

MongoDB Task

Design database for Zen class programme

Created Database and added collection named “users”

```
>_MONGOSH
> db.users.insertMany([
  { userid: 1, name: "Sheldon", email: "Sheldon@gmail.com" },
  { userid: 2, name: "Leonard", email: "Leonard@gmail.com" },
  { userid: 3, name: "Howard", email: "Howard@gmail.com" },
  { userid: 4, name: "Raj", email: "Raj@gmail.com" },
  { userid: 5, name: "Penny", email: "Penny@gmail.com" } ])
< {
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('667556d5b374422b9667625a'),
    '1': ObjectId('667556d5b374422b9667625b'),
    '2': ObjectId('667556d5b374422b9667625c'),
    '3': ObjectId('667556d5b374422b9667625d'),
    '4': ObjectId('667556d5b374422b9667625e')
  }
}
```

Created a new collection named “codekata” and inserted data

```
>_MONGOSH
> db.createCollection("codekata");
db.codekata.insertMany([
  { userid: 1, problems: 50 },
  { userid: 2, problems: 60 },
  { userid: 3, problems: 90 },
  { userid: 4, problems: 51 },
  { userid: 5, problems: 61 }
])
< {
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('66755736b374422b9667625f'),
    '1': ObjectId('66755736b374422b96676260'),
    '2': ObjectId('66755736b374422b96676261'),
    '3': ObjectId('66755736b374422b96676262'),
    '4': ObjectId('66755736b374422b96676263')
  }
}
```

Created a new collection named “attendance” and inserted data

```
>_MONGOSH
> db.createCollection("attendance");
db.attendance.insertMany([
  { userid: 1, topicid: 2, attended: true },
  { userid: 2, topicid: 1, attended: true },
  { userid: 3, topicid: 5, attended: false },
  { userid: 4, topicid: 3, attended: true },
  { userid: 5, topicid: 4, attended: false }
])
< {
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('66755859b374422b96676264'),
    '1': ObjectId('66755859b374422b96676265'),
    '2': ObjectId('66755859b374422b96676266'),
    '3': ObjectId('66755859b374422b96676267'),
    '4': ObjectId('66755859b374422b96676268')
  }
}
```

Created a new collection named “topics” and inserted data

```
>_MONGOSH
> db.createCollection("topics");
db.topics.insertMany([
  { topicid: 1, topic: "HTML", topic_date: new Date("18-Oct-2020") },
  { topicid: 2, topic: "CSS", topic_date: new Date("28-Oct-2020") },
  { topicid: 3, topic: "JavaScript", topic_date: new Date("05-Nov-2020") },
  { topicid: 4, topic: "ReactJS", topic_date: new Date("15-Nov-2020") },
  { topicid: 5, topic: "NodeJS", topic_date: new Date("25-Nov-2020") }
])

< {
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('667558ecb374422b96676269'),
    '1': ObjectId('667558ecb374422b9667626a'),
    '2': ObjectId('667558ecb374422b9667626b'),
    '3': ObjectId('667558ecb374422b9667626c'),
    '4': ObjectId('667558ecb374422b9667626d')
  }
}
```

Created a new collection named “tasks” and inserted data

```
>_MONGOSH
> db.createCollection("tasks");
db.tasks.insertMany([
  { taskid: 1, topicid: 1, userid: 1, task: "HTML Task", due_date: new Date("18-Oct-2020"), submitted: true },
  { taskid: 2, topicid: 2, userid: 2, task: "CSS Task", due_date: new Date("28-Oct-2020"), submitted: false },
  { taskid: 3, topicid: 3, userid: 3, task: "Javascript Task", due_date: new Date("05-Nov-2020"), submitted: true },
  { taskid: 4, topicid: 4, userid: 4, task: "React Task", due_date: new Date("15-Nov-2020"), submitted: true },
  { taskid: 5, topicid: 5, userid: 5, task: "NodeJS Task", due_date: new Date("25-Nov-2020"), submitted: false }
])

< {
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('6675593bb374422b9667626e'),
    '1': ObjectId('6675593bb374422b9667626f'),
    '2': ObjectId('6675593bb374422b96676270'),
    '3': ObjectId('6675593bb374422b96676271'),
    '4': ObjectId('6675593bb374422b96676272')
  }
}
```

Created a new collection named “company_drives” and inserted data

```
>_MONGOSH
> db.createCollection("companydrives");
db.companydrives.insertMany([
  { userid: 1, drive_date: new Date("20-Oct-2020"), company: "Meta" },
  { userid: 1, drive_date: new Date("22-Oct-2020"), company: "Amazon" },
  { userid: 2, drive_date: new Date("25-Oct-2020"), company: "Apple" },
  { userid: 3, drive_date: new Date("30-Oct-2020"), company: "Netflix" },
  { userid: 4, drive_date: new Date("05-Nov-2020"), company: "Google" }
])

< {
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('667559b9b374422b96676273'),
    '1': ObjectId('667559b9b374422b96676274'),
    '2': ObjectId('667559b9b374422b96676275'),
    '3': ObjectId('667559b9b374422b96676276'),
    '4': ObjectId('667559b9b374422b96676277')
  }
}
```

