MongoDB Task

Entities and Attributes:

1. *Users:*

- user_id (Primary Key)
- name
- email

2. *Topics:*

- topic_id (Primary Key)
- user_id (Foreign Key to `users`)
- title
- description
- start_date
- end_date

3. *Tasks:*

- task_id (Primary Key)
- user_id (Foreign Key to `users`)
- topic_id (Foreign Key to `topics`)
- title
- due_date

4. *Company Drives:*

- drive_id (Primary Key)
- company_id
- user_id (Foreign Key to `users`)
- student_placed (Boolean)
- placed_month

5. *Codekata:*

- codekata_id (Primary Key)
- user_id (Foreign Key to `users`)
- solved_problems
- pending_problems

6. *Mentors:*

- mentor_id (Primary Key)
- user_id (Foreign Key to `users`)
- mentee_count

7. *Attendance:*

- attendance_id (Primary Key)
- user_id (Foreign Key to `users`)
- absent_day
- present_days

Answer:

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

```
> db.topics.find()
< {
    _id: ObjectId('66c853218aaef10d851d84e6'),
    topic_id: 1,
    user_id: 1,
    title: 'Introduction to Programming',
    description: 'Basics of programming with Python',
    start_date: '2020-10-01',
    end_date: '2020-10-10'
  }
  {
    _id: ObjectId('66c853218aaef10d851d84e7'),
    topic_id: 2,
    user_id: 2,
    title: 'Advanced Algorithms',
    description: 'In-depth study of algorithms',
    start_date: '2020-10-15',
    end_date: '2020-10-25'
  }
  {
    _id: ObjectId('66c853218aaef10d851d84e8'),
    topic_id: 3,
    user_id: 3,
    title: 'Data Structures',
    description: 'Understanding data structures',
    start_date: '2020-11-05',
    end_date: '2020-12-15'
  }
Atlas atlas-rcfvj7-shard-0 [primary] education_platform>
```

```
> db.tasks.find()
< {
    _id: ObjectId('66c853a68aaef10d851d84eb'),
    task_id: 1,
    user_id: 1,
    topic_id: 1,
    title: 'Python Basics Assignment',
    due_date: '2020-10-05'
  }
  {
    _id: ObjectId('66c853a68aaef10d851d84ec'),
    task_id: 2,
    user_id: 2,
    topic_id: 2,
    title: 'Algorithm Complexity Analysis',
    due_date: '2020-10-20'
  }
  {
    _id: ObjectId('66c853a68aaef10d851d84ed'),
    task_id: 3,
    user_id: 3,
    topic_id: 3,
    title: 'Data Structures Implementation',
    due_date: '2020-10-12'
  }
```

```
const topics = db.topics.find({
  $or: [
    {
      start_date: {
        $gte: "2020-10-01",
        $lt: "2020-11-01"
      }
    },
    {
      end_date: {
        $gte: "2020-10-01",
        $lt: "2020-11-01"
      }
    }
  ]
}).toArray();
const tasks = db.tasks.find({
  due_date: {
    $gte: "2020-10-01",
    $lt: "2020-11-01"
  }
}).toArray();
const combinedResults = topics.concat(tasks);
printjson(combinedResults);
```

```
[
  {
    _id: ObjectId('66c853218aaef10d851d84e6'),
    topic_id: 1,
    user_id: 1,
    title: 'Introduction to Programming',
    description: 'Basics of programming with Python',
    start_date: '2020-10-01',
    end_date: '2020-10-10'
  },
  {
    _id: ObjectId('66c853218aaef10d851d84e7'),
    topic_id: 2,
    user_id: 2,
    title: 'Advanced Algorithms',
    description: 'In-depth study of algorithms',
    start_date: '2020-10-15',
    end_date: '2020-10-25'
  },
  {
    _id: ObjectId('66c853a68aaef10d851d84eb'),
    task_id: 1,
    user_id: 1,
    topic_id: 1,
    title: 'Python Basics Assignment',
    due_date: '2020-10-05'
  },
  {
    _id: ObjectId('66c853a68aaef10d851d84ed'),
    task_id: 3,
    user_id: 3,
    topic_id: 3,
    title: 'Data Structures Implementation',
    due_date: '2020-10-12'
  }
]
Atlas atlas-rcfvj7-shard-0 [primary] education_platform>
```

