1. Create and use the database

```
use zen_class_program;
```

3. Create collections *users *codekata *attendance *topics *tasks *company_drives *mentors

4. users

```
db.users.insertMany([
    {
        "_id": "user1",
        "name": "Alice",
        "email": "alice@example.com",
        "codekata_problems_solved": 150
    },
    {
        "_id": "user2",
        "name": "Bob",
        "email": "bob@example.com",
        "codekata_problems_solved": 200
    },
    {
        "_id": "user3",
        "name": "Charlie",
        "email": "charlie@example.com",
        "codekata_problems_solved": 80
    },
    {
        "_id": "user4",
        "name": "David",
        "email": "david@example.com",
        "codekata_problems_solved": 120
    },
    {
        "_id": "user5",
        "name": "Eva",
        "email": "eva@example.com",
        "codekata_problems_solved": 300
    }
]);
```

2. codekata

```
db.codekata.insertMany([
    {"_id": "ck1", "user_id": "user1", "problems_solved": 150},
    {"_id": "ck2", "user_id": "user2", "problems_solved": 200},
    {"_id": "ck3", "user_id": "user3", "problems_solved": 80},
    {"_id": "ck4", "user_id": "user4", "problems_solved": 120},
```

```
    {"_id": "ck5", "user_id": "user5", "problems_solved": 300}
]);
```

3. Attendance

```
db.attendance.insertMany([
    {"_id": "att1", "user_id": "user1", "date": "2020-10-16", "status":
"present"},
    {"_id": "att2", "user_id": "user1", "date": "2020-10-17", "status": "absent"},
    {"_id": "att3", "user_id": "user2", "date": "2020-10-16", "status":
"present"},
    {"_id": "att4", "user_id": "user2", "date": "2020-10-17", "status":
"present"},
    {"_id": "att5", "user_id": "user3", "date": "2020-10-16", "status": "absent"},
    {"_id": "att6", "user_id": "user3", "date": "2020-10-17", "status": "absent"},
    {"_id": "att7", "user_id": "user4", "date": "2020-10-16", "status":
"present"},
    {"_id": "att8", "user_id": "user4", "date": "2020-10-17", "status":
"present"},
    {"_id": "att9", "user_id": "user5", "date": "2020-10-16", "status": "absent"},
    {"_id": "att10", "user_id": "user5", "date": "2020-10-17", "status": "absent"}
]);
```

4. topics

```
db.topics.insertMany([
    {"_id": "topic1", "name": "HTML Basics", "date": "2020-10-16"},
    {"_id": "topic2", "name": "CSS Flexbox", "date": "2020-10-17"},
    {"_id": "topic3", "name": "JavaScript Events", "date": "2020-10-18"},
    {"_id": "topic4", "name": "ReactJS Basics", "date": "2020-10-19"},
    {"_id": "topic5", "name": "NodeJS Basics", "date": "2020-10-20"}
]);
```

5. tasks

```
db.tasks.insertMany([
    {"_id": "task1", "topic_id": "topic1", "name": "HTML Page Design", "date":
"2020-10-16"},
    {"_id": "task2", "topic_id": "topic1", "name": "Semantic HTML", "date": "2020-
10-16"},
    {"_id": "task3", "topic_id": "topic2", "name": "Flexbox Layout", "date":
"2020-10-17"},
    {"_id": "task4", "topic_id": "topic3", "name": "Event Listeners", "date":
"2020-10-18"},
    {"_id": "task5", "topic_id": "topic4", "name": "Create a React App", "date":
"2020-10-19"}
]);
```

6. company_drives

```
db.company_drives.insertMany([
    {"_id": "drive1", "company_name": "Google", "date": "2020-10-20",
"students_appeared": ["user1", "user2"]},
    {"_id": "drive2", "company_name": "Amazon", "date": "2020-10-25",
"students_appeared": ["user3", "user1"]},
    {"_id": "drive3", "company_name": "Facebook", "date": "2020-10-30",
"students_appeared": ["user2"]},
    {"_id": "drive4", "company_name": "Microsoft", "date": "2020-10-28",
"students_appeared": ["user4", "user5"]},
    {"_id": "drive5", "company_name": "Apple", "date": "2020-10-22",
"students_appeared": ["user3"]}
]);
```

7. mentors

```
db.mentors.insertMany([
    {"_id": "mentor1", "name": "John", "mentees": ["user1", "user2", "user3"]},
    {"_id": "mentor2", "name": "Jane", "mentees": ["user4", "user5", "user1",
"user3"]},
    {"_id": "mentor3", "name": "Alice", "mentees": ["user2", "user5"]},
    {"_id": "mentor4", "name": "Bob", "mentees": ["user1", "user4", "user3",
"user2", "user5"]},
    {"_id": "mentor5", "name": "Eve", "mentees": ["user3", "user4"]}
]);
```

Queries

1. Find all the topics and tasks taught in October 2020

```
db.topics.aggregate([
    {
        $lookup: {
            from: "tasks",
            localField: "_id",
            foreignField: "topic_id",
            as: "related_tasks"
        }
    },
    {
        $match: {
            date: { $gte: "2020-10-01", $lte: "2020-10-31" }
        }
    },
```

```
    {
        $project: {
            _id: 0,
            name: 1,
            date: 1,
            "related_tasks.name": 1,
            "related_tasks.date": 1
        }
    }
]);
```

```
{
  name: 'HTML Basics',
  date: '2020-10-16',
  related_tasks: [
    {
      name: 'HTML Page Design',
      date: '2020-10-16'
    },
    {
      name: 'Semantic HTML',
      date: '2020-10-16'
    }
  ]
}
{
  name: 'CSS Flexbox',
  date: '2020-10-17',
  related_tasks: [
    {
      name: 'Flexbox Layout',
      date: '2020-10-17'
    }
  ]
}
{
  name: 'JavaScript Events',
  date: '2020-10-18',
  related_tasks: [
    {
      name: 'Event Listeners',
      date: '2020-10-18'
    }
  ]
}
{
  name: 'ReactJS Basics',
  date: '2020-10-19',
  related_tasks: [
```