Created a new collection named “mentors” and inserted data

```
> _MONGOSH
> db.createCollection("mentors");
db.mentors.insertMany([
  { mentorid: 1, mentorname: "Stephen", mentor_email: "Stephen@gmail.com", mentee_count: 20 },
  { mentorid: 2, mentorname: "Mike", mentor_email: "Mike@gmail.com", mentee_count: 18 },
  { mentorid: 3, mentorname: "Elon", mentor_email: "Elon@gmail.com", mentee_count: 30 },
  { mentorid: 4, mentorname: "Charles", mentor_email: "Charles@gmail.com", mentee_count: 15 },
  { mentorid: 5, mentorname: "Thomas", mentor_email: "Thomas@gmail.com", mentee_count: 20 }
])
< {
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('66755a42b374422b96676278'),
    '1': ObjectId('66755a42b374422b96676279'),
    '2': ObjectId('66755a42b374422b9667627a'),
    '3': ObjectId('66755a42b374422b9667627b'),
    '4': ObjectId('66755a42b374422b9667627c')
  }
}
```

Created "DATABASE"

My Queries

Performance

Databases

TaskDay35

products

admin

config

local

zen_class

attendance

codekata

companydrives

mentors

tasks

topics

users

Search

Create collection

Refresh

View

Sort by

Collection Name

attendance

Storage size: 20.48 kB

Documents: 5

Avg. document size: 58.00 B

Indexes: 1

Total index size: 20.48 kB

codekata

Storage size: 20.48 kB

Documents: 5

Avg. document size: 48.00 B

Indexes: 1

Total index size: 20.48 kB

companydrives

Storage size: 20.48 kB

Documents: 5

Avg. document size: 73.00 B

Indexes: 1

Total index size: 20.48 kB

mentors

Storage size: 20.48 kB

Documents: 5

Avg. document size: 111.00 B

Indexes: 1

Total index size: 20.48 kB

companydrives

Storage size: 20.48 kB

Documents: 5

Avg. document size: 73.00 B

Indexes: 1

Total index size: 20.48 kB

mentors

Storage size: 20.48 kB

Documents: 5

Avg. document size: 111.00 B

Indexes: 1

Total index size: 20.48 kB

tasks

Storage size: 20.48 kB

Documents: 5

Avg. document size: 110.00 B

Indexes: 1

Total index size: 20.48 kB

topics

Storage size: 20.48 kB

Documents: 5

Avg. document size: 73.00 B

Indexes: 1

Total index size: 20.48 kB

users

Storage size: 4.10 kB

Documents: 0

Avg. document size: 0 B

Indexes: 1

Total index size: 4.10 kB

Task Questions

1. Find all the topics and tasks which are thought in the month of October

Solution:

```
db.topics.aggregate([
{
    $lookup: {
        from: "tasks",
        localField: "topicid",
        foreignField: "topicid",
        as: "taskinfo"
    }
},
{
    $match: {
        $and: [
            { topic_date: { $gte: new Date("2020-10-01"), $lt: new Date("2020-11-01") } },
            {
                $or: [
                    { "taskinfo.due_date": { $gte: new Date("2020-10-01"), $lt: new Date("2020-11-01") } },
                    { "taskinfo.due_date": { $exists: false } }
                ]
            }
        ]
    }
}]
```

```
    },  
  
    {  
  
      $project: {  
  
        _id: 0,  
  
        topicid: 1,  
  
        topic: 1,  
  
        topic_date: 1,  
  
        tasks: "$taskinfo.task",  
  
        due_dates: "$taskinfo.due_date"  
  
      }  
  
    }  
  
  ])  
}
```

```
2020-10-17T18:30:00.000Z  
,  
  ],  
  < {  
    topicid: 1,  
    topic: 'HTML',  
    topic_date: 2020-10-17T18:30:00.000Z,  
    tasks: [  
      'HTML Task'  
    ],  
    due_dates: [  
      2020-10-17T18:30:00.000Z  
    ]  
  }  
  {  
    topicid: 2,  
    topic: 'CSS',  
    topic_date: 2020-10-27T18:30:00.000Z,  
    tasks: [  
      'CSS Task'  
    ],  
    due_dates: [  
      2020-10-27T18:30:00.000Z  
    ]  
  }  
}
```

