**1. Design database for Zen class programme**

**users**

**codekata**

**attendance**

**topics**

**tasks**

**company\_drives**

**mentors**

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

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

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

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

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

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

**1. Users collection:**

{

\_id: ObjectId("61fdaf5a5a73c8f5db5fe129"),

name: "John Doe",

email: "johndoe@example.com",

password: "hashed\_password",

enrollment\_date: ISODate("2022-01-01T00:00:00Z")

}

**2. Codekata collection:**

{

\_id: ObjectId("61fdaf5a5a73c8f5db5fe12a"),

title: "Two Sum",

description: "Given an array of integers nums and an integer target, return indices of the two numbers such that they add up to target.",

difficulty: "easy"

}

**3. Attendance collection:**

{

\_id: ObjectId("61fdaf5a5a73c8f5db5fe12b"),

user\_id: ObjectId("61fdaf5a5a73c8f5db5fe129"),

date: ISODate("2022-01-01T00:00:00Z"),

status: "present"

}

**4.Topics collection:**

{

\_id: ObjectId("61fdaf5a5a73c8f5db5fe12c"),

title: "Introduction to Algorithms",

description: "This topic covers the basics of algorithms and their analysis."

}

**5. Tasks collection:**

{

\_id: ObjectId("61fdaf5a5a73c8f5db5fe12d"),

user\_id: ObjectId("61fdaf5a5a73c8f5db5fe129"),

description: "Implement a binary search algorithm",

due\_date: ISODate("2022-01-15T00:00:00Z"),

status: "incomplete"

}

**6. Company Drives collection:**

{

\_id: ObjectId("61fdaf5a5a73c8f5db5fe12e"),

company\_name: "Acme Corporation",

job\_role: "Software Developer",

start\_date: ISODate("2022-01-01T00:00:00Z"),

end\_date: ISODate("2022-01-31T00:00:00Z")

}

**7. Mentors collection:**

{

"\_id": ObjectId("614f76cf7e7e9770d6d772b8"),

"mentor\_id": "M1001",

"name": "John Doe",

"email": "john.doe@example.com",

"phone": "555-1234",

"expertise": ["Java", "Python", "JavaScript"],

"mentees": [

{

"user\_id": "U1001",

"name": "Alice",

"email": "alice@example.com"

},

{

"user\_id": "U1002",

"name": "Bob",

"email": "bob@example.com"

},

{

"user\_id": "U1003",

"name": "Charlie",

"email": "charlie@example.com"

}

]

}

**1. Find all the topics and tasks which are taught in the month of October:**

db.topics.find({$expr: {$eq: [{$month: "$date\_taught"}, 10]}})

db.tasks.find({$expr: {$eq: [{$month: "$due\_date"}, 10]}})

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

db.company\_drives.find({

start\_date: {$gte: ISODate("2020-10-15T00:00:00.000Z")},

end\_date: {$lte: ISODate("2020-10-31T23:59:59.999Z")}

})

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

db.company\_drives.aggregate([

{

$lookup: {

from: "attendance",

localField: "\_id",

foreignField: "company\_drive\_id",

as: "attendance"

}

},

{

$lookup: {

from: "users",

localField: "attendance.user\_id",

foreignField: "\_id",

as: "users"

}

},

{

$project: {

company\_name: 1,

job\_role: 1,

users: {

$filter: {

input: "$users",

as: "user",

cond: { $eq: [ "$$user.placement\_status", "appeared" ] }

}

}

}

}

])

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

db.codekata.aggregate([

{

$lookup: {

from: "submissions",

localField: "\_id",

foreignField: "codekata\_id",

as: "submissions"

}

},

{

$lookup: {

from: "users",

localField: "submissions.user\_id",

foreignField: "\_id",

as: "users"

}

},

{

$project: {

\_id: 1,

title: 1,

num\_problems\_solved: { $size: { $filter: { input: "$submissions", as: "submission", cond: { $eq: [ "$$submission.status", "accepted" ] } } } }

}

}

])

**5.Find all the mentors who have a mentee count more than 15:**

db.mentors.aggregate([

{

$lookup: {

from: "users",

localField: "\_id",

foreignField: "mentor\_id",

as: "mentees"

}

},

{

$match: {

$expr: {

$gt: [ {$size: "$mentees"}, 15 ]

}

}

}

])

**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([

{

$lookup: {

from: "tasks",

localField: "user\_id",

foreignField: "user\_id",

as: "tasks"

}

},

{

$match: {

date: {

$gte: ISODate("2020-10-15T00:00:00.000Z"),

$lte: ISODate("2020-10-31T23:59:59.999Z")

},

status: "absent",

"tasks.due\_date": {

$gte: ISODate("2020-10-15T00:00:00.000Z"),

$lte: ISODate("2020-10-31T23:59:59.999Z")

},

"tasks.status": "not submitted"

}

},

{

$count: "num\_users"

}

])