

## 31485 – Ashwin Taras - TE 04 - N4

### DBMSL

#### Assignment B1: MongoDB CRUD Operations

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##### PROBLEM STATEMENT:

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

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```
pict@pict-OptiPlex-SFF-Plus-7010:~$ mongosh 10.10.11.156/te31485db -u te31485
Enter password: *****
Current Mongosh Log ID:      6539fb6e2068c08d2f8080d6
Connecting to:
mongodb://<credentials>@10.10.11.156:27017/te31485db?directConnection=true&appName=mongosh+2.0.1
Using MongoDB:      7.0.2
Using Mongosh:      2.0.1
mongosh 2.0.2 is available for download: https://www.mongodb.com/try/download/shell
```

For mongosh info see: <https://docs.mongodb.com/mongodb-shell/>

-----  
**The server generated these startup warnings when booting**

2023-10-26T08:59:52.884+05:30: Using the XFS filesystem is strongly recommended with the WiredTiger storage engine. See <http://dochub.mongodb.org/core/prodnotes-filesystem>

2023-10-26T08:59:55.653+05:30: Access control is not enabled for the database. Read and write access to data and configuration is unrestricted

2023-10-26T08:59:55.654+05:30: vm.max\_map\_count is too low  
-----

```
te31485db> db
te31485db
te31485db> show collections
sample
te31485db> db.createCollection("teachers")
{ ok: 1 }
te31485db> show collections
sample
teachers
te31485db> db.teachers.insertOne(
... {
...   name: "John Smith",
...   qualifications: "Ph.D. in Computer Science",
...   deptno: 101,
...   deptname: "Computer Science",
...   designation: "Associate Professor",
...   experience: { industry: 5, teaching: 8 },
```

```

... salary: { basic: 75000, TA: 5000, DA: 3000, HRA: 7000 },
... date_of_joining: ISODate("2020-01-15"),
... appointment_nature: "Permanent",
... area_of_expertise: "Machine Learning, Data Science",
... })
{
  acknowledged: true,
  insertedId: ObjectId("6539fddc2068c08d2f8080d7")
}

```

```
te31485db> db.teachers.find()
```

```

[
  {
    _id: ObjectId("6539fddc2068c08d2f8080d7"),
    name: 'John Smith',
    qualifications: 'Ph.D. in Computer Science',
    deptno: 101,
    deptname: 'Computer Science',
    designation: 'Associate Professor',
    experience: { industry: 5, teaching: 8 },
    salary: { basic: 75000, TA: 5000, DA: 3000, HRA: 7000 },
    date_of_joining: ISODate("2020-01-15T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Machine Learning, Data Science'
  }
]

```

```
te31485db> db.teachers.insertMany([
```

```

... {
...   name: "Sarah Johnson",
...   qualifications: "M.Sc. in Chemistry",
...   deptno: 104,
...   deptname: "Chemistry",
...   designation: "Professor",
...   experience: { industry: 15, teaching: 12 },
...   salary: { basic: 90000, TA: 6000, DA: 3500, HRA: 8000 },
...   date_of_joining: ISODate("2010-06-15"),
...   appointment_nature: "Permanent",
...   area_of_expertise: "Organic Chemistry",
... },
... {
...   name: "Michael Clark",
...   qualifications: "M.Tech in Mechanical Engineering",
...   deptno: 105,
...   deptname: "Mechanical Engineering",
...   designation: "Associate Professor",
...   experience: { industry: 8, teaching: 10 },
...   salary: { basic: 85000, TA: 5500, DA: 3000, HRA: 7500 },
...   date_of_joining: ISODate("2015-04-20"),
...   appointment_nature: "Permanent",
...   area_of_expertise: "Thermodynamics, Fluid Mechanics",
... },
... {
...   name: "Emily White",
...   qualifications: "Ph.D. in History",
...   deptno: 106,
...   deptname: "History",
...   designation: "Assistant Professor",
...   experience: { industry: 2, teaching: 5 },
...   salary: { basic: 70000, TA: 4500, DA: 2800, HRA: 6000 },
...   date_of_joining: ISODate("2020-08-10"),

```

