MongoDB_Lab1

1 – open mongo shell and view the help

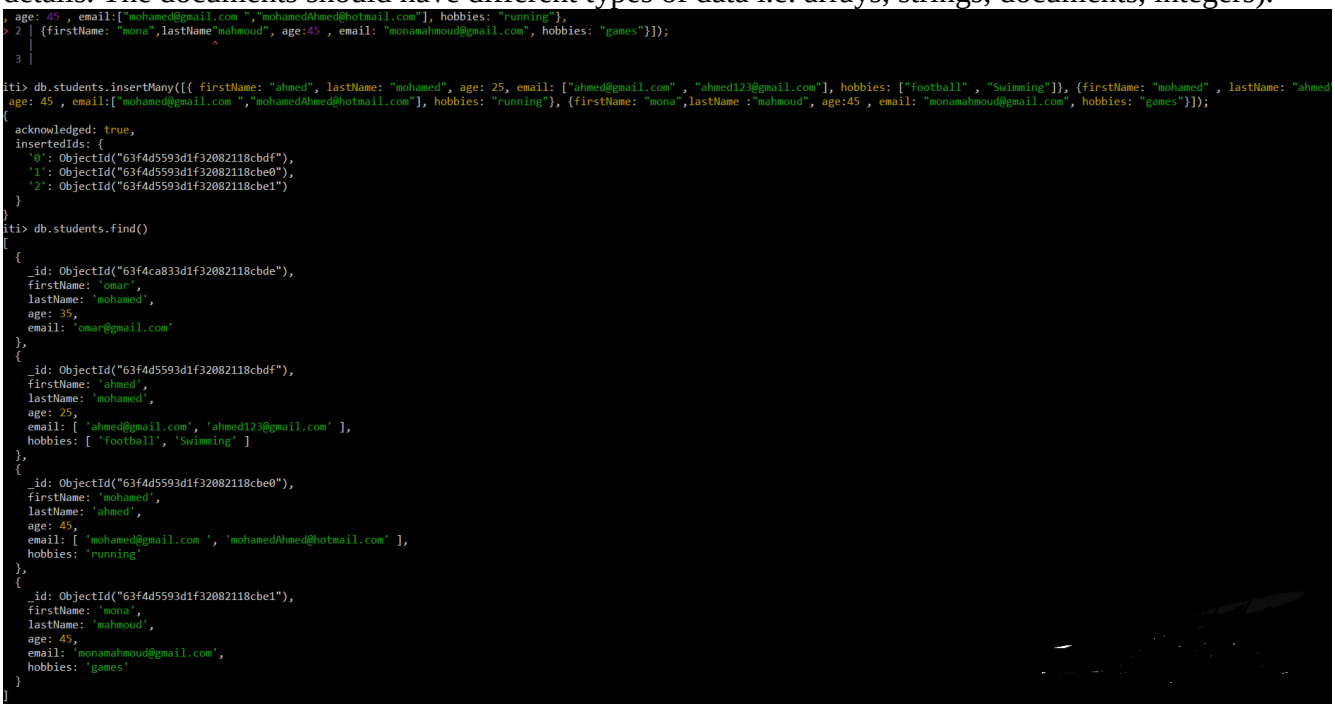
2 – identify your current working database and show list of available databases

3 – create a new database called iti and create a collection named “students”. Insert whatever data you want about yourself (include name and age in your details).

