
MONGODB-LAB1



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TRACK : PD_ALEX_43

1 – open mongo shell and view the help

test> help

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

```
test> show dbs
ITI                72.00 KiB
NurserySystem      408.00 KiB
admin               40.00 KiB
config              72.00 KiB
local               72.00 KiB
test>
```

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).

```
test> use iti_db
switched to db iti_db
iti_db> db.students.insertMany([
...   { name: "Doaa", age: 23, hobbies: ["reading", "writing"], address: { street: "123 Main St,Smouha", city: "Alex" } },
...   { name: "Noury", age: 25, hobbies: ["reading", "write stories"], address: { street: "123 Main St,Smouha", city: "Alex" } },
...   { name: "Joudy", age: 22, hobbies: ["reading", "writing", "drawing"], address: { street: "123 Main St,Smouha", city: "Alex" } },
...   { name: "Adel", age: 19, hobbies: ["reading", "Play acropatics"], address: { street: "123 Main St,Smouha", city: "Alex" } },
...   { name: "Shiko", age: 27, hobbies: ["reading", "Play acropatics"], address: { street: "123 Main St,Smouha", city: "Alex" } },
...   { name: "Malak", age: 19, hobbies: ["reading", "dancing"], address: { street: "123 Main St,Smouha", city: "Alex" } },
...   { name: "Nourhan", age: 27, hobbies: ["cooking"], address: { street: "123 Main St,Smouha", city: "Alex" } }
... ])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId("643865b61f66bfed3699a486"),
    '1': ObjectId("643865b61f66bfed3699a487"),
    '2': ObjectId("643865b61f66bfed3699a488"),
    '3': ObjectId("643865b61f66bfed3699a489"),
    '4': ObjectId("643865b61f66bfed3699a48a"),
    '5': ObjectId("643865b61f66bfed3699a48b"),
    '6': ObjectId("643865b61f66bfed3699a48c")
  }
}
iti_db>
```

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

```
iti_db> show dbs
ITI                72.00 KiB
NurserySystem      408.00 KiB
admin               40.00 KiB
config              108.00 KiB
iti_db              40.00 KiB
local               72.00 KiB
iti_db>
```

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).

```
iti_db> db.students.insertMany([
...   { name: "Zeyad", age: 20, hobbies: ["reading", "writing"] },
...   { name: "Hatem", age: 25, address: { street: "123 Main St", city: "NewYork", state: "NY" } },
...   { name: "Omar", age: 22, interests: { music: "rock", sports: "basketball" } },
...   { name: "Rougina", age: 19, grades: [80, 85, 90] },
...   { name: "Donna", age: 24, siblings: { brother: "John", sister: "Lisa" } },
...   { name: "Karim", age: 23, phone: 1234567890 }
... ])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId("643877ae15bb07608fca8705"),
    '1': ObjectId("643877ae15bb07608fca8706"),
    '2': ObjectId("643877ae15bb07608fca8707"),
    '3': ObjectId("643877ae15bb07608fca8708"),
    '4': ObjectId("643877ae15bb07608fca8709"),
    '5': ObjectId("643877ae15bb07608fca870a")
  }
}
iti_db>
```

6 – Search for your object by name.

```
iti_db> db.students.findOne({ name: "Doaa" })
{
  _id: ObjectId("643865b61f66bfed3699a486"),
  name: 'Doaa',
  age: 23,
  hobbies: [ 'reading', 'writing' ],
  address: { street: '123 Main St,Smouha', city: 'Alex' }
}
```

7- Search for your friend(s) by age.

```
iti_db> db.students.find({ age: 19 })
[
  {
    _id: ObjectId("643865b61f66bfed3699a489"),
    name: 'Adel',
    age: 19,
    hobbies: [ 'reading', 'Play acropatics' ],
    address: { street: '123 Main St,Smouha', city: 'Alex' }
  },
  {
    _id: ObjectId("643865b61f66bfed3699a48b"),
    name: 'Malak',
    age: 19,
    hobbies: [ 'reading', 'dancing' ],
    address: { street: '123 Main St,Smouha', city: 'Alex' }
  },
  {
    _id: ObjectId("643867861f66bfed3699a490"),
    name: 'Rougina',
    age: 19,
    grades: [ 80, 85, 90 ]
  }
]
```

