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**MongoDB -Lab 2**

1- run following queries:

a- Display all documents in instructors collection

```
>_MONGOSH
> db.instructors.find()
< [
  {
    _id: 6,
    firstName: 'noha',
    lastName: 'hesham',
    age: 21,
    salary: 3500,
    address: {
      city: 'cairo',
      street: 10,
      building: 8
    },
    courses: [
      'js',
      'mvc',
      'signalR',
      'expressjs'
    ]
  }
  {
    _id: 7,
    firstName: 'mona',
    lastName: 'ahmed',
    age: 21,
    salary: 3600,
    address: {
      city: 'cairo',
      street: 20,
    }
  }
]
```

b- Display all instructors with salaries greater than 4000  
(only show firstName and salary)

```
>_MONGOSH
> db.instructors.find(
  { salary: { $gt: 4000 } },
  { firstName: 1, salary: 1, _id: 0 }
)
< [
  {
    firstName: 'mazen',
    salary: 7040
  },
  {
    firstName: 'ebtesam',
    salary: 7500
  },
  {
    firstName: 'badr',
    salary: 5550
  },
  {
    firstName: 'mazen',
    salary: 7010
  },
  {
    firstName: 'ebtesam',
    salary: 6200
  }
]
ITI> |
```

c- Display all instructors with ages less than or equal 25.

```
>_MONGOSH
> db.instructors.find({ age: { $lte: 25 } })
< [
  {
    _id: 6,
    firstName: 'noha',
    lastName: 'hesham',
    age: 21,
    salary: 3500,
    address: {
      city: 'cairo',
      street: 10,
      building: 8
    },
    courses: [
      'js',
      'mvc',
      'signalR',
      'expressjs'
    ]
  }
  {
    _id: 7,
    firstName: 'mona',
    lastName: 'ahmed',
    age: 21,
    salary: 3600,
    address: {
      city: 'cairo',
      street: 11,
      building: 9
    },
    courses: [
      'nodejs',
      'angular',
      'react',
      'expressjs'
    ]
  }
]
```

d- Display all instructors with city mansoura and street number 10 or 14 only display (firstname,address,salary).

```
>_MONGOSH
> db.instructors.find(
  {
    "address.city": "mansoura",
    "address.street": { $in: [10, 14] }
  },
  { firstName: 1, address: 1, salary: 1, _id: 0 }
)
< [
  {
    firstName: 'ebtesam',
    salary: 7500,
    address: {
      city: 'mansoura',
      street: 14,
      building: 3
    }
  },
  {
    firstName: 'ebtesam',
    salary: 6200,
    address: {
      city: 'mansoura',
      street: 14,
      building: 7
    }
  }
]
ITI>
```

e- Display all instructors that have js and jquery in their courses (both of them not one of them).

```
>_MONGOSH
> db.instructors.find({
  courses: { $all: ["js", "jquery"] }
})
<
ITI>
```

f- Display number of courses for each instructor and display first name with number of courses.

```
>_MONGOSH
> db.instructors.find(
  {},
  { firstName: 1, courses: 1, _id: 0 }
).forEach(doc => {
  print({
    firstName: doc.firstName,
    numberOfCourses: doc.courses ? doc.courses.length : 0
  });
});
< { firstName: 'noha', numberOfCourses: 5 }
< { firstName: 'mona', numberOfCourses: 4 }
< { firstName: 'mazen', numberOfCourses: 3 }
< { firstName: 'badr', numberOfCourses: 4 }
< { firstName: 'mona', numberOfCourses: 4 }
< { firstName: 'mazen', numberOfCourses: 3 }
< { firstName: 'ebtesam', numberOfCourses: 6 }
ITI >
```

g- Write mongodb query to get all instructors that have firstName and lastName properties , sort them by firstName ascending then by lastName descending and finally display their data FullName and age

Note: use mongoDB sort function

```
>_MONGOSH
> db.instructors.find(
  {
    firstName: { $exists: true },
    lastName: { $exists: true }
  },
  {
    firstName: 1,
    lastName: 1,
    age: 1,
    _id: 0
  }
)
.sort({ firstName: 1, lastName: -1 })
.forEach(doc => {
  print({
    FullName: doc.firstName + " " + doc.lastName,
    age: doc.age
  });
});
< { FullName: 'badr ahmed', age: 22 }
< { FullName: 'ebtesam ahmed', age: 28 }
< { FullName: 'mazen mohammed', age: 21 }
< { FullName: 'mazen ali', age: 30 }
< { FullName: 'mona mohammed', age: 21 }
< { FullName: 'mona ahmed', age: 21 }
< { FullName: 'noha hesham', age: 21 }
ITI> |
```

h- Delete instructor with first name “ebtesam” and has only 5 courses in courses array

```
>_MONGOSH
> db.instructors.deleteOne({
  firstName: "ebtesam",
  courses: { $size: 5 }
})
< {
  acknowledged: true,
  deletedCount: 1
}
ITI> |
```

i- Add active property to all instructors and set its value to true.

```
>_MONGOSH
> db.instructors.updateMany(
  {},
  { $set: { active: true } }
)
< {
  acknowledged: true,
  insertedId: null,
  matchedCount: 7,
  modifiedCount: 7,
  upsertedCount: 0
}
ITI> |
```

j- Change “EF” course to “jquery” for “mazen mohammed” instructor (without knowing EF Index in courses array)

```
>_MONGOSH
> db.instructors.updateOne(
  {
    firstName: "mazen",
    lastName: "mohammed",
    courses: "EF"
  },
  { $set: { "courses.$": "jquery" } }
)
< {
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
ITI> |
```

k- Add jquery course for “noha hesham”.

```
>_MONGOSH
> db.instructors.updateOne(
  {
    firstName: "noha",
    lastName: "hesham"
  },
  { $addToSet: { courses: "jquery" } }
)
< {
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
ITI> |
```

1- Remove courses property for “ahmed mohammed ” instructor

```
>_MONGOSH
> db.instructors.updateOne(
  {
    firstName: "ahmed",
    lastName: "mohammed"
  },
  { $unset: { courses: "" } }
)
< {
  acknowledged: true,
  insertedId: null,
  matchedCount: 0,
  modifiedCount: 0,
  upsertedCount: 0
}
ITI >
```

m- Decrease salary by 500 for all instructors that has only 3 courses in their list (\$inc)

```
>_MONGOSH
> db.instructors.updateMany(
  { courses: { $size: 3 } },
  { $inc: { salary: -500 } }
)
< {
  acknowledged: true,
  insertedId: null,
  matchedCount: 2,
  modifiedCount: 2,
  upsertedCount: 0
}
ITI>
```

n- Rename address field for all instructors to fullAddress.

```
>_MONGOSH
> db.instructors.updateMany(
  {},
  { $rename: { "address": "fullAddress" } }
)
< {
  acknowledged: true,
  insertedId: null,
  matchedCount: 7,
  modifiedCount: 7,
  upsertedCount: 0
}
ITI> |
```

o- Change street number for noha hesham to 20

```
>_MONGOSH
> db.instructors.updateOne(
  {
    firstName: "noha",
    lastName: "hesham"
  },
  { $set: { "fullAddress.street": 20 } }
)
< {
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
ITI>
```