4– show list of available databases. What did you notice ?

```
test> show dbs
admin   40.00 KiBhowdbs is not defined
config  60.00 KiB
local   40.00 KiB
iti>
admin   40.00 KiBi
config  60.00 KiB
iti> db.students.insertOne({
... firstName : "omar",
... lastName  : "mohamed",
... age : 35,
... email : "omar@gmail.com"
... });
{
  acknowledged: true,
  insertedId: ObjectId("63f4ca833d1f32082118cbde")
}
iti> show dbs
admin   40.00 KiB
config  92.00 KiB
iti      8.00 KiB
local   40.00 KiB
iti> db.students.find()
[
  {
    _id: ObjectId("63f4ca833d1f32082118cbde"),
    firstName: 'omar',
    lastName: 'mohamed',
    age: 35,
    email: 'omar@gmail.com'
  }
]
```

5 – Insert un-structured or semi-structured data for 10 of your friends (include name and age in your details. The documents should have different types of data i.e. arrays, strings, documents, integers).



```
  age: 45 , email:["mohamed@gmail.com ","mohamedAhmed@hotmail.com"], hobbies: "running"},
> 2 | {firstName: "mona",lastName"mahmoud", age:45 , email: "monamahmoud@gmail.com", hobbies: "games"}]);
    |                    ^
  3 |

iti> db.students.insertMany([{ firstName: "ahmed", lastName: "mohamed", age: 25, email: ["ahmed@gmail.com" , "ahmed123@gmail.com"], hobbies: ["football" , "Swimming"]}, {firstName: "mohamed" , lastName: "ahmed"
 age: 45 , email:["mohamed@gmail.com ","mohamedAhmed@hotmail.com"], hobbies: "running"}, {firstName: "mona",lastName :"mahmoud", age:45 , email: "monamahmoud@gmail.com", hobbies: "games"}]);
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId("63f4d5593d1f32082118cbdf"),
    '1': ObjectId("63f4d5593d1f32082118cbe0"),
    '2': ObjectId("63f4d5593d1f32082118cbe1")
  }
}
iti> db.students.find()
[
  {
    _id: ObjectId("63f4ca833d1f32082118cbde"),
    firstName: 'omar',
    lastName: 'mohamed',
    age: 35,
    email: 'omar@gmail.com'
  },
  {
    _id: ObjectId("63f4d5593d1f32082118cbdf"),
    firstName: 'ahmed',
    lastName: 'mohamed',
    age: 25,
    email: [ 'ahmed@gmail.com', 'ahmed123@gmail.com' ],
    hobbies: [ 'football', 'Swimming' ]
  },
  {
    _id: ObjectId("63f4d5593d1f32082118cbe0"),
    firstName: 'mohamed',
    lastName: 'ahmed',
    age: 45,
    email: [ 'mohamed@gmail.com ', 'mohamedAhmed@hotmail.com' ],
    hobbies: 'running'
  },
  {
    _id: ObjectId("63f4d5593d1f32082118cbe1"),
    firstName: 'mona',
    lastName: 'mahmoud',
    age: 45,
    email: 'monamahmoud@gmail.com',
    hobbies: 'games'
  }
]
```

6 – Search for your object by name.

```
iti> db.students.findOne({firstName: "omar" , lastName: "mohamed"});
{
  _id: ObjectId("63f4ca833d1f32082118cbde"),
  firstName: 'omar',
  lastName: 'mohamed',
  age: 35,
  email: 'omar@gmail.com'
}

iti>
```

7– Search for your friend(s) by age.

```
iti> db.students.find({age:25 });
[
  {
    _id: ObjectId("63f4d5593d1f32082118cbdf"),
    firstName: 'ahmed',
    lastName: 'mohamed',
    age: 25,
    email: [ 'ahmed@gmail.com', 'ahmed123@gmail.com' ],
    hobbies: [ 'football', 'Swimming' ]
  }
]

iti>
```

8 – Search for all of your friends whose age is older than yours.

```
ti> db.students.find({age:{$gt : 35}});

[
  {
    _id: ObjectId("63f4d5593d1f32082118cbe0"),
    firstName: 'mohamed',
    lastName: 'ahmed',
    age: 45,
    email: [ 'mohamed@gmail.com ', 'mohamedAhmed@hotmail.com' ],
    hobbies: 'running'
  },
  {
    _id: ObjectId("63f4d5593d1f32082118cbe1"),
    firstName: 'mona',
    lastName: 'mahmoud',
    age: 45,
    email: 'monamahmoud@gmail.com',
    hobbies: 'games'
  }
]
```