```

...  appointment_nature: "Permanent",
...  area_of_expertise: "Ancient History",
... },
... {
...   name: "Daniel Harris",
...   qualifications: "M.Tech in Civil Engineering",
...   deptno: 107,
...   deptname: "Civil Engineering",
...   designation: "Lecturer",
...   experience: { industry: 3, teaching: 4 },
...   salary: { basic: 60000, TA: 3500, DA: 2000, HRA: 5500 },
...   date_of_joining: ISODate("2022-03-05"),
...   appointment_nature: "Adhoc",
...   area_of_expertise: "Structural Engineering",
... },
... {
...   name: "Olivia Smith",
...   qualifications: "M.Sc. in Physics",
...   deptno: 108,
...   deptname: "Physics",
...   designation: "Professor",
...   experience: { industry: 12, teaching: 14 },
...   salary: { basic: 95000, TA: 6000, DA: 3700, HRA: 8500 },
...   date_of_joining: ISODate("2013-02-12"),
...   appointment_nature: "Permanent",
...   area_of_expertise: "Quantum Mechanics, Astrophysics",
... },
... {
...   name: "William Turner",
...   qualifications: "M.Sc. in Biology",
...   deptno: 109,
...   deptname: "Biology",
...   designation: "Associate Professor",
...   experience: { industry: 6, teaching: 8 },
...   salary: { basic: 80000, TA: 5000, DA: 3200, HRA: 7000 },
...   date_of_joining: ISODate("2016-07-25"),
...   appointment_nature: "Permanent",
...   area_of_expertise: "Genetics, Ecology",
... },
... {
...   name: "Sophia Davis",
...   qualifications: "Ph.D. in English Literature",
...   deptno: 110,
...   deptname: "English",
...   designation: "Assistant Professor",
...   experience: { industry: 1, teaching: 4 },
...   salary: { basic: 72000, TA: 4600, DA: 2900, HRA: 6200 },
...   date_of_joining: ISODate("2021-10-08"),
...   appointment_nature: "Permanent",
...   area_of_expertise: "Victorian Literature",
... },
... {
...   name: "Alexander Brown",
...   qualifications: "M.Tech in Electrical Engineering",
...   deptno: 111,
...   deptname: "Electrical Engineering",
...   designation: "Lecturer",
...   experience: { industry: 4, teaching: 5 },
...   salary: { basic: 61000, TA: 3600, DA: 2100, HRA: 5600 },
...   date_of_joining: ISODate("2019-05-15"),

```

```

...   appointment_nature: "Permanent",
...   area_of_expertise: "Power Systems",
... },
... {
...   name: "Ava Wilson",
...   qualifications: "M.Sc. in Psychology",
...   deptno: 112,
...   deptname: "Psychology",
...   designation: "Professor",
...   experience: { industry: 10, teaching: 11 },
...   salary: { basic: 92000, TA: 5900, DA: 3600, HRA: 7800 },
...   date_of_joining: ISODate("2012-12-01"),
...   appointment_nature: "Permanent",
...   area_of_expertise: "Cognitive Psychology, Abnormal Psychology",
... },
... {
...   name: "James Taylor",
...   qualifications: "M.Tech in Chemical Engineering",
...   deptno: 113,
...   deptname: "Chemical Engineering",
...   designation: "Associate Professor",
...   experience: { industry: 7, teaching: 9 },
...   salary: { basic: 82000, TA: 5400, DA: 3100, HRA: 6800 },
...   date_of_joining: ISODate("2017-04-18"),
...   appointment_nature: "Permanent",
...   area_of_expertise: "Chemical Process Design",
... }
... ])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId("6539fe062068c08d2f8080d8"),
    '1': ObjectId("6539fe062068c08d2f8080d9"),
    '2': ObjectId("6539fe062068c08d2f8080da"),
    '3': ObjectId("6539fe062068c08d2f8080db"),
    '4': ObjectId("6539fe062068c08d2f8080dc"),
    '5': ObjectId("6539fe062068c08d2f8080dd"),
    '6': ObjectId("6539fe062068c08d2f8080de"),
    '7': ObjectId("6539fe062068c08d2f8080df"),
    '8': ObjectId("6539fe062068c08d2f8080e0"),
    '9': ObjectId("6539fe062068c08d2f8080e1")
  }
}

```

