, department: 'Civil', marks: 70 },
  { _id: 7, name: 'George', age: 21, department: 'EE', marks: 65 },
  { _id: 8, name: 'Hannah', age: 23, department: 'ME', marks: 78 },
  { _id: 10, name: 'Judy', age: 22, department: 'Civil', marks: 74 }
]
```

## $nor

```
// Find students who are neither in "CS" nor have marks less than 70

te31446_db> db.students.find({
...    $nor: [
...       { department: "CS" },
...       { marks: { $lt: 70 } }
...    ]
... })
[
  { _id: 2, name: 'Bob', age: 22, department: 'EE', marks: 75 },
  { _id: 3, name: 'Charlie', age: 21, department: 'ME', marks: 80 },
  { _id: 5, name: 'Eva', age: 20, department: 'Bio', marks: 88 },
  { _id: 6, name: 'Fiona', age: 22, department: 'Civil', marks: 70 },
  { _id: 8, name: 'Hannah', age: 23, department: 'ME', marks: 78 },
  { _id: 10, name: 'Judy', age: 22, department: 'Civil', marks: 74 }
]
```