9 – delete any of your friends by id.

```
ti> db.students.deleteOne({_id: ObjectId("63f4d5593d1f32082118cbdf") })
{ acknowledged: true, deletedCount: 1 }
ti> db.students.find()
[
  {
    _id: ObjectId("63f4ca833d1f32082118cbde"),
    firstName: 'omar',
    lastName: 'mohamed',
    age: 35,
    email: 'omar@gmail.com'
  },
  {
    _id: ObjectId("63f4d5593d1f32082118cbe0"),
    firstName: 'mohamed',
    lastName: 'ahmed',
    age: 45,
    email: [ 'mohamed@gmail.com ', 'mohamedAhmed@hotmail.com' ],
    hobbies: 'running'
  },
  {
    _id: ObjectId("63f4d5593d1f32082118cbe1"),
    firstName: 'mona',
    lastName: 'mahmoud',
    age: 45,
    email: 'monamahmoud@gmail.com',
    hobbies: 'games'
  }
]
ti>
```

10 – view all documents in students collection in a prettified format.

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

{
  _id: ObjectId("63f4ca833d1f32082118cbde"),
  firstName: 'omar',
  lastName: 'mohamed',
  age: 35,
  email: 'omar@gmail.com'
},
{
  _id: ObjectId("63f4d5593d1f32082118cbe0"),
  firstName: 'mohamed',
  lastName: 'ahmed',
  age: 45,
  email: [ 'mohamed@gmail.com ', 'mohamedAhmed@hotmail.com' ],
  hobbies: 'running'
},
{
  _id: ObjectId("63f4d5593d1f32082118cbe1"),
  firstName: 'mona',
  lastName: 'mahmoud',
  age: 45,
  email: 'monamahmoud@gmail.com',
  hobbies: 'games'
}
```

11 – count all documents in students collection.

```
iti> db.students.count()
DeprecationWarning: Collection.count() is deprecated. Use countDocuments or estimatedDocumentCount.
3
```

---

part 2

1- Create database with name ems

```
ti> use ems
witched to db ems
```

2- Insert the following data into "faculty" collection

{ "name":"Krish", "age":35,"gender":"M","exp":10,subjects:["DS","C","OS"],"type":"Full Time","qualification":"M.Tech" },

{ "name":"Manoj", "age":38,"gender":"M","exp":12,subjects:["JAVA","DBMS"],"type":"Full Time", "qualification":"Ph.D"},

{ "name":"Anush", "age":32,"gender":"F","exp":8,subjects:["C","CPP"],"type":"Part Time","qualification":"M.Tech" },

{ "name":"Suresh", "age":40,"gender":"M","exp":9,subjects:["JAVA","DBMS","NETWORKING"],"type":"Full Time", "qualification":"Ph.D"},

{ "name":"Rajesh", "age":35,"gender":"M","exp":7,subjects:["DS","C","OS"],"type":"Full Time","qualification":"M.Tech" },

{ "name":"Mani", "age":38,"gender":"F","exp":10,subjects:["JAVA","DBMS","OS"],"type":"Part Time", "qualification":"Ph.D"},

{ "name":"Sivani", "age":32,"gender":"F","exp":8,subjects:["C","CPP","MATHS"],"type":"Part Time","qualification":"M.Tech" },

{ "name":"Nagesh", "age":39,"gender":"M","exp":11,subjects:["JAVA","DBMS","NETWORKING"],"type":"Full Time", "qualification":"Ph.D"},

{ "name":"Nagesh", "age":35,"gender":"M","exp":9,subjects:["JAVA",".Net","NETWORKING"],"type":"Full Time", "qualification":"Ph.D"},

{ "name":"Latha", "age":40,"gender":"F","exp":13,subjects:["MATHS"],"type":"Full Time", "qualification":"Ph.D"}