```

te31485db> db.teachers.find()
[
  {
    _id: ObjectId("6539fddc2068c08d2f8080d7"),
    name: 'John Smith',
    qualifications: 'Ph.D. in Computer Science',
    deptno: 101,
    deptname: 'Computer Science',
    designation: 'Associate Professor',
    experience: { industry: 5, teaching: 8 },
    salary: { basic: 75000, TA: 5000, DA: 3000, HRA: 7000 },
    date_of_joining: ISODate("2020-01-15T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Machine Learning, Data Science'
  },
  {

```

```

_id: ObjectId("6539fe062068c08d2f8080d8"),
name: 'Sarah Johnson',
qualifications: 'M.Sc. in Chemistry',
deptno: 104,
deptname: 'Chemistry',
designation: 'Professor',
experience: { industry: 15, teaching: 12 },
salary: { basic: 90000, TA: 6000, DA: 3500, HRA: 8000 },
date_of_joining: ISODate("2010-06-15T00:00:00.000Z"),
appointment_nature: 'Permanent',
area_of_expertise: 'Organic Chemistry'
},
{
_id: ObjectId("6539fe062068c08d2f8080d9"),
name: 'Michael Clark',
qualifications: 'M.Tech in Mechanical Engineering',
deptno: 105,
deptname: 'Mechanical Engineering',
designation: 'Associate Professor',
experience: { industry: 8, teaching: 10 },
salary: { basic: 85000, TA: 5500, DA: 3000, HRA: 7500 },
date_of_joining: ISODate("2015-04-20T00:00:00.000Z"),
appointment_nature: 'Permanent',
area_of_expertise: 'Thermodynamics, Fluid Mechanics'
},
{
_id: ObjectId("6539fe062068c08d2f8080da"),
name: 'Emily White',
qualifications: 'Ph.D. in History',
deptno: 106,
deptname: 'History',
designation: 'Assistant Professor',
experience: { industry: 2, teaching: 5 },
salary: { basic: 70000, TA: 4500, DA: 2800, HRA: 6000 },
date_of_joining: ISODate("2020-08-10T00:00:00.000Z"),
appointment_nature: 'Permanent',
area_of_expertise: 'Ancient History'
},
{
_id: ObjectId("6539fe062068c08d2f8080db"),
name: 'Daniel Harris',
qualifications: 'M.Tech in Civil Engineering',
deptno: 107,
deptname: 'Civil Engineering',
designation: 'Lecturer',
experience: { industry: 3, teaching: 4 },
salary: { basic: 60000, TA: 3500, DA: 2000, HRA: 5500 },
date_of_joining: ISODate("2022-03-05T00:00:00.000Z"),
appointment_nature: 'Adhoc',
area_of_expertise: 'Structural Engineering'
},
{
_id: ObjectId("6539fe062068c08d2f8080dc"),
name: 'Olivia Smith',
qualifications: 'M.Sc. in Physics',
deptno: 108,
deptname: 'Physics',
designation: 'Professor',
experience: { industry: 12, teaching: 14 },
salary: { basic: 95000, TA: 6000, DA: 3700, HRA: 8500 },

```

