

Design Database for Zen Class Programme

Create database

Use Zen_Class

The screenshot displays the Oviya database management interface. The left sidebar shows the database structure: 'My Queries', 'Performance', 'Databases', and 'Zen_Class'. Under 'Zen_Class', the 'users' collection is highlighted. The main panel shows the 'users' collection with tabs for 'Documents', 'Aggregations', 'Schema', 'Indexes', and 'Validation'. The 'Documents' tab is active, showing a search bar and buttons for 'ADD DATA', 'EXPORT DATA', 'UPDATE', and 'DELETE'. Below the main panel, a terminal window shows the MongoDB command prompt with the following commands and output:

```
>_MONGOSH
>
> use Zen_Class
< switched to db_Zen_Class
> db.createCollection("users")
< { ok: 1 }
> db.users.insertMany([
  { userid: 1, name: "Santhosh", email: "santhosh@gmail.com" },
  { userid: 2, name: "Surya", email: "surya@gmail.com" },
  { userid: 3, name: "Shiyam", email: "shiyam@gmail.com" },
  { userid: 4, name: "Muhib", email: "muhib@gmail.com" },
  { userid: 5, name: "Surya Kumar", email: "suryakumar@gmail.com" }
])
< {
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('66780ae6e442a71a421852b4'),
    '1': ObjectId('66780ae6e442a71a421852b5'),
    '2': ObjectId('66780ae6e442a71a421852b6')
  }
}
```

Create collection and insert data – “USERS” :

```
db.users.insertMany([
  { userid: 1, name: "Santhosh", email: "santhosh@gmail.com" },
  { userid: 2, name: "Surya", email: "surya@gmail.com" },
  { userid: 3, name: "Shiyam", email: "shiyam@gmail.com" },
  { userid: 4, name: "Muhib", email: "muhib@gmail.com" },
  { userid: 5, name: "Surya Kumar", email: "suryakumar@gmail.com" }
])
```

```
use Zen_Class
switched to db Zen_Class
db.createCollection("users")
{ ok: 1 }
db.users.insertMany([
  { userid: 1, name: "Santhosh", email: "santhosh@gmail.com" },
  { userid: 2, name: "Surya", email: "surya@gmail.com" },
  { userid: 3, name: "Shiyam", email: "shiyam@gmail.com" },
  { userid: 4, name: "Muhib", email: "muhib@gmail.com" },
  { userid: 5, name: "Surya Kumar", email: "suryakumar@gmail.com" }
])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('66780ae6e442a71a421052b4'),
    '1': ObjectId('66780ae6e442a71a421052b5'),
    '2': ObjectId('66780ae6e442a71a421052b6'),
    '3': ObjectId('66780ae6e442a71a421052b7'),
    '4': ObjectId('66780ae6e442a71a421052b8')
  }
}
```

Create collection and insert data – “CODEKATA” :

```
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 }  
])
```

```
db.createCollection("codekata");  
{ ok: 1 }  
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('66780dfae442a71a421052b9'),  
    '1': ObjectId('66780dfae442a71a421052ba'),  
    '2': ObjectId('66780dfae442a71a421052bb'),  
    '3': ObjectId('66780dfae442a71a421052bc'),  
    '4': ObjectId('66780dfae442a71a421052bd')  
  }  
}  
las atlas-d8xav5-shard-0 [primary] Zen_Class>
```

Create collection and insert data – “ATTENDANCE” :

```
db.createCollection("attendance");  
db.attendance.insertMany([  
    { userid: 1, topicid: 2, attended: true },  
    { userid: 2, topicid: 1, attended: true },  
    { userid: 3, topicid: 5, attended: true },  
    { userid: 4, topicid: 3, attended: true },  
    { userid: 5, topicid: 4, attended: false }  
])
```

```
}  
}  
> db.createCollection("attendance");  
< { ok: 1 }  
> db.attendance.insertMany([  
    { userid: 1, topicid: 2, attended: true },  
    { userid: 2, topicid: 1, attended: true },  
    { userid: 3, topicid: 5, attended: true },  
    { userid: 4, topicid: 3, attended: true },  
    { userid: 5, topicid: 4, attended: false }  
])  
< {  
    acknowledged: true,  
    insertedIds: {  
        '0': ObjectId('66780eb8e442a71a421052be'),  
        '1': ObjectId('66780eb8e442a71a421052bf'),  
        '2': ObjectId('66780eb8e442a71a421052c0'),  
        '3': ObjectId('66780eb8e442a71a421052c1'),  
        '4': ObjectId('66780eb8e442a71a421052c2')  
    }  
}  
}  
Atlas atlas-d8xav5-shard-0 [primary] Zen_Class>
```