```
ems> db.faculty.insertMany([{ "name":"Krish", "age":35,"gender":"M","exp":10,subjects:["DS","C","OS"],"type":"Full Time","qualification":"M.Tech" },
...     { "name":"Manoj", "age":38,"gender":"M","exp":12,subjects:["JAVA","DBMS"],"type":"Full Time", "qualification":"Ph.D"},
...     { "name":"Anush", "age":32,"gender":"F","exp":8,subjects:["C","CPP"],"type":"Part Time","qualification":"M.Tech" },
...     { "name":"Suresh", "age":40,"gender":"M","exp":9,subjects:["JAVA","DBMS","NETWORKING"],"type":"Full Time", "qualification":"Ph.D"},
...     { "name":"Rajesh", "age":35,"gender":"M","exp":7,subjects:["DS","C","OS"],"type":"Full Time","qualification":"M.Tech" },
...     { "name":"Mani", "age":38,"gender":"F","exp":10,subjects:["JAVA","DBMS","OS"],"type":"Part Time", "qualification":"Ph.D"},
...      { "name":"Sivani", "age":32,"gender":"F","exp":8,subjects:["C","CPP","MATHS"],"type":"Part Time","qualification":"M.Tech" },
...      { "name":"Nagesh", "age":39,"gender":"M","exp":11,subjects:["JAVA","DBMS","NETWORKING"],"type":"Full Time", "qualification":"Ph.D"},
...      { "name":"Nagesh", "age":35,"gender":"M","exp":9,subjects:["JAVA",".Net","NETWORKING"],"type":"Full Time", "qualification":"Ph.D"},
...      { "name":"Latha", "age":40,"gender":"F","exp":13,subjects:["MATHS"],"type":"Full Time", "qualification":"Ph.D"}
... ])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId("63f4e0663d1f32082118cbe3"),
    '1': ObjectId("63f4e0663d1f32082118cbe4"),
    '2': ObjectId("63f4e0663d1f32082118cbe5"),
    '3': ObjectId("63f4e0663d1f32082118cbe6"),
    '4': ObjectId("63f4e0663d1f32082118cbe7"),
    '5': ObjectId("63f4e0663d1f32082118cbe8"),
    '6': ObjectId("63f4e0663d1f32082118cbe9"),
    '7': ObjectId("63f4e0663d1f32082118cbea"),
    '8': ObjectId("63f4e0663d1f32082118cbeb"),
    '9': ObjectId("63f4e0663d1f32082118cbec")
  }
}
```

1. Get the details of all the faculty.

```
ems> db.faculty.find()
[
  {
    _id: ObjectId("63f4e0663d1f32082118cbe3"),
    name: 'Krish',
    age: 35,
    gender: 'M',
    exp: 10,
    subjects: [ 'DS', 'C', 'OS' ],
    type: 'Full Time',
    qualification: 'M.Tech'
  },
  {
    _id: ObjectId("63f4e0663d1f32082118cbe4"),
    name: 'Manoj',
    age: 38,
    gender: 'M',
    exp: 12,
    subjects: [ 'JAVA', 'DBMS' ],
    type: 'Full Time',
    qualification: 'Ph.D'
  },
  {
    _id: ObjectId("63f4e0663d1f32082118cbe5"),
    name: 'Anush',
    age: 32,
    gender: 'F',
    exp: 8,
    subjects: [ 'C', 'CPP' ],
    type: 'Part Time',
    qualification: 'M.Tech'
  },
  {
    _id: ObjectId("63f4e0663d1f32082118cbe6"),
    name: 'Suresh',
    age: 40,
    gender: 'M',
    exp: 9,
    subjects: [ 'JAVA', 'DBMS', 'NETWORKING' ],
    type: 'Full Time',
    qualification: 'Ph.D'
  },
  {
    _id: ObjectId("63f4e0663d1f32082118cbe7"),
    name: 'Rajesh',
    age: 35,
```

2. Get the count of all faculty members.