2. Find all the company drives held between October 15, 2020, and October 31, 2020

```
db.company_drives.find({
    date: { $gte: "2020-10-15", $lte: "2020-10-31" }
});
```

```
> db.company_drives.find({
    date: { $gte: "2020-10-15", $lte: "2020-10-31" }
});
< {
    _id: 'drive1',
    company_name: 'Google',
    date: '2020-10-20',
    students_appeared: [
      'user1',
      'user2'
    ]
  }
  {
    _id: 'drive2',
    company_name: 'Amazon',
    date: '2020-10-25',
    students_appeared: [
      'user3',
      'user1'
    ]
  }
  {
    _id: 'drive3',
    company_name: 'Facebook',
    date: '2020-10-30',
    students_appeared: [
      'user2'
    ]
  }
  {
    _id: 'drive4',
    company_name: 'Microsoft',
    date: '2020-10-28',
    students_appeared: [
      'user4',
      'user5'
    ]
  }
```

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

```
db.company_drives.aggregate([
    {
        $lookup: {
            from: "users",
            localField: "students_appeared",
            foreignField: "_id",
            as: "students"
        }
    },
    {
        $project: {
            _id: 0,
            company_name: 1,
            date: 1,
            "students.name": 1,
            "students.email": 1
        }
    }
]);
```

```
{
  company_name: 'Google',
  date: '2020-10-20',
  students: [
    {
      name: 'Bob',
      email: 'bob@example.com'
    },
    {
      name: 'Alice',
      email: 'alice@example.com'
    }
  ]
}
{
  company_name: 'Amazon',
  date: '2020-10-25',
  students: [
    {
      name: 'Charlie',
      email: 'charlie@example.com'
    },
    {
      name: 'Alice',
      email: 'alice@example.com'
    }
  ]
}
{
  company_name: 'Facebook',
  date: '2020-10-30',
  students: [
    {
      name: 'Bob',
      email: 'bob@example.com'
    }
  ]
}
```

4. Find the number of problems solved by each user in Codekata

```
db.users.aggregate([
    {
        $project: {
            _id: 0,
            name: 1,
            email: 1,
            codekata_problems_solved: 1
        }
    }
]);
```

```
> db.users.aggregate([
    {
        $project: {
            _id: 0,
            name: 1,
            email: 1,
            codekata_problems_solved: 1
        }
    }
]);
< {
  name: 'Alice',
  email: 'alice@example.com',
  codekata_problems_solved: 150
}
{
  name: 'Bob',
  email: 'bob@example.com',
  codekata_problems_solved: 200
}
{
  name: 'Charlie',
  email: 'charlie@example.com',
  codekata_problems_solved: 80
}
{
  name: 'David',
  email: 'david@example.com',
  codekata_problems_solved: 120
}
{
  name: 'Eva',
  email: 'eva@example.com',
  codekata_problems_solved: 300
}
```

5. Find all mentors with mentees count greater than 15

```
db.mentors.aggregate([
    {
        $project: {
            name: 1,
            mentees_count: { $size: "$mentees" }
```

```
        }
    },
    {
        $match: {
            mentees_count: { $gt: 15 }
        }
    }
]);
```

```
> db.mentors.aggregate([
    {
        $project: {
            name: 1,
            mentees_count: { $size: "$mentees" }
        }
    },
    {
        $match: {
            mentees_count: { $gt: 15 }
        }
    }
]);

< {
    _id: 'mentor6',
    name: 'stark',
    mentees_count: 19
  }
zen_class_program>
```

1. Find the number of users who were absent and did not submit tasks between October 15, 2020, and October 31, 2020

```
db.attendance.aggregate([
    {
        $match: {
            status: "absent",
            date: { $gte: "2020-10-15", $lte: "2020-10-31" }
        }
    },
    {
        $lookup: {
            from: "tasks",
            localField: "user_id",
            foreignField: "user_id",
            as: "tasks"
```

```
            }
        },
        {
            $unwind: "$tasks"
        },
        {
            $match: {
                "tasks.submitted": false
            }
        },
        {
            $group: {
                _id: null,
                count: { $sum: 1 }
            }
        }
    ]);
```

```
zen_class_program> db.attendance.aggregate([
                    {
                        $match: {
                            status: "absent",
                            date: { $gte: "2020-10-15", $lte: "2020-10-31" }
                        }
                    },
                    {
                        $lookup: {
                            from: "tasks",
                            localField: "user_id",
                            foreignField: "user_id",
                            as: "user_tasks"
                        }
                    },
                    {
                        $unwind: "$user_tasks"
                    },
                    {
                        $match: {
                            "user_tasks.submitted": false
                        }
                    },
                    {
                        $group: {
                            _id: "$user_id",
                            count: { $sum: 1 }
                        }
                    },
                    {
                        $count: "absent_and_not_submitted"
                    }
                ]);
```