```

date_of_joining: ISODate("2013-02-12T00:00:00.000Z"),
appointment_nature: 'Permanent',
area_of_expertise: 'Quantum Mechanics, Astrophysics'
},
{
  _id: ObjectId("6539fe062068c08d2f8080dd"),
  name: 'William Turner',
  qualifications: 'M.Sc. in Biology',
  deptno: 109,
  deptname: 'Biology',
  designation: 'Associate Professor',
  experience: { industry: 6, teaching: 8 },
  salary: { basic: 80000, TA: 5000, DA: 3200, HRA: 7000 },
  date_of_joining: ISODate("2016-07-25T00:00:00.000Z"),
  appointment_nature: 'Permanent',
  area_of_expertise: 'Genetics, Ecology'
},
{
  _id: ObjectId("6539fe062068c08d2f8080de"),
  name: 'Sophia Davis',
  qualifications: 'Ph.D. in English Literature',
  deptno: 110,
  deptname: 'English',
  designation: 'Assistant Professor',
  experience: { industry: 1, teaching: 4 },
  salary: { basic: 72000, TA: 4600, DA: 2900, HRA: 6200 },
  date_of_joining: ISODate("2021-10-08T00:00:00.000Z"),
  appointment_nature: 'Permanent',
  area_of_expertise: 'Victorian Literature'
},
{
  _id: ObjectId("6539fe062068c08d2f8080df"),
  name: 'Alexander Brown',
  qualifications: 'M.Tech in Electrical Engineering',
  deptno: 111,
  deptname: 'Electrical Engineering',
  designation: 'Lecturer',
  experience: { industry: 4, teaching: 5 },
  salary: { basic: 61000, TA: 3600, DA: 2100, HRA: 5600 },
  date_of_joining: ISODate("2019-05-15T00:00:00.000Z"),
  appointment_nature: 'Permanent',
  area_of_expertise: 'Power Systems'
},
{
  _id: ObjectId("6539fe062068c08d2f8080e0"),
  name: 'Ava Wilson',
  qualifications: 'M.Sc. in Psychology',
  deptno: 112,
  deptname: 'Psychology',
  designation: 'Professor',
  experience: { industry: 10, teaching: 11 },
  salary: { basic: 92000, TA: 5900, DA: 3600, HRA: 7800 },
  date_of_joining: ISODate("2012-12-01T00:00:00.000Z"),
  appointment_nature: 'Permanent',
  area_of_expertise: 'Cognitive Psychology, Abnormal Psychology'
},
{
  _id: ObjectId("6539fe062068c08d2f8080e1"),
  name: 'James Taylor',
  qualifications: 'M.Tech in Chemical Engineering',

```

```
deptno: 113,  
deptname: 'Chemical Engineering',  
designation: 'Associate Professor',  
experience: { industry: 7, teaching: 9 },  
salary: { basic: 82000, TA: 5400, DA: 3100, HRA: 6800 },  
date_of_joining: ISODate("2017-04-18T00:00:00.000Z"),  
appointment_nature: 'Permanent',  
area_of_expertise: 'Chemical Process Design'  
}  
]
```

31485 Ashwin Taras

```

te31485db> db.teachers.find({})
[
  {
    _id: ObjectId("6539fddc2068c08d2f8080d7"),
    name: 'John Smith',
    qualifications: 'Ph.D. in Computer Science',
    deptno: 101,
    deptname: 'Computer Science',
    designation: 'Associate Professor',
    experience: { industry: 5, teaching: 8 },
    salary: { basic: 75000, TA: 5000, DA: 3000, HRA: 7000 },
    date_of_joining: ISODate("2020-01-15T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Machine Learning, Data Science'
  },
  {
    _id: ObjectId("6539fe062068c08d2f8080d8"),
    name: 'Sarah Johnson',
    qualifications: 'M.Sc. in Chemistry',
    deptno: 104,
    deptname: 'Chemistry',
    designation: 'Professor',
    experience: { industry: 15, teaching: 12 },
    salary: { basic: 90000, TA: 6000, DA: 3500, HRA: 8000 },
    date_of_joining: ISODate("2010-06-15T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Organic Chemistry'
  },
  {
    _id: ObjectId("6539fe062068c08d2f8080d9"),
    name: 'Michael Clark',
    qualifications: 'M.Tech in Mechanical Engineering',
    deptno: 105,
    deptname: 'Mechanical Engineering',
    designation: 'Associate Professor',
    experience: { industry: 8, teaching: 10 },
    salary: { basic: 85000, TA: 5500, DA: 3000, HRA: 7500 },
    date_of_joining: ISODate("2015-04-20T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Thermodynamics, Fluid Mechanics'
  },
  {
    _id: ObjectId("6539fe062068c08d2f8080da"),
    name: 'Emily White',
    qualifications: 'Ph.D. in History',
    deptno: 106,
    deptname: 'History',
    designation: 'Assistant Professor',
    experience: { industry: 2, teaching: 5 },
    salary: { basic: 70000, TA: 4500, DA: 2800, HRA: 6000 },
    date_of_joining: ISODate("2020-08-10T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Ancient History'
  },
  {
    _id: ObjectId("6539fe062068c08d2f8080db"),
    name: 'Daniel Harris',
    qualifications: 'M.Tech in Civil Engineering',
    deptno: 107,

```