```
ems> db.faculty.count();
10
ems>
```

3. Get all the faculty members whose qualification is “Ph.D”.

```
ems> db.faculty.find({qualification : "Ph.D"} , {name:1 , age:1 , qualification:1 , _id :0})
[
  { name: 'Manoj', age: 38, qualification: 'Ph.D' },
  { name: 'Suresh', age: 40, qualification: 'Ph.D' },
  { name: 'Mani', age: 38, qualification: 'Ph.D' },
  { name: 'Nagesh', age: 39, qualification: 'Ph.D' },
  { name: 'Nagesh', age: 35, qualification: 'Ph.D' },
  { name: 'Latha', age: 40, qualification: 'Ph.D' }
]
```

4. Get all the faculty members whose experience is between 8 to 12 years.

```
ems> db.faculty.find({exp : {$gt : 7 , $lt : 13}} , {name:1 , age:1 , qualification:1 ,exp:1 ,_id :0})
[
  { name: 'Krish', age: 35, exp: 10, qualification: 'M.Tech' },
  { name: 'Manoj', age: 38, exp: 12, qualification: 'Ph.D' },
  { name: 'Anush', age: 32, exp: 8, qualification: 'M.Tech' },
  { name: 'Suresh', age: 40, exp: 9, qualification: 'Ph.D' },
  { name: 'Mani', age: 38, exp: 10, qualification: 'Ph.D' },
  { name: 'Sivani', age: 32, exp: 8, qualification: 'M.Tech' },
  { name: 'Nagesh', age: 39, exp: 11, qualification: 'Ph.D' },
  { name: 'Nagesh', age: 35, exp: 9, qualification: 'Ph.D' }
]
ems>
```

5. Get all the faculty members who teach “MATHS” or “NETWORKING”.

```
ems> db.faculty.find({subjects :{$in: ["MATHS","NETWORKING" ]}}, {name:1, qualification:1, subjects:1,_id:0})
[
  {
    name: 'Suresh',
    subjects: [ 'JAVA', 'DBMS', 'NETWORKING' ],
    qualification: 'Ph.D'
  },
  {
    name: 'Sivani',
    subjects: [ 'C', 'CPP', 'MATHS' ],
    qualification: 'M.Tech'
  },
  {
    name: 'Nagesh',
    subjects: [ 'JAVA', 'DBMS', 'NETWORKING' ],
    qualification: 'Ph.D'
  },
  {
    name: 'Nagesh',
    subjects: [ 'JAVA', '.Net', 'NETWORKING' ],
    qualification: 'Ph.D'
  },
  { name: 'Latha', subjects: [ 'MATHS' ], qualification: 'Ph.D' }
]
ems>
```

6. Get all the faculty members who teach “MATHS” and whose age is more than 30 years and qualification must be “Ph.D”.

```
ems> db.faculty.find({subjects:"MATHS" , age :{$gt:30}, qualification : "Ph.D"}, {name:1, qualification:1, subjects:1,age:1,_id:0})
[
  {
    name: 'Latha',
    age: 40,
    subjects: [ 'MATHS' ],
    qualification: 'Ph.D'
  }
]
```

7. Get all the faculty members who are working part-time or who teach “JAVA”.

