// 1. Switch to or create the SportsClub database

use SportsClub;

// 2. Create the "users" collection and insert sample data

db.users.insertMany([

{ name: "Alice", joinDate: new Date("2023-02-15"), sportPreferences: ["tennis", "swimming"] },

{ name: "Bob", joinDate: new Date("2023-03-22"), sportPreferences: ["soccer", "basketball"] },

{ name: "Charlie", joinDate: new Date("2023-02-17"), sportPreferences: ["tennis", "soccer"] },

{ name: "David", joinDate: new Date("2023-01-10"), sportPreferences: ["basketball", "swimming"] },

{ name: "Eve", joinDate: new Date("2023-03-05"), sportPreferences: ["swimming", "soccer"] }

]);

// 3. Create an index on sportPreferences

db.users.createIndex({ sportPreferences: 1 });

// 4. Create a compound index on joinDate and sportPreferences

db.users.createIndex({ joinDate: 1, sportPreferences: 1 });

// 5. Return user names in upper case and in alphabetical order

db.users.aggregate([

{

$project: {

upperCaseName: { $toUpper: "$name" }

}

},

{

$sort: { upperCaseName: 1 }

}

]);

// 6. Return user names sorted by the month they joined

db.users.aggregate([

{

$project: {

name: 1,

joinMonth: { $month: "$joinDate" }

}

},

{

$sort: { joinMonth: 1 }

}

]);

// 7. Show how many people joined each month of the year

db.users.aggregate([

{

$group: {

\_id: { month: { $month: "$joinDate" } },

count: { $sum: 1 }

}

},

{

$sort: { "\_id.month": 1 }

}

]);