```

deptname: 'Civil Engineering',
designation: 'Lecturer',
experience: { industry: 3, teaching: 4 },
salary: { basic: 60000, TA: 3500, DA: 2000, HRA: 5500 },
date_of_joining: ISODate("2022-03-05T00:00:00.000Z"),
appointment_nature: 'Adhoc',
area_of_expertise: 'Structural Engineering'
},
{
  _id: ObjectId("6539fe062068c08d2f8080dc"),
  name: 'Olivia Smith',
  qualifications: 'M.Sc. in Physics',
  deptno: 108,
  deptname: 'Physics',
  designation: 'Professor',
  experience: { industry: 12, teaching: 14 },
  salary: { basic: 95000, TA: 6000, DA: 3700, HRA: 8500 },
  date_of_joining: ISODate("2013-02-12T00:00:00.000Z"),
  appointment_nature: 'Permanent',
  area_of_expertise: 'Quantum Mechanics, Astrophysics'
},
{
  _id: ObjectId("6539fe062068c08d2f8080dd"),
  name: 'William Turner',
  qualifications: 'M.Sc. in Biology',
  deptno: 109,
  deptname: 'Biology',
  designation: 'Associate Professor',
  experience: { industry: 6, teaching: 8 },
  salary: { basic: 80000, TA: 5000, DA: 3200, HRA: 7000 },
  date_of_joining: ISODate("2016-07-25T00:00:00.000Z"),
  appointment_nature: 'Permanent',
  area_of_expertise: 'Genetics, Ecology'
},
{
  _id: ObjectId("6539fe062068c08d2f8080de"),
  name: 'Sophia Davis',
  qualifications: 'Ph.D. in English Literature',
  deptno: 110,
  deptname: 'English',
  designation: 'Assistant Professor',
  experience: { industry: 1, teaching: 4 },
  salary: { basic: 72000, TA: 4600, DA: 2900, HRA: 6200 },
  date_of_joining: ISODate("2021-10-08T00:00:00.000Z"),
  appointment_nature: 'Permanent',
  area_of_expertise: 'Victorian Literature'
},
{
  _id: ObjectId("6539fe062068c08d2f8080df"),
  name: 'Alexander Brown',
  qualifications: 'M.Tech in Electrical Engineering',
  deptno: 111,
  deptname: 'Electrical Engineering',
  designation: 'Lecturer',
  experience: { industry: 4, teaching: 5 },
  salary: { basic: 61000, TA: 3600, DA: 2100, HRA: 5600 },
  date_of_joining: ISODate("2019-05-15T00:00:00.000Z"),
  appointment_nature: 'Permanent',
  area_of_expertise: 'Power Systems'
},

```

```

{
  _id: ObjectId("6539fe062068c08d2f8080e0"),
  name: 'Ava Wilson',
  qualifications: 'M.Sc. in Psychology',
  deptno: 112,
  deptname: 'Psychology',
  designation: 'Professor',
  experience: { industry: 10, teaching: 11 },
  salary: { basic: 92000, TA: 5900, DA: 3600, HRA: 7800 },
  date_of_joining: ISODate("2012-12-01T00:00:00.000Z"),
  appointment_nature: 'Permanent',
  area_of_expertise: 'Cognitive Psychology, Abnormal Psychology'
},
{
  _id: ObjectId("6539fe062068c08d2f8080e1"),
  name: 'James Taylor',
  qualifications: 'M.Tech in Chemical Engineering',
  deptno: 113,
  deptname: 'Chemical Engineering',
  designation: 'Associate Professor',
  experience: { industry: 7, teaching: 9 },
  salary: { basic: 82000, TA: 5400, DA: 3100, HRA: 6800 },
  date_of_joining: ISODate("2017-04-18T00:00:00.000Z"),
  appointment_nature: 'Permanent',
  area_of_expertise: 'Chemical Process Design'
}
]

```

