

LAB – 11

LAB EXERCISE:

1. TO SHOW ALL DATABASES

```
mongosh> show dbs
admin    40.00 KiB
config   72.00 KiB
local    72.00 KiB
mongosh>
```

2. TO SWITCH A DATABASE

```
mongosh> use admin
switched to db admin
admin>
```

3. TO CREATE NEW DATABASE

```
admin> use school
switched to db school
school>
```

To show school database, you need to enter some data here, otherwise it won't show;

```
school> show dbs
admin    40.00 KiB
config   108.00 KiB
local    72.00 KiB
school>
```

4. TO ADD DATA IN DATABASE

```
school> db.createCollection("student");
{ ok: 1 }
school>
```

Now if we want to see school database, we will be able to see it by using the command show dbs.

```
school> show dbs
admin    40.00 KiB
config   108.00 KiB
local    72.00 KiB
school    8.00 KiB
school>
```

5. TO SEE COLLECTIONS IN DATABASE

```
school> show collections
student
```

6. TO DROP DATABASE

```
school> db.dropDatabase()
{ ok: 1, dropped: 'school' }
```

7. TO INSERT DOCUMENT IN DATABASE

```
school> db.student.insertOne({name:"Mariam",age:20,gpa:3.7})
{
  acknowledged: true,
  insertedId: ObjectId('6689b648c97fae187f90defe')
}
```

Inserting more than one document;

```
school> db.student.insertMany([{name:"Ayesha",age:49,gpa:3.8},{name:"Arshad",age:55,gpa:3.5},{name:"Maham",age:22,gpa:3.8}])
TypeError: db.insertMany is not a function
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('6689b7e1c97fae187f90deff'),
    '1': ObjectId('6689b7e1c97fae187f90df00'),
    '2': ObjectId('6689b7e1c97fae187f90df01')
  }
}
```

8. TO RETURN DOCUMENTS IN COLLECTION

```
school> db.student.find()
[
  {
    _id: ObjectId('6689b648c97fae187f90defe'),
    name: 'Mariam',
    age: 20,
    gpa: 3.7
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90deff'),
    name: 'Ayesha',
    age: 49,
    gpa: 3.8
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90df00'),
    name: 'Arshad',
    age: 55,
    gpa: 3.5
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90df01'),
    name: 'Maham',
    age: 22,
    gpa: 3.8
  }
]
```

9. INCLUDING FIELDS AND NESTED DOCUMENTS

```
school> db.student.insertOne({name:"Tooba",age:21,fullTime:false, registerDate: new Date(), gradationdate: null, courses:
["DSA","OOP","DBMS"],address:{street:"123 NEDUET",city:"Karachi",zip:23456}})
{
  acknowledged: true,
  insertedId: ObjectId('6689b97fc97fae187f90df03')
}
```

10. SORTING IN ASCENDING ORDER

```
school> db.student.find().sort({name:1})
[
  {
    _id: ObjectId('6689b7e1c97fae187f90df00'),
    name: 'Arshad',
    age: 55,
    gpa: 3.5
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90defff'),
    name: 'Ayesha',
    age: 49,
    gpa: 3.8
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90df01'),
    name: 'Maham',
    age: 22,
    gpa: 3.8
  },
  {
    _id: ObjectId('6689b648c97fae187f90defe'),
    name: 'Mariam',
    age: 20,
    gpa: 3.7
  },
  {
    _id: ObjectId('6689b96ac97fae187f90df02'),
    name: 'Tooba',
    age: 21,
    fullTime: false,
    registerDate: ISODate('2024-07-06T21:38:50.813Z'),
    gradationdate: null,
    courses: [ 'DSA', 'OOP', 'DBMS' ],
    address: { street: '123 NEDUET', city: 'Karachi', zip: 23456 }
  },
  {
    _id: ObjectId('6689b97fc97fae187f90df03'),
    name: 'Tooba',
    age: 21,
    fullTime: false,
    registerDate: ISODate('2024-07-06T21:39:11.663Z'),
    gradationdate: null,
    address: { street: '123 NEDUET', city: 'Karachi', zip: 23456 }
  }
]
```