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

```
iti_db> db.students.find({ age: { $gt: 23 } })
[
  {
    _id: ObjectId("643865b61f66bfed3699a487"),
    name: 'Noury',
    age: 25,
    hobbies: [ 'reading', 'write stories' ],
    address: { street: '123 Main St,Smouha', city: 'Alex' }
  },
  {
    _id: ObjectId("643865b61f66bfed3699a48a"),
    name: 'Shiko',
    age: 27,
    hobbies: [ 'reading', 'Play acropatics' ],
    address: { street: '123 Main St,Smouha', city: 'Alex' }
  },
  {
    _id: ObjectId("643865b61f66bfed3699a48c"),
    name: 'Nourhan',
    age: 27,
    hobbies: [ 'cooking' ],
    address: { street: '123 Main St,Smouha', city: 'Alex' }
  },
  {
    _id: ObjectId("643867861f66bfed3699a48e"),
    name: 'Hatem',
    age: 25,
    address: { street: '123 Main St', city: 'NewYork', state: 'NY' }
  },
  {
    _id: ObjectId("643867861f66bfed3699a491"),
    name: 'Donna',
    age: 24,
    siblings: { brother: 'John', sister: 'Lisa' }
  }
]
```

9 – delete any of your friends by id.

```
iti_db> db.students.deleteOne({_id: ObjectId("643867861f66bfed3699a48e")})
{ acknowledged: true, deletedCount: 1 }
iti_db> .
```

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

```
iti_db> db.students.find().pretty()
[
  {
    _id: ObjectId("643865b61f66bfed3699a486"),
    name: 'Doaa',
    age: 23,
    hobbies: [ 'reading', 'writing' ],
    address: { street: '123 Main St,Smouha', city: 'Alex' }
  },
  {
    _id: ObjectId("643865b61f66bfed3699a487"),
    name: 'Noury',
    age: 25,
    hobbies: [ 'reading', 'write stories' ],
    address: { street: '123 Main St,Smouha', city: 'Alex' }
  },
  {
    _id: ObjectId("643865b61f66bfed3699a488"),
    name: 'Joudy',
    age: 22,
    hobbies: [ 'reading', 'writing', 'drawing' ],
    address: { street: '123 Main St,Smouha', city: 'Alex' }
  },
  {
    _id: ObjectId("643865b61f66bfed3699a489"),
    name: 'Adel',
    age: 19,
    hobbies: [ 'reading', 'Play acropatics' ],
    address: { street: '123 Main St,Smouha', city: 'Alex' }
  },
  {

```

11 – count all documents in students' collection.

```
iti_db> db.students.countDocuments()
12
```

part 2

1- Create database with name ems

```
iti_db> use ems
switched 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("64386c491f66bfed3699a493"),
    '1': ObjectId("64386c491f66bfed3699a494"),
    '2': ObjectId("64386c491f66bfed3699a495"),
    '3': ObjectId("64386c491f66bfed3699a496"),
    '4': ObjectId("64386c491f66bfed3699a497"),
    '5': ObjectId("64386c491f66bfed3699a498"),
    '6': ObjectId("64386c491f66bfed3699a499"),
    '7': ObjectId("64386c491f66bfed3699a49a"),
    '8': ObjectId("64386c491f66bfed3699a49b"),
    '9': ObjectId("64386c491f66bfed3699a49c")
  }
}
```

1. Get the details of all the faculty.

```
ems> db.faculty.find()
[
  {
    _id: ObjectId("64386c491f66bfed3699a493"),
    name: 'Krish',
    age: 35,
    gender: 'M',
    exp: 10,
    subjects: [ 'DS', 'C', 'OS' ],
    type: 'Full Time',
    qualification: 'M.Tech'
  },
  {
    _id: ObjectId("64386c491f66bfed3699a494"),
    name: 'Manoj',
    age: 38,
    gender: 'M',
    exp: 12,
    subjects: [ 'JAVA', 'DBMS' ],
    type: 'Full Time',
    qualification: 'Ph.D'
  },
  {
    _id: ObjectId("64386c491f66bfed3699a495"),
    name: 'Anush',
    age: 32,
    gender: 'F',
    exp: 8,
    subjects: [ 'C', 'CPP' ],
    type: 'Part Time',
    qualification: 'M.Tech'
  },
]
```