2. Find all the company drives which appeared between 15 oct-2020 and 31-oct-2020

Solution:

```
db.companydrives.find({
  $or: [
    { drive_date: { $gte: new Date("15-oct-2020") } },
    { drive_date: { $lte: new Date("31-oct-2020") } }
  ]
})
```

```
  drive_date: 2020-10-19T18:30:00.000Z,
  company: 'Meta'
}
{
  _id: ObjectId('667559b9b374422b96676274'),
  userid: 1,
  drive_date: 2020-10-21T18:30:00.000Z,
  company: 'Amazon'
}
{
  _id: ObjectId('667559b9b374422b96676275'),
  userid: 2,
  drive_date: 2020-10-24T18:30:00.000Z,
  company: 'Apple'
}
{
  _id: ObjectId('667559b9b374422b96676276'),
  userid: 3,
  drive_date: 2020-10-29T18:30:00.000Z,
  company: 'Netflix'
}
{
  _id: ObjectId('667559b9b374422b96676277'),
  userid: 4,
  drive_date: 2020-11-04T18:30:00.000Z,
  company: 'Google'
}
```

3. Find all the company drives and students who are appeared for the placement.

Solution:

```
db.companydrives.aggregate([
  {
    $lookup: {
      from: "users",
      localField: "userid",
      foreignField: "userid",
```

```

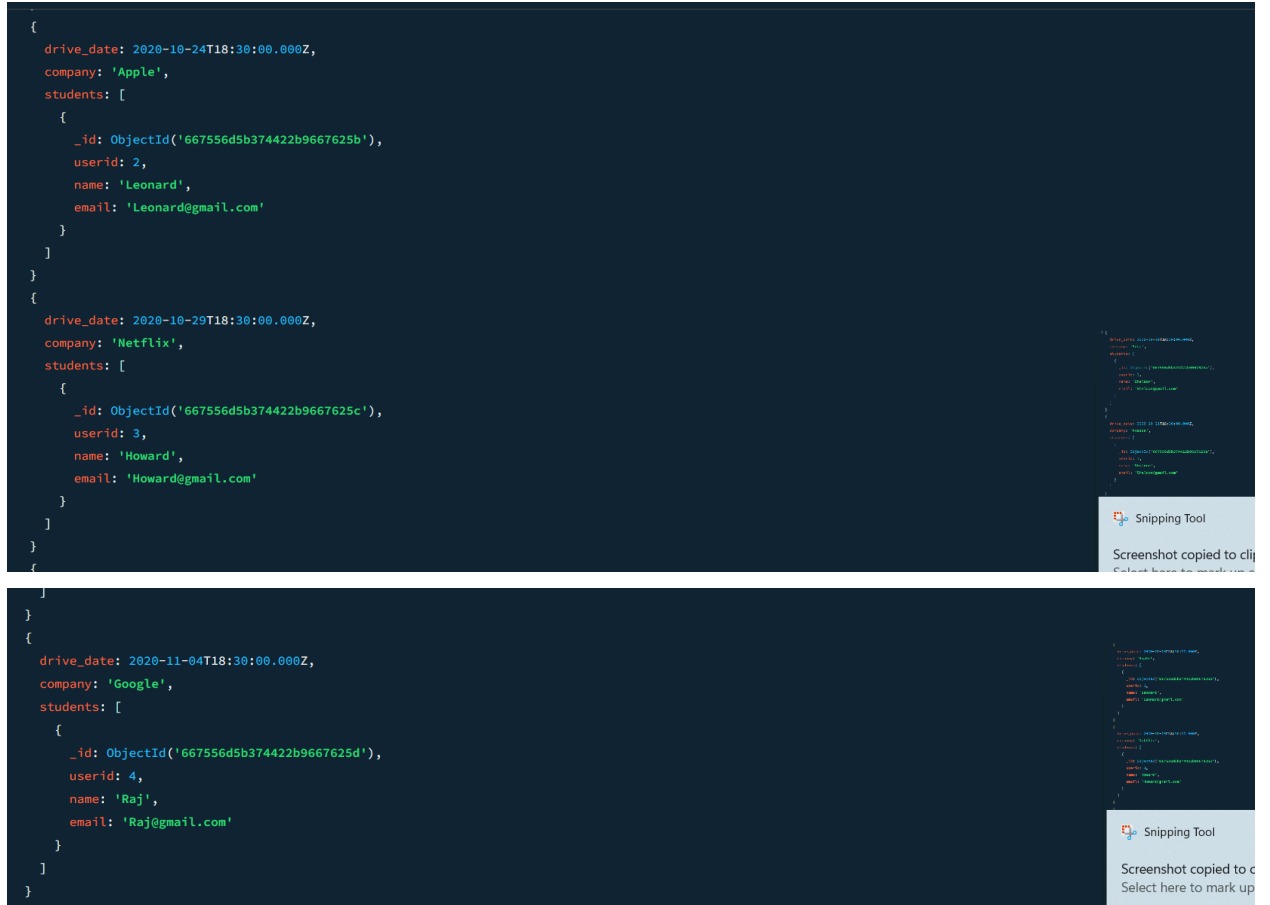
        as: "userinfo"
    }
},
{
    $project: {
        _id: 0,
        company: 1,
        drive_date: 1,
        students: "$userinfo"
    }
}
})