```
te31485db> db.teachers.find({}).pretty()
```

```

[
  {
    _id: ObjectId("6539fddc2068c08d2f8080d7"),
    name: 'John Smith',
    qualifications: 'Ph.D. in Computer Science',
    deptno: 101,
    deptname: 'Computer Science',
    designation: 'Associate Professor',
    experience: { industry: 5, teaching: 8 },
    salary: { basic: 75000, TA: 5000, DA: 3000, HRA: 7000 },
    date_of_joining: ISODate("2020-01-15T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Machine Learning, Data Science'
  },
  {
    _id: ObjectId("6539fe062068c08d2f8080d8"),
    name: 'Sarah Johnson',
    qualifications: 'M.Sc. in Chemistry',
    deptno: 104,
    deptname: 'Chemistry',
    designation: 'Professor',
    experience: { industry: 15, teaching: 12 },
    salary: { basic: 90000, TA: 6000, DA: 3500, HRA: 8000 },
    date_of_joining: ISODate("2010-06-15T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Organic Chemistry'
  },
  {
    _id: ObjectId("6539fe062068c08d2f8080d9"),
    name: 'Michael Clark',

```

```

qualifications: 'M.Tech in Mechanical Engineering',
deptno: 105,
deptname: 'Mechanical Engineering',
designation: 'Associate Professor',
experience: { industry: 8, teaching: 10 },
salary: { basic: 85000, TA: 5500, DA: 3000, HRA: 7500 },
date_of_joining: ISODate("2015-04-20T00:00:00.000Z"),
appointment_nature: 'Permanent',
area_of_expertise: 'Thermodynamics, Fluid Mechanics'
},
{
  _id: ObjectId("6539fe062068c08d2f8080da"),
  name: 'Emily White',
  qualifications: 'Ph.D. in History',
  deptno: 106,
  deptname: 'History',
  designation: 'Assistant Professor',
  experience: { industry: 2, teaching: 5 },
  salary: { basic: 70000, TA: 4500, DA: 2800, HRA: 6000 },
  date_of_joining: ISODate("2020-08-10T00:00:00.000Z"),
  appointment_nature: 'Permanent',
  area_of_expertise: 'Ancient History'
},
{
  _id: ObjectId("6539fe062068c08d2f8080db"),
  name: 'Daniel Harris',
  qualifications: 'M.Tech in Civil Engineering',
  deptno: 107,
  deptname: 'Civil Engineering',
  designation: 'Lecturer',
  experience: { industry: 3, teaching: 4 },
  salary: { basic: 60000, TA: 3500, DA: 2000, HRA: 5500 },
  date_of_joining: ISODate("2022-03-05T00:00:00.000Z"),
  appointment_nature: 'Adhoc',
  area_of_expertise: 'Structural Engineering'
},
{
  _id: ObjectId("6539fe062068c08d2f8080dc"),
  name: 'Olivia Smith',
  qualifications: 'M.Sc. in Physics',
  deptno: 108,
  deptname: 'Physics',
  designation: 'Professor',
  experience: { industry: 12, teaching: 14 },
  salary: { basic: 95000, TA: 6000, DA: 3700, HRA: 8500 },
  date_of_joining: ISODate("2013-02-12T00:00:00.000Z"),
  appointment_nature: 'Permanent',
  area_of_expertise: 'Quantum Mechanics, Astrophysics'
},
{
  _id: ObjectId("6539fe062068c08d2f8080dd"),
  name: 'William Turner',
  qualifications: 'M.Sc. in Biology',
  deptno: 109,
  deptname: 'Biology',
  designation: 'Associate Professor',
  experience: { industry: 6, teaching: 8 },
  salary: { basic: 80000, TA: 5000, DA: 3200, HRA: 7000 },
  date_of_joining: ISODate("2016-07-25T00:00:00.000Z"),
  appointment_nature: 'Permanent',

```

