MongoDB Task

Design database for Zen class programme

1)Users

```
db.users.insertMany([
 { user_id: 1, name: "Jitender Kumar M", email: "jitendermaruthu@example.com",
mentee_count: 10 },
 { user_id: 2, name: "Charumathi K", email: "charumathik@example.com", mentee_count:
20 },
 { user_id: 3, name: "Nithiya K", email: "nithiya@example.com", mentee_count: 15 },
 { user_id: 4, name: "Gowtham", email: "gowtham@example.com", mentee_count: 5 },
 { user_id: 5, name: "Gokul K", email: "gokul@example.com", mentee_count: 25 },
 { user_id: 6, name: "Harish S", email: "harish@example.com", mentee_count: 12 },
 { user_id: 7, name: "Arun M", email: "arun@example.com", mentee_count: 18 },
 { user_id: 8, name: "Akash P", email: "akash@example.com", mentee_count: 8 },
 { user_id: 9, name: "Anbu M S", email: "anbu@example.com", mentee_count: 22 },
 { user_id: 10, name: "Arsath Ahamed A", email: "arsathahamed@example.com",
mentee_count: 30},
])
```

2)CodeKata

```
db.codekata.insertMany([
  { user_id: 1, problems_solved: 50 },
  { user_id: 2, problems_solved: 75 },
  { user_id: 3, problems_solved: 40 },
  { user_id: 4, problems_solved: 60 },
  { user_id: 5, problems_solved: 30 },
  { user_id: 6, problems_solved: 55 },
  { user_id: 7, problems_solved: 80 },
  { user_id: 8, problems_solved: 45 },
  { user_id: 9, problems_solved: 70 },
  { user_id: 10, problems_solved: 65 }
]);
```

3)Attendance

```
const users = [//addUserCollectionData….];

function getRandomStatus() {
  return Math.random() > 0.5 ? "present" : "absent";
}

const dates = [
  new Date("2024-09-26"),
  new Date("2024-09-27"),
  new Date("2024-09-28"),
  new Date("2024-09-29"),
  new Date("2024-09-30"),
  new Date("2024-10-01"),
  new Date("2024-10-02"),
  new Date("2024-10-03"),
  new Date("2024-10-04"),
  new Date("2024-10-05")
];

const attendanceData = [];
users.forEach(user => {
  dates.forEach(date => {
    attendanceData.push({
      user_id: user.user_id,
      date: date,
      status: getRandomStatus()
    });
  });
});

db.attendance.insertMany(attendanceData);
```

4)Topics

```
db.topics.insertMany([
  { topic_id: 1, topic_name: "HTML Basics", date: new Date("2024-09-26") },
  { topic_id: 2, topic_name: "CSS Fundamentals", date: new Date("2024-09-27") },
  { topic_id: 3, topic_name: "JavaScript Introduction", date: new Date("2024-09-28") },
  { topic_id: 4, topic_name: "Advanced JavaScript", date: new Date("2024-09-29") },
  { topic_id: 5, topic_name: "Node.js Basics", date: new Date("2024-09-30") },
  { topic_id: 6, topic_name: "Express.js Overview", date: new Date("2024-10-01") },
  { topic_id: 7, topic_name: "MongoDB Introduction", date: new Date("2024-10-02") },
  { topic_id: 8, topic_name: "React Basics", date: new Date("2024-10-03") },
  { topic_id: 9, topic_name: "React State Management", date: new Date("2024-10-04") },
  { topic_id: 10, topic_name: "MERN Stack Overview", date: new Date("2024-10-05") }
]);
```