Create collection and insert data – “TOPICS” :

```
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") }  
])
```

```
> db.createCollection("topics");  
< { ok: 1 }  
> 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('66782086e442a71a421052c3'),  
        '1': ObjectId('66782086e442a71a421052c4'),  
        '2': ObjectId('66782086e442a71a421052c5'),  
        '3': ObjectId('66782086e442a71a421052c6'),  
        '4': ObjectId('66782086e442a71a421052c7')  
    }  
}  
Atlas atlas-d8xav5-shard-0 [primary] Zen_Class>
```

Create collection and insert data – “TASKS” :

```
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 }]
```

```
)
```

```
> db.createCollection("tasks");
< { ok: 1 }
> 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('6678210ae442a71a421052c8'),
    '1': ObjectId('6678210ae442a71a421052c9'),
    '2': ObjectId('6678210ae442a71a421052ca'),
    '3': ObjectId('6678210ae442a71a421052cb'),
    '4': ObjectId('6678210ae442a71a421052cc')
  }
}
```

Atlas atlas-d8xav5-shard-0 [primary] Zen_Class>

Create collection and insert data – “COMPANY DRIVES” :

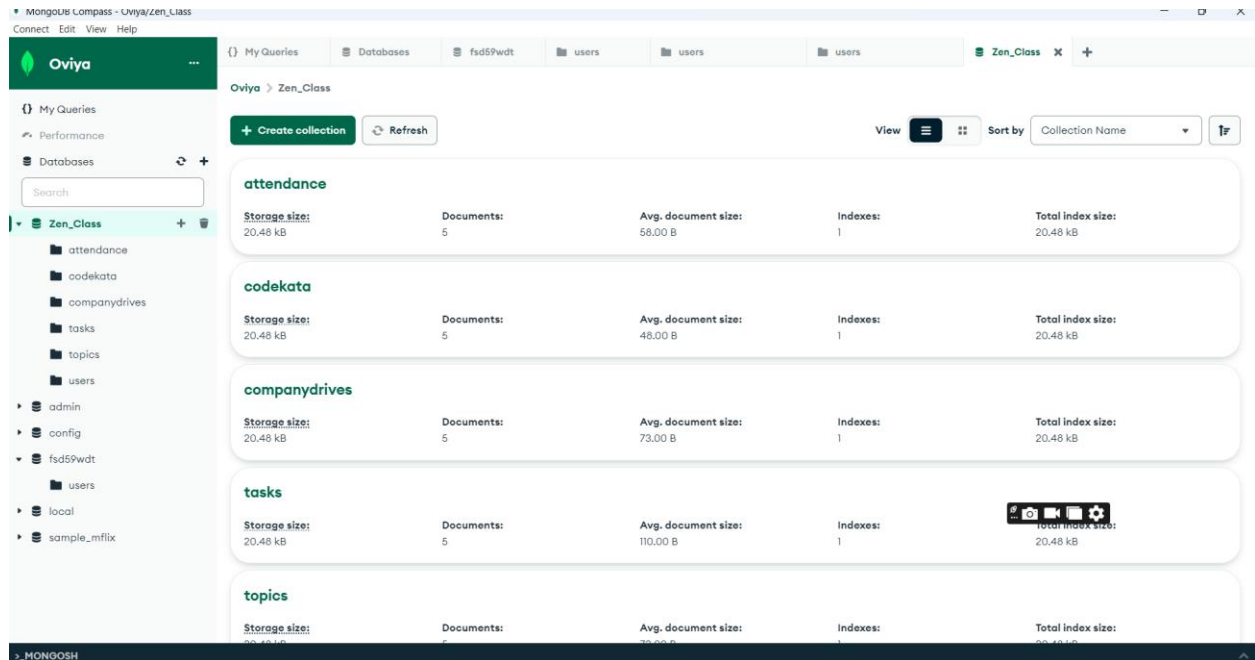
```
db.createCollection("companydrives");
```

```
db.companydrives.insertMany([
```

```
    { userid: 1, drive_date: new Date("20-Oct-2020"), company: "Apple" },
    { userid: 1, drive_date: new Date("22-Oct-2020"), company: "Amazon" },
    { userid: 2, drive_date: new Date("25-Oct-2020"), company: "TCS" },
    { userid: 3, drive_date: new Date("30-Oct-2020"), company: "Flipkart" },
    { userid: 4, drive_date: new Date("05-Nov-2020"), company: "Zomato" }
])
```

```
    }
    > db.createCollection("companydrives");
    { ok: 1 }
    > db.companydrives.insertMany([
        { userid: 1, drive_date: new Date("20-Oct-2020"), company: "Apple" },
        { userid: 1, drive_date: new Date("22-Oct-2020"), company: "Amazon" },
        { userid: 2, drive_date: new Date("25-Oct-2020"), company: "TCS" },
        { userid: 3, drive_date: new Date("30-Oct-2020"), company: "Flipkart" },
        { userid: 4, drive_date: new Date("05-Nov-2020"), company: "Zomato" }
    ])
    {
      acknowledged: true,
      insertedIds: {
        '0': ObjectId('6678215ce442a71a421052cd'),
        '1': ObjectId('6678215ce442a71a421052ce'),
        '2': ObjectId('6678215ce442a71a421052cf'),
        '3': ObjectId('6678215ce442a71a421052d0'),
        '4': ObjectId('6678215ce442a71a421052d1')
      }
    }
    atlas atlas-d8xav5-shard-0 [primary] Zen_Class>
```