2. Get the count of all faculty members.

```
ems> db.faculty.countDocuments()  
10
```

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

```
ems> db.faculty.find({qualification:"Ph.D"})  
[  
  {  
    _id: ObjectId("64386c491f66bfed3699a494"),  
    name: 'Manoj',  
    age: 38,  
    gender: 'M',  
    exp: 12,  
    subjects: [ 'JAVA', 'DBMS' ],  
    type: 'Full Time',  
    qualification: 'Ph.D'  
  },  
  {  
    _id: ObjectId("64386c491f66bfed3699a496"),  
    name: 'Suresh',  
    age: 40,  
    gender: 'M',  
    exp: 9,  
    subjects: [ 'JAVA', 'DBMS', 'NETWORKING' ],  
    type: 'Full Time',  
    qualification: 'Ph.D'  
  },  
  {  
    _id: ObjectId("64386c491f66bfed3699a498"),  
    name: 'Mani',  
    age: 38,  
    gender: 'F',  
    exp: 10,  
    subjects: [ 'JAVA', 'DBMS', 'OS' ],  
    type: 'Part Time',  
    qualification: 'Ph.D'  
  },  
]
```

```
  {  
    _id: ObjectId("64386c491f66bfed3699a49b"),  
    name: 'Nagesh',  
    age: 35,  
    gender: 'M',  
    exp: 9,  
    subjects: [ 'JAVA', '.Net', 'NETWORKING' ],  
    type: 'Full Time',  
    qualification: 'Ph.D'  
  },  
  {  
    _id: ObjectId("64386c491f66bfed3699a49c"),  
    name: 'Latha',  
    age: 40,  
    gender: 'F',  
    exp: 13,  
    subjects: [ 'MATHS' ],  
    type: 'Full Time',  
    qualification: 'Ph.D'  
  }  
]
```

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

```
ems> db.faculty.find({exp:{$gt:8, $lt:12}})
[
  {
    _id: ObjectId("64386c491f66bfed3699a493"),
    name: 'Krish',
    age: 35,
    gender: 'M',
    exp: 10,
    subjects: [ 'DS', 'C', 'OS' ],
    type: 'Full Time',
    qualification: 'M.Tech'
  },
  {
    _id: ObjectId("64386c491f66bfed3699a496"),
    name: 'Suresh',
    age: 40,
    gender: 'M',
    exp: 9,
    subjects: [ 'JAVA', 'DBMS', 'NETWORKING' ],
    type: 'Full Time',
    qualification: 'Ph.D'
  },
  {
    _id: ObjectId("64386c491f66bfed3699a498"),
    name: 'Mani',
    age: 38,
    gender: 'F',
    exp: 10,
    subjects: [ 'JAVA', 'DBMS', 'OS' ],
    type: 'Part Time',
    qualification: 'Ph.D'
  },
  {
    _id: ObjectId("64386c491f66bfed3699a49b"),
    name: 'Nagesh',
    age: 35,
    gender: 'M',
    exp: 9,
    subjects: [ 'JAVA', '.Net', 'NETWORKING' ],
    type: 'Full Time',
    qualification: 'Ph.D'
  }
]
ems>
```

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

```
ems> db.faculty.find({subjects:{$in: ["MATHS", "NETWORKING"]}})
[
  {
    _id: ObjectId("64386c491f66bfed3699a496"),
    name: 'Suresh',
    age: 40,
    gender: 'M',
    exp: 9,
    subjects: [ 'JAVA', 'DBMS', 'NETWORKING' ],
    type: 'Full Time',
    qualification: 'Ph.D'
  },
  {
    _id: ObjectId("64386c491f66bfed3699a499"),
    name: 'Sivani',
    age: 32,
    gender: 'F',
    exp: 8,
    subjects: [ 'C', 'CPP', 'MATHS' ],
    type: 'Part Time',
    qualification: 'M.Tech'
  },
  {
    _id: ObjectId("64386c491f66bfed3699a49a"),
    name: 'Nagesh',
    age: 39,
    gender: 'M',
    exp: 11,
    subjects: [ 'JAVA', 'DBMS', 'NETWORKING' ],
    type: 'Full Time',
    qualification: 'Ph.D'
  },
  {
    _id: ObjectId("64386c491f66bfed3699a49c"),
    name: 'Latha',
    age: 40,
    gender: 'F',
    exp: 13,
    subjects: [ 'MATHS' ],
    type: 'Full Time',
    qualification: 'Ph.D'
  }
]
```

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"})
[
  {
    _id: ObjectId("64386c491f66bfed3699a49c"),
    name: 'Latha',
    age: 40,
    gender: 'F',
    exp: 13,
    subjects: [ 'MATHS' ],
    type: 'Full Time',
    qualification: 'Ph.D'
  }
]
```

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