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

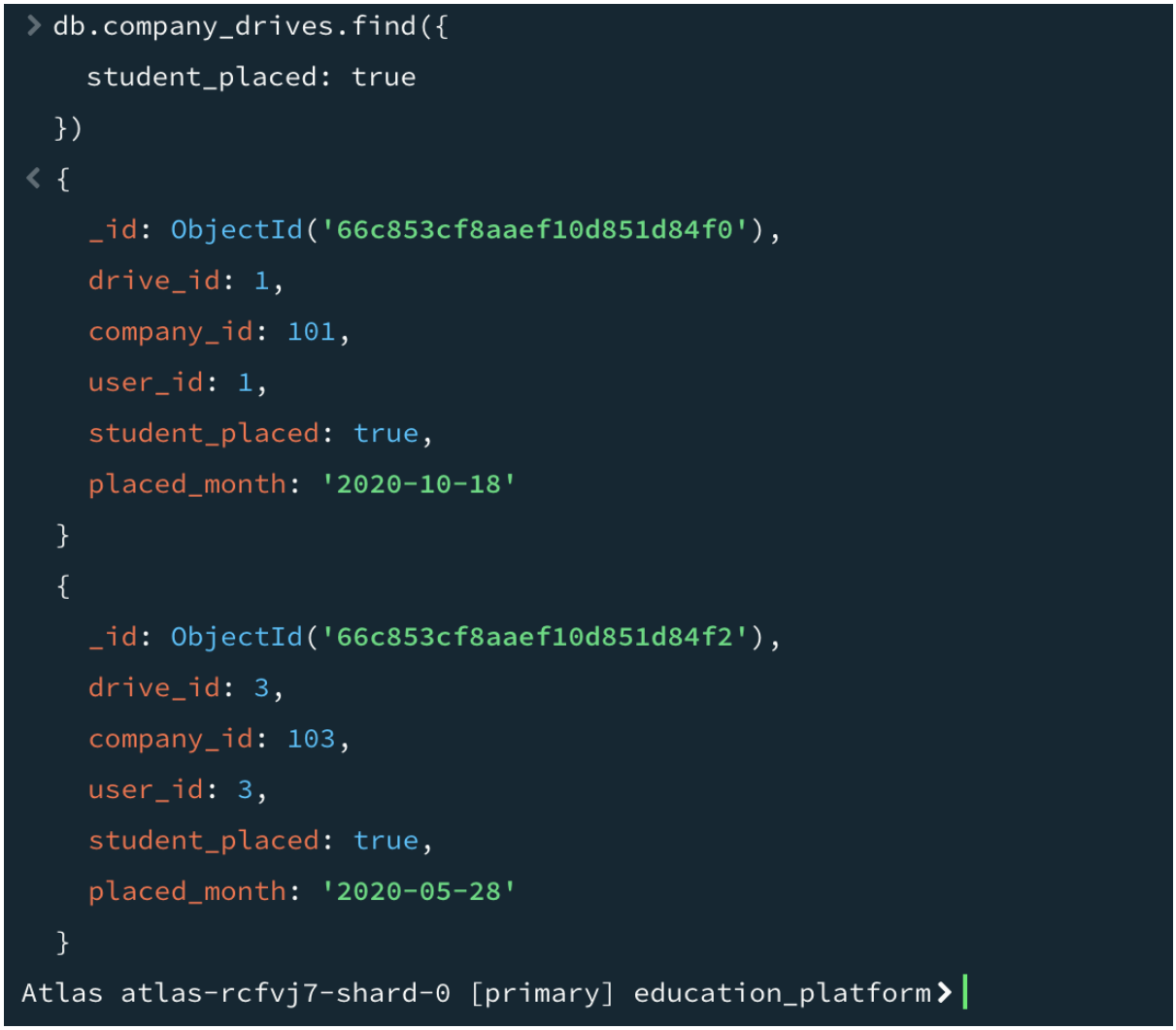
```
> db.company_drives.find()
< {
    _id: ObjectId('66c853cf8aaef10d851d84f0'),
    drive_id: 1,
    company_id: 101,
    user_id: 1,
    student_placed: true,
    placed_month: '2020-10-18'
  }
  {
    _id: ObjectId('66c853cf8aaef10d851d84f1'),
    drive_id: 2,
    company_id: 102,
    user_id: 2,
    student_placed: false,
    placed_month: '2020-12-25'
  }
  {
    _id: ObjectId('66c853cf8aaef10d851d84f2'),
    drive_id: 3,
    company_id: 103,
    user_id: 3,
    student_placed: true,
    placed_month: '2020-05-28'
  }
Atlas atlas-rcfvj7-shard-0 [primary] education_platform>
```

```
db.company_drives.find({
        placed_month: {
            $gte:  “2020-10-15”,
            $lte:  “2020-10-31”,
        }
})
```

```
> db.company_drives.find({
    placed_month: {
      $gte: "2020-10-15",
      $lte: "2020-10-31"
    }
  })
< {
    _id: ObjectId('66c853cf8aaef10d851d84f0'),
    drive_id: 1,
    company_id: 101,
    user_id: 1,
    student_placed: true,
    placed_month: '2020-10-18'
  }
Atlas atlas-rcfvj7-shard-0 [primary] education_platform>
```