CREATED DATABASE



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"
    }
}
])
```

```

< {
  topicid: 1,
  topic: 'HTML',
  topic_date: 2020-10-18T07:00:00.000Z,
  tasks: [
    'HTML Task'
  ],
  due_dates: [
    2020-10-18T07:00:00.000Z
  ]
}
{
  topicid: 2,
  topic: 'CSS',
  topic_date: 2020-10-28T07:00:00.000Z,
  tasks: [
    'CSS Task'
  ],
  due_dates: [
    2020-10-28T07:00:00.000Z
  ]
}
Atlas atlas-d8xav5-shard-0 [primary] Zen_Class>

```

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") } }
  ]
})

```

```
>_MONGOSH
< {
  _id: ObjectId('6678215ce442a71a421052cd'),
  userid: 1,
  drive_date: 2020-10-20T07:00:00.000Z,
  company: 'Apple'
}
{
  _id: ObjectId('6678215ce442a71a421052ce'),
  userid: 1,
  drive_date: 2020-10-22T07:00:00.000Z,
  company: 'Amazon'
}
{
  _id: ObjectId('6678215ce442a71a421052cf'),
  userid: 2,
  drive_date: 2020-10-25T07:00:00.000Z,
  company: 'TCS'
}
{
  _id: ObjectId('6678215ce442a71a421052d0'),
  userid: 3,
  drive_date: 2020-10-30T07:00:00.000Z,
  company: 'Flipkart'
}
```

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: 2020-10-20T07:00:00.000Z,
  company: 'Apple',
  students: [
    {
      _id: ObjectId('66780ae6e442a71a421052b4'),
      userid: 1,
      name: 'Santhosh',
      email: 'santhosh@gmail.com'
    }
  ]
}
{
  drive_date: 2020-10-22T07:00:00.000Z,
  company: 'Amazon',
  students: [
    {
      _id: ObjectId('66780ae6e442a71a421052b4'),
      userid: 1,
      name: 'Santhosh',
      email: 'santhosh@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
    }
}
])
```

```

>_MONGOSH
}
{
  total_problems_solved: 50,
  userid: 1,
  username: [
    'Santhosh'
  ]
}
{
  total_problems_solved: 61,
  userid: 5,
  username: [
    'Surya Kumar'
  ]
}
{
  total_problems_solved: 60,
  userid: 2,
  username: [
    'Surya'
  ]
}
Atlas atlas-d8xav5-shard-0 [primary] Zen_Class>

```

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",
      mentername: { $first: "$mentername" },
      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"}}))

```

```

> 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") } }
      ]
    }
  }
])

```

▪