11. SORTING IN DESCENDING ORDER

```
school> db.student.find().sort({name:-1})
[
  {
    _id: ObjectId('6689b96ac97fae187f90df02'),
    name: 'Tooba',
    age: 21,
    fullTime: false,
    registerDate: ISODate('2024-07-06T21:38:50.813Z'),
    gradationdate: null,
    courses: [ 'DSA', 'OOP', 'DBMS' ],
    address: { street: '123 NEDUET', city: 'Karachi', zip: 23456 }
  },
  {
    _id: ObjectId('6689b97fc97fae187f90df03'),
    name: 'Tooba',
    age: 21,
    fullTime: false,
    registerDate: ISODate('2024-07-06T21:39:11.663Z'),
    gradationdate: null,
    courses: [ 'DSA', 'OOP', 'DBMS' ],
    address: { street: '123 NEDUET', city: 'Karachi', zip: 23456 }
  },
  {
    _id: ObjectId('6689b648c97fae187f90defe'),
    name: 'Mariam',
    age: 20,
    gpa: 3.7
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90df01'),
    name: 'Maham',
    age: 22,
    gpa: 3.8
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90deff'),
    name: 'Ayesha',
    age: 49,
    gpa: 3.8
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90df00'),
    name: 'Arshad',
    age: 55,
    gpa: 3.5
  }
]
```

12. FINDING ONLY ONE/FIRST DOCUMENT

```
school>
{
  _id: ObjectId('6689b648c97fae187f90defe'),
  name: 'Mariam',
  age: 20,
  gpa: 3.7
}
```

13. ADDING ARGUMENTS TO FIND()

```
school> db.student.find({name:"Mariam"})
[
  {
    _id: ObjectId('6689b648c97fae187f90defe'),
    name: 'Mariam',
    age: 20,
    gpa: 3.7
  }
]
```

No result because it doesn't exist

```
school> db.student.find({gpa:3.2,fulltime:false})
```

Now showing because it exists

```
school> db.student.find({name:"Tooba",fullTime:false})
[
  {
    _id: ObjectId('6689b96ac97fae187f90df02'),
    name: 'Tooba',
    age: 21,
    fullTime: false,
    registerDate: ISODate('2024-07-06T21:38:50.813Z'),
    gradationdate: null,
    courses: [ 'DSA', 'OOP', 'DBMS' ],
    address: { street: '123 NEDUET', city: 'Karachi', zip: 23456 }
  },
]
```

14. QUERY AND PROJECTION ARGUMENT IN FIND()

```
school>
[
  { _id: ObjectId('6689b648c97fae187f90defe'), name: 'Mariam' },
  { _id: ObjectId('6689b7e1c97fae187f90deff'), name: 'Ayesha' },
  { _id: ObjectId('6689b7e1c97fae187f90df00'), name: 'Arshad' },
  { _id: ObjectId('6689b7e1c97fae187f90df01'), name: 'Maham' },
  { _id: ObjectId('6689b96ac97fae187f90df02'), name: 'Tooba' },
  { _id: ObjectId('6689b97fc97fae187f90df03'), name: 'Tooba' }
]
```

15. OPTIMIZING THE QUERY

```
school> db.student.find({}, {_id:false,name:true})
[
  { name: 'Mariam' },
  { name: 'Ayesha' },
  { name: 'Arshad' },
  { name: 'Maham' },
  { name: 'Tooba' },
  { name: 'Tooba' }
]
```

```
school> db.student.find({}, {_id:false,name:true,gpa:true})
[
  { name: 'Mariam', gpa: 3.7 },
  { name: 'Ayesha', gpa: 3.8 },
  { name: 'Arshad', gpa: 3.5 },
  { name: 'Maham', gpa: 3.8 },
  { name: 'Tooba' },
  { name: 'Tooba' }
]
```

16. LIMITING DOCUMENTS

```
school> db.student.find().limit(1)
[
  {
    _id: ObjectId('6689b648c97fae187f90defe'),
    name: 'Mariam',
    age: 20,
    gpa: 3.7
  }
]
```

17. COMBINING BOTH SORT AND LIMIT

Finding the student with highest GPA;

```
school> db.student.find().limit(1)
[
  {
    _id: ObjectId('6689b648c97fae187f90defe'),
    name: 'Mariam',
    age: 20,
    gpa: 3.7
  }
]
```

Finding the student with lowest GPA;

```
school> db.student.find().sort({gpa:1}).limit(1)
[
  {
    _id: ObjectId('6689b96ac97fae187f90df02'),
    name: 'Tooba',
    age: 21,
    fullTime: false,
    registerDate: ISODate('2024-07-06T21:38:50.813Z'),
    gradationdate: null,
    courses: [ 'DSA', 'OOP', 'DBMS' ],
    address: { street: '123 NEDUET', city: 'Karachi', zip: 23456 }
  }
]
```

18. UPDATE THE DOCUMENTS

```
school> db.student.updateOne({name:"Mariam"},{$set:{fullTime:true}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
school>
```

To verify that the record has been updated:

```
school> db.student.find({name:"Mariam"})
[
  {
    _id: ObjectId('6689b648c97fae187f90defe'),
    name: 'Mariam',
    age: 20,
    gpa: 3.7,
    fullTime: true
  }
]
```

It has been updated successfully.