```
ems> db.faculty.find({$or:[{type:"Part Time"},{subjects: "JAVA"}]})
[
  {
    _id: ObjectId("64386c491f66bfed3699a494"),
    name: 'Manoj',
    age: 38,
    gender: 'M',
    exp: 12,
    subjects: [ 'JAVA', 'DBMS' ],
    type: 'Full Time',
    qualification: 'Ph.D'
  },
  {
    _id: ObjectId("64386c491f66bfed3699a495"),
    name: 'Anush',
    age: 32,
    gender: 'F',
    exp: 8,
    subjects: [ 'C', 'CPP' ],
    type: 'Part Time',
    qualification: 'M.Tech'
  },
  {
    _id: ObjectId("64386c491f66bfed3699a496"),
    name: 'Suresh',
    age: 40,
    gender: 'M',
    exp: 9,
    subjects: [ 'JAVA', 'DBMS', 'NETWORKING' ],
    type: 'Full Time',
    qualification: 'Ph.D'
  },
  {
    _id: ObjectId("64386c491f66bfed3699a498"),
    name: 'Mani',
    age: 38,
    gender: 'F',
    exp: 10,
    subjects: [ 'JAVA', 'DBMS', 'OS' ],
    type: 'Part Time',
    qualification: 'Ph.D'
  }
]
```

```
],
{
  _id: ObjectId("64386c491f66bfed3699a499"),
  name: 'Sivani',
  age: 32,
  gender: 'F',
  exp: 8,
  subjects: [ 'C', 'CPP', 'MATHS' ],
  type: 'Part Time',
  qualification: 'M.Tech'
},
{
  _id: ObjectId("64386c491f66bfed3699a49a"),
  name: 'Nagesh',
  age: 39,
  gender: 'M',
  exp: 11,
  subjects: [ 'JAVA', 'DBMS', 'NETWORKING' ],
  type: 'Full Time',
  qualification: 'Ph.D'
},
{
  _id: ObjectId("64386c491f66bfed3699a49b"),
  name: 'Nagesh',
  age: 35,
  gender: 'M',
  exp: 9,
  subjects: [ 'JAVA', '.Net', 'NETWORKING' ],
  type: 'Full Time',
  qualification: 'Ph.D'
}
]
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",
... "age":55,"gender":"M","exp":25,subjects:["MATHS","DE"],"type":"Full Time",
... "qualification":"Ph.D"})
{
  acknowledged: true,
  insertedId: ObjectId("643871c615bb07608fca8704")
}
ems> _
```

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

```
ems> db.faculty.updateMany({},{$inc:{age:1, exp:1}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 11,
  modifiedCount: 11,
  upsertedCount: 0
}
ems> _
```

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

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

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

```
ems> db.faculty.updateMany({subjects:"MATHS"},{$addToSet:{subjects:"PSK"}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 3,
  modifiedCount: 3,
  upsertedCount: 0
}
ems> _
```

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.

```
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' }
]
ems> _
```

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

```
ems> db.faculty.find({}, {name:1,qualification:1,_id:0,exp:1}).sort({exp:1})
[
  { name: 'Rajesh', exp: 8, qualification: 'M.Tech' },
  { name: 'Anush', exp: 9, qualification: 'M.Tech' },
  { name: 'Sivani', exp: 9, qualification: 'Ph.D' },
  { name: 'Suresh', exp: 10, qualification: 'Ph.D' },
  { name: 'Nagesh', exp: 10, qualification: 'Ph.D' },
  { name: 'Krish', exp: 11, qualification: 'M.Tech' },
  { name: 'Mani', exp: 11, qualification: 'Ph.D' },
  { name: 'Nagesh', exp: 12, qualification: 'Ph.D' },
  { name: 'Manoj', exp: 13, qualification: 'Ph.D' },
  { name: 'Latha', exp: 14, qualification: 'Ph.D' }
]
ems> _
```

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("64386c491f66bfed3699a49c"),
    name: 'Latha',
    age: 41,
    gender: 'F',
    exp: 14,
    subjects: [ 'MATHS', 'PSK' ],
    type: 'Full Time',
    qualification: 'Ph.D'
  },
  {
    _id: ObjectId("64386c491f66bfed3699a496"),
    name: 'Suresh',
    age: 41,
    gender: 'M',
    exp: 10,
    subjects: [ 'JAVA', 'DBMS', 'NETWORKING' ],
    type: 'Full Time',
    qualification: 'Ph.D'
  },
  {
    _id: ObjectId("64386c491f66bfed3699a49a"),
    name: 'Nagesh',
    age: 40,
    gender: 'M',
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    subjects: [ 'JAVA', 'DBMS', 'NETWORKING' ],
    type: 'Full Time',
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  {
    _id: ObjectId("64386c491f66bfed3699a494"),
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  {
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    name: 'Anush',
    age: 39,
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    exp: 9,
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    type: 'Full Time',
    qualification: 'M.Tech'
  }
]
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