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

```
db.company_drives.find({
        student_placed=true;
})
```

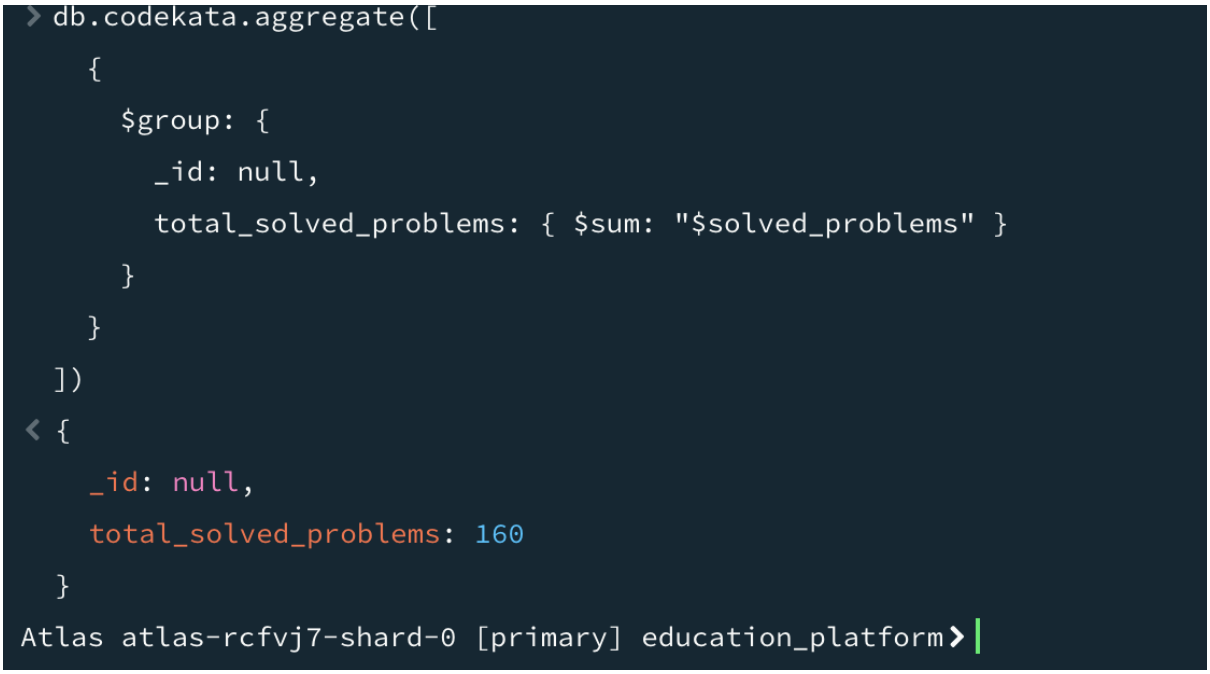


```
> db.company_drives.find({
    student_placed: true
  })
< {
    _id: ObjectId('66c853cf8aaef10d851d84f0'),
    drive_id: 1,
    company_id: 101,
    user_id: 1,
    student_placed: true,
    placed_month: '2020-10-18'
  }
  {
    _id: ObjectId('66c853cf8aaef10d851d84f2'),
    drive_id: 3,
    company_id: 103,
    user_id: 3,
    student_placed: true,
    placed_month: '2020-05-28'
  }
Atlas atlas-rcfvj7-shard-0 [primary] education_platform>
```