```

```

< {
  drive_date: 2020-10-19T18:30:00.000Z,
  company: 'Meta',
  students: [
    {
      _id: ObjectId('667556d5b374422b9667625a'),
      userid: 1,
      name: 'Sheldon',
      email: 'Sheldon@gmail.com'
    }
  ]
}
{
  drive_date: 2020-10-21T18:30:00.000Z,
  company: 'Amazon',
  students: [
    {
      _id: ObjectId('667556d5b374422b9667625a'),
      userid: 1,
      name: 'Sheldon',
      email: 'Sheldon@gmail.com'
    }
  ]
}
}

```



4. Find the number of problems solved by the user in codekata

Solution:

```
db.codekata.aggregate([
```

```
{
```

```
  $lookup: {
```

```
    from: "users",
```

```
    localField: "userid",
```

```
    foreignField: "userid",
```

```
    as: "userinfo"
```

```
  }
```

```
},
```



```
{
  $group: {
    _id: {
      userid: "$userid",
      username: "$userinfo.name"
    },
    total_problems_solved: { $sum: "$problems" }
  },
  {
    $project: {
      _id: 0,
      userid: "$_id.userid",
      username: "$_id.username",
      total_problems_solved: 1
    }
  }
}
```

])

```

MONGODB
< {
  total_problems_solved: 90,
  userid: 3,
  username: [
    'Howard'
  ]
}
{
  total_problems_solved: 61,
  userid: 5,
  username: [
    'Penny'
  ]
}
{
  total_problems_solved: 50,
  userid: 1,
  username: [
    'Sheldon'
  ]
}
{
  total_problems_solved: 51,
  userid: 4,
  username: [
    'Raj'
  ]
}
}
{
  total_problems_solved: 60,
  userid: 2,
  username: [
    'Leonard'
  ]
}
}

```

5. Find all the mentors with who has the mentee's count more than 15

Solution:

```

db.users.aggregate([

  {

    $match: { mentorid: { $exists: true } }

  },

  {

    $group: {

      _id: "$mentorid",

      mentorname: { $first: "$mentorname" },

      mentee_count: { $sum: 1 }

    }

  },


```

```

    {
$match: { mentee_count: { $gt: 15 } }

    },

    {
$project: {

    _id: 0,

    mentorid: "$_id",

    mentorname: 1,

    mentee_count: 1

}

}

})

```

```

    ]
  }
  > db.users.aggregate([
    {
      $match: { mentorid: { $exists: true } }
    },
    {
      $group: {
        _id: "$mentorid",
        mentorname: { $first: "$mentorname" },
        mentee_count: { $sum: 1 }
      }
    },
    {
      $match: { mentee_count: { $gt: 15 } }
    },
    {
      $project: {
        _id: 0,
        mentorid: "$_id",
        mentorname: 1,
        mentee_count: 1
      }
    }
  ])

```

6. Find the number of users who are absent and task is not submitted between 15 oct-2020 and 31-oct-2020

Solution:

```

db.attendance.aggregate([

{

```

```
$lookup: {
  from: "topics",
  localField: "topicid",
  foreignField: "topicid",
  as: "topics"
},
{
  $lookup: {
    from: "tasks",
    localField: "topicid",
    foreignField: "topicid",
    as: "tasks"
  },
  {
    $match: {
      attended: false,
      "tasks.submitted": false,
      $and: [
        { "topics.topic_date": { $gte: new Date("15-oct-2020") } },
        { "topics.topic_date": { $lte: new Date("31-oct-2020") } },
        { "tasks.due_date": { $gte: new Date("15-oct-2020") } },
```

```

    { "tasks.due_date": { $lte: new Date("31-oct-2020") } }

  ]

}

},

{$count: "No_of_students_absent"}}))

```

```

zen_class> db.attendance.aggregate([
  {
    $lookup: {
      from: "topics",
      localField: "topicid",
      foreignField: "topicid",
      as: "topics"
    }
  },
  {
    $lookup: {
      from: "tasks",
      localField: "topicid",
      foreignField: "topicid",
      as: "tasks"
    }
  },
  {
    $match: {
      attended: false,
      "tasks.submitted": false,
      $and: [
        { "topics.topic_date": { $gte: new Date("15-oct-2020") } },
        { "topics.topic_date": { $lte: new Date("31-oct-2020") } },
        { "tasks.due_date": { $gte: new Date("15-oct-2020") } },
        { "tasks.due_date": { $lte: new Date("31-oct-2020") } }
      ]
    }
  }
])

```