```

    area_of_expertise: 'Genetics, Ecology'
  },
  {
    _id: ObjectId("6539fe062068c08d2f8080de"),
    name: 'Sophia Davis',
    qualifications: 'Ph.D. in English Literature',
    deptno: 110,
    deptname: 'English',
    designation: 'Assistant Professor',
    experience: { industry: 1, teaching: 4 },
    salary: { basic: 72000, TA: 4600, DA: 2900, HRA: 6200 },
    date_of_joining: ISODate("2021-10-08T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Victorian Literature'
  },
  {
    _id: ObjectId("6539fe062068c08d2f8080df"),
    name: 'Alexander Brown',
    qualifications: 'M.Tech in Electrical Engineering',
    deptno: 111,
    deptname: 'Electrical Engineering',
    designation: 'Lecturer',
    experience: { industry: 4, teaching: 5 },
    salary: { basic: 61000, TA: 3600, DA: 2100, HRA: 5600 },
    date_of_joining: ISODate("2019-05-15T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Power Systems'
  },
  {
    _id: ObjectId("6539fe062068c08d2f8080e0"),
    name: 'Ava Wilson',
    qualifications: 'M.Sc. in Psychology',
    deptno: 112,
    deptname: 'Psychology',
    designation: 'Professor',
    experience: { industry: 10, teaching: 11 },
    salary: { basic: 92000, TA: 5900, DA: 3600, HRA: 7800 },
    date_of_joining: ISODate("2012-12-01T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Cognitive Psychology, Abnormal Psychology'
  },
  {
    _id: ObjectId("6539fe062068c08d2f8080e1"),
    name: 'James Taylor',
    qualifications: 'M.Tech in Chemical Engineering',
    deptno: 113,
    deptname: 'Chemical Engineering',
    designation: 'Associate Professor',
    experience: { industry: 7, teaching: 9 },
    salary: { basic: 82000, TA: 5400, DA: 3100, HRA: 6800 },
    date_of_joining: ISODate("2017-04-18T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Chemical Process Design'
  }
]

```

```

te31485db> db.teachers.find({ deptname: "Computer Science" })

```

```

[
  {

```

```

    _id: ObjectId("6539fddc2068c08d2f8080d7"),
    name: 'John Smith',
    qualifications: 'Ph.D. in Computer Science',
    deptno: 101,
    deptname: 'Computer Science',
    designation: 'Associate Professor',
    experience: { industry: 5, teaching: 8 },
    salary: { basic: 75000, TA: 5000, DA: 3000, HRA: 7000 },
    date_of_joining: ISODate("2020-01-15T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Machine Learning, Data Science'
  }
]

```

```

te31485db> db.teachers.find({
...   deptname: { $in: ["Computer Science", "IT", "First Year"] }
... })

```

```

[
  {
    _id: ObjectId("6539fddc2068c08d2f8080d7"),
    name: 'John Smith',
    qualifications: 'Ph.D. in Computer Science',
    deptno: 101,
    deptname: 'Computer Science',
    designation: 'Associate Professor',
    experience: { industry: 5, teaching: 8 },
    salary: { basic: 75000, TA: 5000, DA: 3000, HRA: 7000 },
    date_of_joining: ISODate("2020-01-15T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Machine Learning, Data Science'
  }
]

```

```

te31485db> db.teachers.find({
...   deptname: { $in: ["Computer Science", "IT", "E&TC"] },
...   "salary.basic": { $gte: 70000, $lte: 100000 }
... })

```

```

[
  {
    _id: ObjectId("6539fddc2068c08d2f8080d7"),
    name: 'John Smith',
    qualifications: 'Ph.D. in Computer Science',
    deptno: 101,
    deptname: 'Computer Science',
    designation: 'Associate Professor',
    experience: { industry: 5, teaching: 8 },
    salary: { basic: 75000, TA: 5000, DA: 3000, HRA: 7000 },
    date_of_joining: ISODate("2020-01-15T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Machine Learning, Data Science'
  }
]

```

```

te31485db> db.teachers.update(
...   { name: "James Taylor" },
...   {
...     $set: {
...       experience: { industry: 10, teaching: 10 },
...     },
...     { upsert: true }
...   )

```

DeprecationWarning: Collection.update() is deprecated. Use updateOne, updateMany, or bulkWrite.