5)Tasks

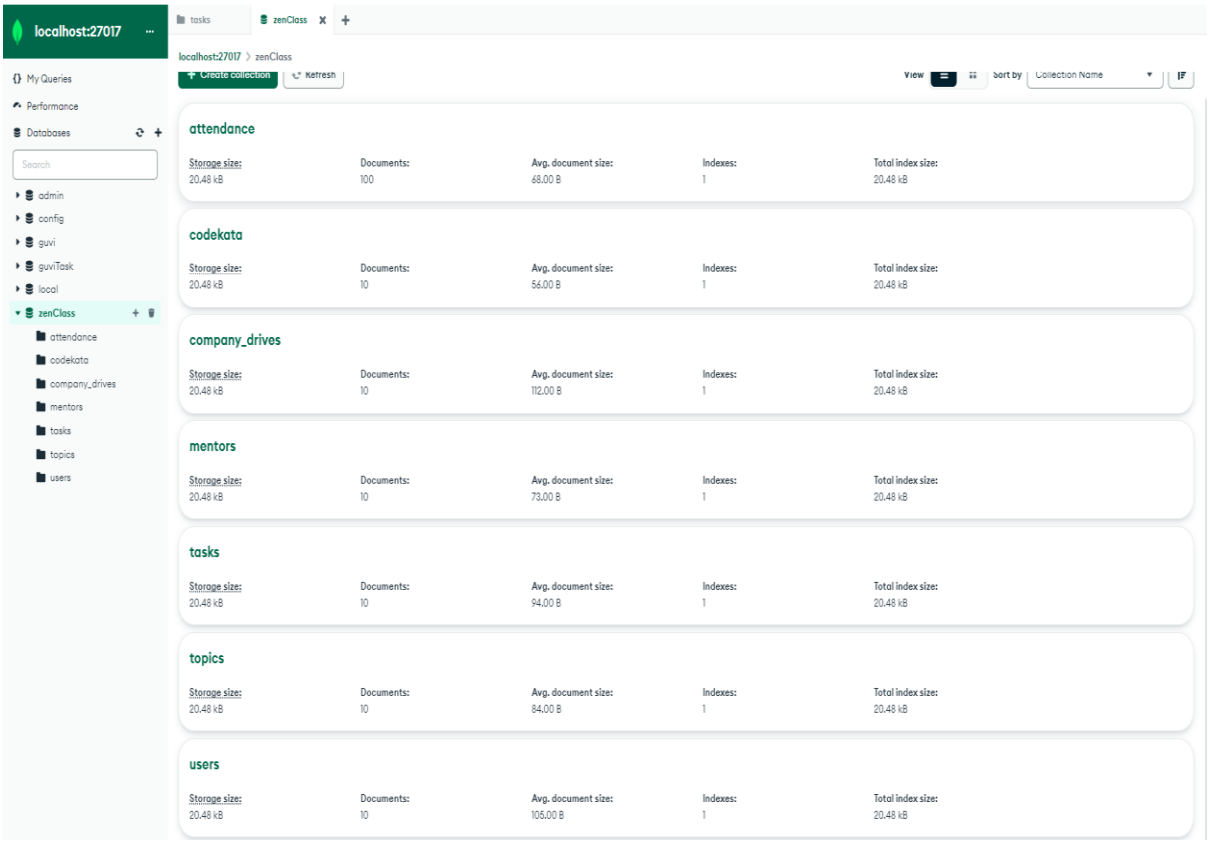
```
db.tasks.insertMany([
  { task_id: 1, task_name: "Create a simple HTML page", date: new Date("2024-09-26"), notSubmitted: [ '1','3'] },
  { task_id: 2, task_name: "Design a CSS layout", date: new Date("2024-09-27"), notSubmitted: [ '4']},
  { task_id: 3, task_name: "Write JavaScript to manipulate DOM", date: new Date("2024-09-28"), notSubmitted: [ '2','3']},
  { task_id: 4, task_name: "Implement advanced JS functions", date: new Date("2024-09-29"), notSubmitted: [ '1']},
  { task_id: 5, task_name: "Build a basic Node.js server", date: new Date("2024-09-30"), notSubmitted: [ '8']},
  { task_id: 6, task_name: "Create routes using Express.js", date: new Date("2024-10-01"), notSubmitted: [ '3','4']},
  { task_id: 7, task_name: "Perform CRUD operations in MongoDB", date: new Date("2024-10-02"), notSubmitted: [ '6']},
  { task_id: 8, task_name: "Build a simple React component", date: new Date("2024-10-03"), notSubmitted: [ '5','9']},
  { task_id: 9, task_name: "Manage state in a React app", date: new Date("2024-10-04"), notSubmitted: [ '10']},
  { task_id: 10, task_name: "Create a full MERN stack application", date: new Date("2024-10-05"), notSubmitted: [ '5']}
]);
```

