**Design database for Zen class programme**

**1. Users Collection**

**Schema:**

* user\_id (ObjectId)
* name (string)
* email (string)
* password (string)
* role (string) - e.g., student, mentor, admin
* joined\_date (date)
* contact\_number (string)

**2. Codekata Collection**

**Schema:**

* codekata\_id (ObjectId)
* user\_id (ObjectId) - reference to Users collection
* date (date)
* problem\_id (ObjectId)
* status (string) - e.g., completed, in-progress
* score (number)

**3. Attendance Collection**

**Schema:**

* attendance\_id (ObjectId)
* user\_id (ObjectId) - reference to Users collection
* date (date)
* status (string) - e.g., present, absent

**4. Topics Collection**

**Schema:**

* topic\_id (ObjectId)
* name (string)
* description (string)
* date (date)
* mentor\_id (ObjectId) - reference to Mentors collection

**5. Tasks Collection**

**Schema:**

* task\_id (ObjectId)
* topic\_id (ObjectId) - reference to Topics collection
* user\_id (ObjectId) - reference to Users collection
* description (string)
* due\_date (date)
* status (string) - e.g., completed, pending

**6. Company Drives Collection**

**Schema:**

* drive\_id (ObjectId)
* company\_name (string)
* date (date)
* job\_title (string)
* description (string)
* mentor\_id (ObjectId) - reference to Mentors collection

**7. Mentors Collection**

**Schema:**

* mentor\_id (ObjectId)
* name (string)
* email (string)
* expertise (string)
* contact\_number (string)

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

**db.topics.aggregate([**

**// Match topics taught in October**

**{**

**$match: {**

**date: {**

**$gte: ISODate("2023-10-01T00:00:00Z"),**

**$lt: ISODate("2023-11-01T00:00:00Z")**

**}**

**}**

**},**

**// Lookup corresponding tasks**

**{**

**$lookup: {**

**from: "tasks",**

**let: { topicId: "$\_id" },**

**pipeline: [**

**{**

**$match: {**

**$expr: {**

**$and: [**

**{ $eq: ["$topic\_id", "$$topicId"] },**

**{**

**$gte: ["$due\_date", ISODate("2023-10-01T00:00:00Z")]**

**},**

**{**

**$lt: ["$due\_date", ISODate("2023-11-01T00:00:00Z")]**

**}**

**]**

**}**

**}**

**}**

**],**

**as: "tasks"**

**}**

**}**

**])**

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

**db.company\_drives.find({ date: { $gte: ISODate("2020-10-15T00:00:00Z"), $lt: ISODate("2020-11-01T00:00:00Z") } })**

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

**db.company\_drives.aggregate([**

**{**

**$lookup: {**

**from: "students",**

**localField: "students",**

**foreignField: "\_id",**

**as: "students\_list"**

**}**

**},**

**{**

**$project: {**

**\_id: 1,**

**company\_name: 1,**

**date: 1,**

**job\_title: 1,**

**description: 1,**

**mentor\_id: 1,**

**students: "$students\_list"**

**}**

**}**

**])**

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

**db.codekata.aggregate([**

**{**

**$match: {**

**status: "completed**

**}**

**},**

**{**

**$group: {**

**\_id: "$user\_id",**

**total\_solved: { $sum: 1 }**

**}**

**},**

**{**

**$lookup: {**

**from: "users",**

**localField: "\_id",**

**foreignField: "\_id",**

**as: "user\_info"**

**}**

**},**

**{**

**$unwind: "$user\_info"**

**},**

**{**

**$project: {**

**\_id: 0,**

**user\_id: "$\_id",**

**user\_name: "$user\_info.name",**

**total\_solved: 1**

**}**

**}**

**])**

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

**db.students.aggregate([**

**{**

**$group: {**

**\_id: "$mentor\_id",**

**mentee\_count: { $sum: 1 }**

**}**

**},**

**{**

**$match: {**

**mentee\_count: { $gt: 15 }**

**}**

**},**

**{**

**$lookup: {**

**from: "mentors",**

**localField: "\_id",**

**foreignField: "\_id",**

**as: "mentor\_info"**

**}**

**},**

**{**

**$unwind: "$mentor\_info"**

**},**

**{**

**$project: {**

**\_id: 0,**

**mentor\_id: "$\_id",**

**mentee\_count: 1,**

**mentor\_name: "$mentor\_info.name",**

**mentor\_email: "$mentor\_info.email"**

**}**

**}**

**])**

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

**db.attendance.aggregate([**

**{**

**$match: {**

**date: {**

**$gte: ISODate("2020-10-15T00:00:00Z"),**

**$lt: ISODate("2020-11-01T00:00:00Z")**

**},**

**status: "absent"**

**}**

**},**

**{**

**$lookup: {**

**from: "tasks",**

**localField: "user\_id",**

**foreignField: "user\_id",**

**as: "tasks"**

**}**

**},**

**{**

**$unwind: "$tasks"**

**},**

**{**

**$match: {**

**"tasks.submission\_date": null,**

**"tasks.due\_date": {**

**$gte: ISODate("2020-10-15T00:00:00Z"),**

**$lt: ISODate("2020-11-01T00:00:00Z")**

**}**

**}**

**},**

**{**

**$group: {**

**\_id: "$user\_id",**

**absent\_and\_not\_submitted\_count: { $sum: 1 }**

**}**

**},**

**{**

**$count: "total\_users"**

**}**

**])**