```

{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
te31485db> db.teachers.updateOne(
... { name: "James Taylor" },
... {
...   $set: {
...     experience: { industry: 10, teaching: 10 },
...   }
... },
... { upsert: true }
... )
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 0,
  upsertedCount: 0
}
te31485db> db.teachers.find({}, { _id: 0, name: 1, "experience.teaching": 1 }).sort({ "experience.teaching": -1
})
[
  { name: 'Olivia Smith', experience: { teaching: 14 } },
  { name: 'Sarah Johnson', experience: { teaching: 12 } },
  { name: 'Ava Wilson', experience: { teaching: 11 } },
  { name: 'Michael Clark', experience: { teaching: 10 } },
  { name: 'James Taylor', experience: { teaching: 10 } },
  { name: 'John Smith', experience: { teaching: 8 } },
  { name: 'William Turner', experience: { teaching: 8 } },
  { name: 'Emily White', experience: { teaching: 5 } },
  { name: 'Alexander Brown', experience: { teaching: 5 } },
  { name: 'Daniel Harris', experience: { teaching: 4 } },
  { name: 'Sophia Davis', experience: { teaching: 4 } }
]
te31485db> db.teachers.save({
... name: "New Teacher",
... qualifications: "M.Sc. in Physics",
... })
TypeError: db.teachers.save is not a function
te31485db> db.teachers.update(
... { "experience.teaching": { $gte: 10 } },
... { $set: { designation: "Professor" } },
... { multi: true }
... )
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 5,
  modifiedCount: 2,
  upsertedCount: 0
}
te31485db> db.teachers.find({}).forEach(function(teacher) {
... teacher.designation = "Professor";
... db.teachers.save(teacher);
... })
TypeError: db.teachers.save is not a function

```

```

te31485db> db.teachers.deleteMany({ appointment_nature: "adhoc" })
{ acknowledged: true, deletedCount: 0 }
te31485db> db.teachers.find().sort({ "experience.teaching": 1 }).limit(3).pretty()
[
  {
    _id: ObjectId("6539fe062068c08d2f8080de"),
    name: 'Sophia Davis',
    qualifications: 'Ph.D. in English Literature',
    deptno: 110,
    deptname: 'English',
    designation: 'Assistant Professor',
    experience: { industry: 1, teaching: 4 },
    salary: { basic: 72000, TA: 4600, DA: 2900, HRA: 6200 },
    date_of_joining: ISODate("2021-10-08T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Victorian Literature'
  },
  {
    _id: ObjectId("6539fe062068c08d2f8080db"),
    name: 'Daniel Harris',
    qualifications: 'M.Tech in Civil Engineering',
    deptno: 107,
    deptname: 'Civil Engineering',
    designation: 'Lecturer',
    experience: { industry: 3, teaching: 4 },
    salary: { basic: 60000, TA: 3500, DA: 2000, HRA: 5500 },
    date_of_joining: ISODate("2022-03-05T00:00:00.000Z"),
    appointment_nature: 'Adhoc',
    area_of_expertise: 'Structural Engineering'
  },
  {
    _id: ObjectId("6539fe062068c08d2f8080da"),
    name: 'Emily White',
    qualifications: 'Ph.D. in History',
    deptno: 106,
    deptname: 'History',
    designation: 'Assistant Professor',
    experience: { industry: 2, teaching: 5 },
    salary: { basic: 70000, TA: 4500, DA: 2800, HRA: 6000 },
    date_of_joining: ISODate("2020-08-10T00:00:00.000Z"),
    appointment_nature: 'Permanent',
    area_of_expertise: 'Ancient History'
  }
]
te31485db>

```

---

31485 Ashwin Taras