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

```
> db.codekata.find()
< {
    _id: ObjectId('66c853ec8aaef10d851d84f5'),
    codekata_id: 1,
    user_id: 1,
    solved_problems: 50,
    pending_problems: 10
  }
  {
    _id: ObjectId('66c853ec8aaef10d851d84f6'),
    codekata_id: 2,
    user_id: 2,
    solved_problems: 70,
    pending_problems: 5
  }
  {
    _id: ObjectId('66c853ec8aaef10d851d84f7'),
    codekata_id: 3,
    user_id: 3,
    solved_problems: 40,
    pending_problems: 20
  }
Atlas atlas-rcfvj7-shard-0 [primary] education_platform>
```

```
db.codekata.aggregate([
        {
          $group: {
          _id: null,
          total_solved_problems: { $sum: “$solved_problems” }
         }
        }
])
```



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

```
> db.mentors.find()
< {
    _id: ObjectId('66c854048aaef10d851d84fa'),
    mentor_id: 1,
    user_id: 1,
    mentee_count: 20
  }
  {
    _id: ObjectId('66c854048aaef10d851d84fb'),
    mentor_id: 2,
    user_id: 2,
    mentee_count: 10
  }
  {
    _id: ObjectId('66c854048aaef10d851d84fc'),
    mentor_id: 3,
    user_id: 3,
    mentee_count: 18
  }
Atlas atlas-rcfvj7-shard-0 [primary] education_platform>
```

```
db.mentors.find({
        mente_count: {
            $gt: 15,
        }
})
```

```
> db.mentors.find({
    mentee_count: {
      $gt: 15,
    }
  })
< {
    _id: ObjectId('66c854048aaef10d851d84fa'),
    mentor_id: 1,
    user_id: 1,
    mentee_count: 20
  }
  {
    _id: ObjectId('66c854048aaef10d851d84fc'),
    mentor_id: 3,
    user_id: 3,
    mentee_count: 18
  }
Atlas atlas-rcfvj7-shard-0 [primary] education_platform>
```

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

```
> db.attendance.find()
< {
    _id: ObjectId('66c854378aaef10d851d84ff'),
    attendance_id: 1,
    user_id: 1,
    absent_days: 2,
    present_days: 28
  }
  {
    _id: ObjectId('66c854378aaef10d851d8500'),
    attendance_id: 2,
    user_id: 2,
    absent_days: 0,
    present_days: 30
  }
  {
    _id: ObjectId('66c854378aaef10d851d8501'),
    attendance_id: 3,
    user_id: 3,
    absent_days: 3,
    present_days: 27
  }
Atlas atlas-rcfvj7-shard-0 [primary] education_platform>
```