19. TO UPDATE USING OBJECT ID:

```
school> db.student.updateOne({_id:ObjectId("6689b96ac97fae187f90df02")},{ $set:{fullTime:true}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
```

To verify that the record has been updated:

```
school> db.student.find({name:"Tooba"})
[
  {
    _id: ObjectId('6689b96ac97fae187f90df02'),
    name: 'Tooba',
    age: 21,
    fullTime: true,
    registerDate: ISODate('2024-07-06T21:38:50.813Z'),
    gradationdate: null,
    courses: [ 'DSA', 'OOP', 'DBMS' ],
    address: { street: '123 NEDUET', city: 'Karachi', zip: 23456 }
  },
]
```

20. TO UNSET ANY RECORD

```
school> db.student.updateOne({_id:ObjectId("6689b96ac97fae187f90df02")},{ $unset:{fullTime:""}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
```

To verify that the record has been updated:

```
school> db.student.find({name:"Tooba"})
[
  {
    _id: ObjectId('6689b96ac97fae187f90df02'),
    name: 'Tooba',
    age: 21,
    registerDate: ISODate('2024-07-06T21:38:50.813Z'),
    gradationdate: null,
    courses: [ 'DSA', 'OOP', 'DBMS' ],
    address: { street: '123 NEDUET', city: 'Karachi', zip: 23456 }
  },
]
```


21. TO UPDATE MANY RECORDS

```
school> db.student.updateMany({fulltime:{$exists:false}},{$set:{fulltime:true}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 6,
  modifiedCount: 6,
  upsertedCount: 0
}
```

To verify that the record has been updated:

```
school> db.student.find()
[
  {
    _id: ObjectId('6689b648c97fae187f90defe'),
    name: 'Mariam',
    age: 20,
    gpa: 3.7,
    fullTime: true,
    fulltime: true
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90deff'),
    name: 'Ayesha',
    age: 49,
    gpa: 3.8,
    fulltime: true
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90df00'),
    name: 'Arshad',
    age: 55,
    gpa: 3.5,
    fulltime: true
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90df01'),
    name: 'Maham',
    age: 22,
    gpa: 3.8,
    fulltime: true
  },
  {
    _id: ObjectId('6689b96ac97fae187f90df02'),
    name: 'Tooba',
    age: 21,
    registerDate: ISODate('2024-07-06T21:38:50.813Z'),
    gradationdate: null,
    courses: [ 'DSA', 'OOP', 'DBMS' ],
    address: { street: '123 NEDUET', city: 'Karachi', zip: 23456 },
    fulltime: true
  },
  {
    _id: ObjectId('6689b97fc97fae187f90df03'),
    name: 'Tooba',
    age: 21,
    fullTime: false,
    registerDate: ISODate('2024-07-06T21:39:11.663Z'),
    gradationdate: null,
    courses: [ 'DSA', 'OOP', 'DBMS' ],
    address: { street: '123 NEDUET', city: 'Karachi', zip: 23456 },
  }
]
```

22. TO DELETE A DOCUMENT

```
school> db.student.deleteOne({name:"Tooba"})
{ acknowledged: true, deletedCount: 1 }
```

To verify that the record has been updated:

```
school> db.student.find()
[
  {
    _id: ObjectId('6689b648c97fae187f90defe'),
    name: 'Mariam',
    age: 20,
    gpa: 3.7,
    fulltime: true,
    fulltime: true
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90deff'),
    name: 'Ayesha',
    age: 49,
    gpa: 3.8,
    fulltime: true
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90df00'),
    name: 'Arshad',
    age: 55,
    gpa: 3.5,
    fulltime: true
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90df01'),
    name: 'Maham',
    age: 22,
    gpa: 3.8,
    fulltime: true
  }
]
```

23. TO DELETE MANY RECORDS

```
school> db.student.deleteMany({fullTime:false})
{ acknowledged: true, deletedCount: 0 }
school>
```

To verify that the record has been updated:

```
school> db.student.find()
[
  {
    _id: ObjectId('6689b648c97fae187f90defe'),
    name: 'Mariam',
    age: 20,
    gpa: 3.7,
    fullTime: true,
    fulltime: true
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90defff'),
    name: 'Ayesha',
    age: 49,
    gpa: 3.8,
    fulltime: true
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90df00'),
    name: 'Arshad',
    age: 55,
    gpa: 3.5,
    fulltime: true,
    fullTime: true
  },
  {
    _id: ObjectId('6689b7e1c97fae187f90df01'),
    name: 'Maham',
    age: 22,
    gpa: 3.8,
    fulltime: true,
    fullTime: true
  }
]
```