6)Company Drives

```
db.company_drives.insertMany([
  { drive_id: 1, company_name: "Google", date: new Date("2024-10-16"),
students_appeared: [1, 2] },
  { drive_id: 2, company_name: "Facebook", date: new Date("2024-11-18"),
students_appeared: [3, 4] },
  { drive_id: 3, company_name: "Amazon", date: new Date("2024-11-20"),
students_appeared: [5, 6] },
  { drive_id: 4, company_name: "Microsoft", date: new Date("2024-10-22"),
students_appeared: [7, 8] },
  { drive_id: 5, company_name: "Apple", date: new Date("2024-10-24"), students_appeared:
[9, 10] },
  { drive_id: 6, company_name: "Netflix", date: new Date("2024-10-26"), students_appeared:
[1, 3] },
  { drive_id: 7, company_name: "Tesla", date: new Date("2024-11-28"), students_appeared:
[2, 4] },
  { drive_id: 8, company_name: "Adobe", date: new Date("2024-10-30"), students_appeared:
[5, 7] },
  { drive_id: 9, company_name: "IBM", date: new Date("2024-11-01"), students_appeared:
[6, 8] },
  { drive_id: 10, company_name: "Intel", date: new Date("2024-11-03"), students_appeared:
[9, 10] }
]);
```

7)Mentors

```
db.mentors.insertMany([
  { mentor_id: 1, name: "Vijat", mentee_count: 10 },
  { mentor_id: 2, name: "Saravana Kumar", mentee_count: 20 },
  { mentor_id: 3, name: "Anand", mentee_count: 15 },
  { mentor_id: 4, name: "Velavan", mentee_count: 25 },
  { mentor_id: 5, name: "Indumathi", mentee_count: 30 },
  { mentor_id: 6, name: "Ajay", mentee_count: 18 },
  { mentor_id: 7, name: "Shamini", mentee_count: 22 },
  { mentor_id: 8, name: "Karthikeyan", mentee_count: 12 },
  { mentor_id: 9, name: "Sankar", mentee_count: 28 },
  { mentor_id: 10, name: "Jenifa", mentee_count: 16 }
]);
```



Queries

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

Ans:

```
db.topics.aggregate([
 {
  $match: {
   date: {
    $gte: new Date('2024-10-01'),
    $lte: new Date('2024-10-31')
   }
  }
 },
 {
  $lookup: {
   from: "tasks",
   localField: "date",
   foreignField: "date",
   as: "task"
  }
 },
 {
  $unwind: "$task"
 },
 {
  $project: {
   _id: 0,
   topic_id: 1,
   topic_name: 1,
   date: 1,
   task_id: "$task.task_id",
   task_name: "$task.task_name"
  }
 }]).forEach(printjson);
```

2. **Find all the company drives which appeared between 1st oct-2024 and 5th-oct-2024**

Ans:

```
db.company_drives.find({
    date:{$gte:new Date("2024-10-15") ,$lte:new Date("2024-10-30")}
})
```

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

Ans : db.company_drives.find({}, { company_name: 1, students_appeared: 1 });

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

Ans: db.codekata.find({}, {_id:0, user_id: 1, problems_solved: 1 });

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

Ans: db.mentors.find({ mentee_count: { $gt: 15 } });

6. **Find the number of users who are absent and task is not submitted between 1st oct-2024 and 5th-oct-2024**

Ans:

```
db.attendance.aggregate([
 {
  $match: {
   date: {
    $gte: new Date('2024-10-01'),
    $lte: new Date('2024-10-05')
   },
   status: 'absent'
  }
 },
 {
  $lookup: {
   from: 'tasks',
   let: { user_id: '$user_id', date: '$date' },
   pipeline: [
    {
     $match: {
      $expr: {
       $and: [
        { $eq: ['$date', '$$date'] },
        { $in: ['$$user_id', '$notSubmitted'] }
       ]
      }
     }
    }
   ],
   as: 'tasks_not_submitted'
  }
 },
 {
  $match: {
```

```
      tasks_not_submitted: { $eq: [] }
    }
  },
  {
    $group: {
      _id: 0,
      count: { $sum: 1 }
    }
  }
])
```