```
ems> db.faculty.find({ $or: [{ subjects: "JAVA" }, { type: "Part Time" }] }, { name: 1, subjects: 1, type: 1, _id: 0 })
[
  { name: 'Manoj', subjects: [ 'JAVA', 'DBMS' ], type: 'Full Time' },
  { name: 'Anush', subjects: [ 'C', 'CPP' ], type: 'Part Time' },
  {
    name: 'Suresh',
    subjects: [ 'JAVA', 'DBMS', 'NETWORKING' ],
    type: 'Full Time'
  },
  {
    name: 'Mani',
    subjects: [ 'JAVA', 'DBMS', 'OS' ],
    type: 'Part Time'
  },
  {
    name: 'Sivani',
    subjects: [ 'C', 'CPP', 'MATHS' ],
    type: 'Part Time'
  },
  {
    name: 'Nagesh',
    subjects: [ 'JAVA', 'DBMS', 'NETWORKING' ],
    type: 'Full Time'
  },
  {
    name: 'Nagesh',
    subjects: [ 'JAVA', '.Net', 'NETWORKING' ],
    type: 'Full Time'
  }
]
ems>
```

8. Add the following new faculty members:
   { "name":"Suresh Babu", "age":55,"gender":"M","exp":25,subjects: ["MATHS","DE"],"type":"Full Time", "qualification":"Ph.D"}

```
ems> db.faculty.insertOne( {name :" Suresh Babu", ag:55 , gender:'M',exp:25,subjects:["MATHS","DE"],"type":"Full Time", "qualification":"Ph.D"  } )
{
  acknowledged: true,
  insertedId: ObjectId("63f4f0ec3d1f32082118cbee")
}
```

9. Update the data of all faculty members by incrementing their age and exp by one year.

```
ms> db.faculty.updateMany({}, {$inc: { "age": 1, "exp": 1}})

 acknowledged: true,
 insertedId: null,
 matchedCount: 11,
 modifiedCount: 11,
 upsertedCount: 0

ms> db.faculty.find( )

{
  _id: ObjectId("63f4e0663d1f32082118cbe3"),
  name: 'Krish',
  age: 36,
  gender: 'M',
  exp: 15,
  subjects: [ 'DS', 'C', 'OS' ],
  type: 'Full Time',
  qualification: 'M.Tech',
  ag: 1
},
{
  _id: ObjectId("63f4e0663d1f32082118cbe4"),
  name: 'Manoj',
  age: 39,
  gender: 'M',
  exp: 15,
  subjects: [ 'JAVA', 'DBMS' ],
  type: 'Full Time',
  qualification: 'Ph.D',
  ag: 1
},
{
  _id: ObjectId("63f4e0663d1f32082118cbe5"),
  name: 'Anush',
  age: 33,
  gender: 'F',
  exp: 11,
  subjects: [ 'C', 'CPP' ],
```

10. Update the faculty “Sivani” with the following data: update qualification to “Ph.D” and type to “Full Time”.

```
ms> db.faculty.updateOne({ name: "Sivani" }, {$set: {qualification: "Ph.D", type: 'Full Time'} })
}
acknowledged: true,
insertedId: null,
matchedCount: 1,
modifiedCount: 1,
upsertedCount: 0
```

```
{
  _id: ObjectId("63f4e0663d1f32082118cbe9"),
  name: 'Sivani',
  age: 33,
  gender: 'F',
  exp: 11,
  subjects: [ 'C', 'CPP', 'MATHS' ],
  type: 'Full Time',
  qualification: 'Ph.D',
  ag: 1
},
```

11. Update all faculty members who are teaching “MATHS” such that they should now also teach “PSK”.

```
ms> db.faculty.updateMany({ subjects: "MATHS" },{ $push: { "subjects": "PSK" } })

 acknowledged: true,
 insertedId: null,
 matchedCount: 3,
 modifiedCount: 3,
 upsertedCount: 0

ms> db.faculty.find( )

 {
   _id: ObjectId("63f4e0663d1f32082118cbe3"),
   name: 'Krish',
   age: 36,
   gender: 'M',
   exp: 15,
   subjects: [ 'DS', 'C', 'OS' ],
   type: 'Full Time',
   qualification: 'M.Tech',
   ag: 1
 },
 {
   _id: ObjectId("63f4e0663d1f32082118cbe4"),
   name: 'Manoj',
   age: 39,
   gender: 'M',
   exp: 15,
   subjects: [ 'JAVA', 'DBMS' ],
   type: 'Full Time',
   qualification: 'Ph.D',
   ag: 1
 },
 {
   _id: ObjectId("63f4e0663d1f32082118cbe5"),
   name: 'Anush',
   age: 33,
   gender: 'F',
   exp: 11,
   subjects: [ 'C', 'CPP' ],
   type: 'Part Time',
   qualification: 'M.Tech',
   ag: 1
 },
```

12. Delete all faculty members whose age is more than 55 years.

