**QUESTION SET 3**

**QUESTION-1: Operations on the Patients Collection**

**a) Retrieve all patients whose age is less than 10 or greater than 60.**

db.Patients.find({

$or: [

{ age: { $lt: 10 } },

{ age: { $gt: 60 } }

]

});

**b) Find patients who have been diagnosed with either "Diabetes" or "Hypertension" as one of their conditions.**

db.Patients.find({

conditions: { $in: ["Diabetes", "Hypertension"] }

});

**c) Identify patients who have visited the hospital more than 5 times.**

db.Patients.find({

"visits.5": { $exists: true }

});

**d) Sort the patients in descending order of their last visit date and limit the result to the top 10 records.**

db.Patients.find()

.sort({ "visits": -1 }) // Assuming 'visits' has a date field or timestamp to sort by

.limit(10);

**e) Group patients by their city (from the contact document) and calculate the total number of patients residing in each city.**

db.Patients.aggregate([

{

$group: {

\_id: "$contact.city", // Grouping by the 'city' field within the 'contact' document

totalPatients: { $sum: 1 } // Counting the number of patients per city

}

}

]);

**QUESTION-2: Operations on the Doctors Collection**

**a) Retrieve doctors who specialize in "Cardiology" but have less than 5 years of experience.**

db.Doctors.find({

specialization: "Cardiology",

experience: { $lt: 5 }

});

**b) Find doctors who are scheduled to work on both "Monday" and "Wednesday."**

db.Doctors.find({

schedule: { $all: ["Monday", "Wednesday"] }

});

**c) Display the names and contact details of doctors whose qualifications include a degree from "Harvard University."**

db.Doctors.find(

{ "qualifications.degree": "Harvard University" },

{ name: 1, contact: 1 }

);

**d) Create a sparse index on the schedule field to optimize queries that filter doctors based on their availability.**

db.Doctors.createIndex({ schedule: 1 }, { sparse: true });

**e) Use aggregation to project only the doctor's name, specialization, and years of experience, and then filter out doctors with less than 10 years of experience.**

db.Doctors.aggregate([

{

$project: {

name: 1,

specialization: 1,

experience: 1

}

},

{

$match: {

experience: { $gte: 10 }

}

}

]);