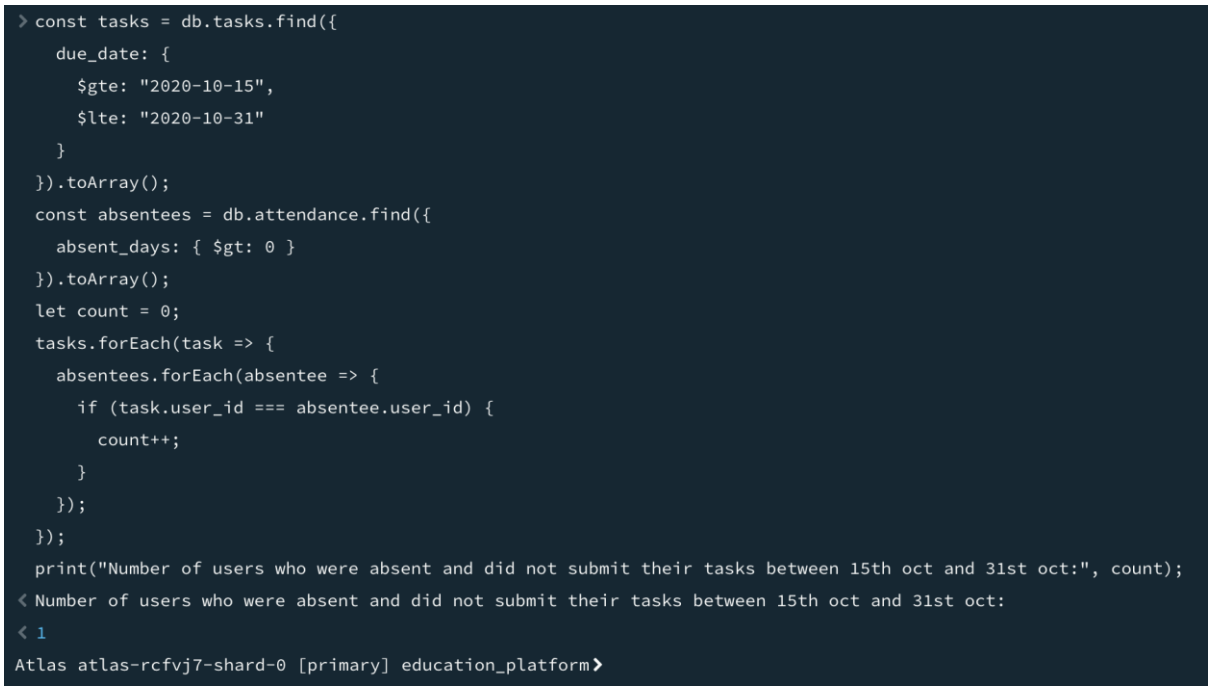
```
> db.tasks.find()
< {
    _id: ObjectId('66c853a68aaef10d851d84eb'),
    task_id: 1,
    user_id: 1,
    topic_id: 1,
    title: 'Python Basics Assignment',
    due_date: '2020-10-18'
  }
  {
    _id: ObjectId('66c853a68aaef10d851d84ec'),
    task_id: 2,
    user_id: 2,
    topic_id: 2,
    title: 'Algorithm Complexity Analysis',
    due_date: '2020-09-20'
  }
  {
    _id: ObjectId('66c853a68aaef10d851d84ed'),
    task_id: 3,
    user_id: 3,
    topic_id: 3,
    title: 'Data Structures Implementation',
    due_date: '2020-10-12'
  }
Atlas atlas-rcfvj7-shard-0 [primary] education_platform>
```

```
const tasks = db.tasks.find({
    due_date: {
            $gte: "2020-10-15",
            $lte: "2020-10-31"
      }
}).toArray();

const absentees = db.attendance.find({
       absent_days: {
              $gt: 0
       }
 }).toArray();

 let count = 0;
 tasks.forEach(task => {
        absentees.forEach(absentee => {
                if (task.user_id === absentee.user_id) {
                        count++;
                }
         });
 });

 print(count);
```



```
> const tasks = db.tasks.find({
    due_date: {
      $gte: "2020-10-15",
      $lte: "2020-10-31"
    }
  }).toArray();
  const absentees = db.attendance.find({
    absent_days: { $gt: 0 }
  }).toArray();
  let count = 0;
  tasks.forEach(task => {
    absentees.forEach(absentee => {
      if (task.user_id === absentee.user_id) {
        count++;
      }
    });
  });
  print("Number of users who were absent and did not submit their tasks between 15th oct and 31st oct:", count);
< Number of users who were absent and did not submit their tasks between 15th oct and 31st oct:
< 1
Atlas atlas-rcfvj7-shard-0 [primary] education_platform>
```