```
ems> db.faculty.deleteMany({age : {$gt:55}})
{ acknowledged: true, deletedCount: 1 }
ems>
```

13. Get only the name and qualification of all faculty members.

```
{ acknowledged: true, deletedCount: 1 }
ems> db.faculty.find( {},{name:1 , qualification:1 ,_id:0})
[
  { name: 'Krish', qualification: 'M.Tech' },
  { name: 'Manoj', qualification: 'Ph.D' },
  { name: 'Anush', qualification: 'M.Tech' },
  { name: 'Suresh', qualification: 'Ph.D' },
  { name: 'Rajesh', qualification: 'M.Tech' },
  { name: 'Mani', qualification: 'Ph.D' },
  { name: 'Sivani', qualification: 'Ph.D' },
  { name: 'Nagesh', qualification: 'Ph.D' },
  { name: 'Nagesh', qualification: 'Ph.D' },
  { name: 'Latha', qualification: 'Ph.D' },
  { name: ' Suresh Babu', qualification: 'Ph.D' },
  { name: ' Suresh Babu', qualification: 'Ph.D' }
]
```

14. Get the name, qualification and exp of all faculty members and display the same in ascending order of exp.

```
{ name: ' Suresh Babu', qualification: 'Ph.D' }

ms> db.faculty.find({}, {name:1, qualification:1, exp:1, _id:0}).sort({exp:1})

{ name: 'Rajesh', exp: 10, qualification: 'M.Tech' },
{ name: 'Anush', exp: 11, qualification: 'M.Tech' },
{ name: 'Sivani', exp: 11, qualification: 'Ph.D' },
{ name: 'Suresh', exp: 12, qualification: 'Ph.D' },
{ name: 'Nagesh', exp: 12, qualification: 'Ph.D' },
{ name: 'Mani', exp: 13, qualification: 'Ph.D' },
{ name: 'Nagesh', exp: 14, qualification: 'Ph.D' },
{ name: 'Krish', exp: 15, qualification: 'M.Tech' },
{ name: 'Manoj', exp: 15, qualification: 'Ph.D' },
{ name: 'Latha', exp: 16, qualification: 'Ph.D' },
{ name: ' Suresh Babu', exp: 25, qualification: 'Ph.D' },
{ name: ' Suresh Babu', exp: 28, qualification: 'Ph.D' }
```

15. Sort the faculty details by their age (descending order) and get the details of the first five faculty members only.

```
ems> db.faculty.find().sort({age:-1}).limit(5)
[
  {
    _id: ObjectId("63f503503d1f32082118cbef"),
    name: ' Suresh Babu',
    age: 55,
    gender: 'M',
    exp: 25,
    subjects: [ 'MATHS', 'DE' ],
    type: 'Full Time',
    qualification: 'Ph.D'
  },
  {
    _id: ObjectId("63f4e0663d1f32082118cbec"),
    name: 'Latha',
    age: 41,
    gender: 'F',
    exp: 16,
    subjects: [ 'MATHS', 'PSK', 'PSK', 'PSK' ],
    type: 'Full Time',
    qualification: 'Ph.D',
    ag: 1
  },
  {
    _id: ObjectId("63f4e0663d1f32082118cbe6"),
    name: 'Suresh',
    age: 41,
    gender: 'M',
    exp: 12,
    subjects: [ 'JAVA', 'DBMS', 'NETWORKING' ],
    type: 'Full Time',
    qualification: 'Ph.D',
    ag: 1
  },
  {
    _id: ObjectId("63f4e0663d1f32082118cbea"),
```