# Name : G Anand Kumar

## Reg.No : 22BCE20144

## Date : 06-06-2025

**Dataset :**

db.sales.insertMany([

{ "\_id" : 1, "item" : "Americanos", "price" : 5, "size": "Short", "quantity" : 22, "date" : ISODate("2022-01-15T08:00:00Z") },

{ "\_id" : 2, "item" : "Cappuccino", "price" : 6, "size": "Short","quantity" : 12, "date" : ISODate("2022-01-16T09:00:00Z") },

{ "\_id" : 3, "item" : "Lattes", "price" : 15, "size": "Grande","quantity" : 25, "date" : ISODate("2022-01-16T09:05:00Z") },

{ "\_id" : 4, "item" : "Mochas", "price" : 25,"size": "Tall", "quantity" : 11, "date" : ISODate("2022-02-17T08:00:00Z") },

{ "\_id" : 5, "item" : "Americanos", "price" : 10, "size": "Grande","quantity" : 12, "date" : ISODate("2022-02-18T21:06:00Z") },

{ "\_id" : 6, "item" : "Cappuccino", "price" : 7, "size": "Tall","quantity" : 20, "date" : ISODate("2022-02-20T10:07:00Z") },

{ "\_id" : 7, "item" : "Lattes", "price" : 25,"size": "Tall", "quantity" : 30, "date" : ISODate("2022-02-21T10:08:00Z") },

{ "\_id" : 8, "item" : "Americanos", "price" : 10, "size": "Grande","quantity" : 21, "date" : ISODate("2022-02-22T14:09:00Z") },

{ "\_id" : 9, "item" : "Cappuccino", "price" : 10, "size": "Grande","quantity" : 17, "date" : ISODate("2022-02-23T14:09:00Z") },

{ "\_id" : 10, "item" : "Americanos", "price" : 8, "size": "Tall","quantity" : 15, "date" : ISODate("2022-02-25T14:09:00Z")}

]);

1. Find the total revenue (price × quantity) for each item, sorted from highest to lowest.

db.sales.aggregate([

{

$project: {

item: 1,

revenue: { $multiply: ["$price", "$quantity"] }

}

},

{

$group: {

\_id: "$item",

totalRevenue: { $sum: "$revenue" }

}

},

{

$sort: { totalRevenue: -1 }

}

]);

2. Calculate the total quantity sold per month in 2022.

db.sales.aggregate([

{

$match: {

date: {

$gte: new ISODate("2022-01-01T00:00:00Z"),

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

}

}

},

{

$group: {

\_id: {

year: { $year: "$date" },

month: { $month: "$date" }

},

totalQuantity: { $sum: "$quantity" }

}

},

{

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

}

]);

3. Find all items where price is greater than 10 and size is not ‘Short'.

db.sales.find({

price: { $gt: 10 },

size: { $ne: "Short" }

});

4. Get all Cappuccino sales with quantity between 10 and 20.

db.sales.find({

item: "Cappuccino",

quantity: { $gte: 10, $lte: 20 }

});

5. Query to find items where the item name starts with “A".

db.sales.find({

item: { $regex: /^A/ }

});

6. Find all records that do not have the field size.

db.sales.find({

size: { $exists: false }

});

7. Find all sales that are either "Grande" or "Tall" but not “Americanos".

db.sales.find({

size: { $in: ["Grande", "Tall"] },

item: { $ne: "Americanos" }

});

8. List all items sold in February 2022.

db.sales.find({

date: {

$gte: ISODate("2022-02-01T00:00:00Z"),

$lt: ISODate("2022-03-01T00:00:00Z")

}

});

9. Find sales where the quantity is more than twice the price.

db.sales.find({

$expr: {

$gt: [

"$quantity",

{ $multiply: ["$price", 2] }

]

}

});

10. Find all sales where the price is greater than the average price of their respective size.

db.sales.aggregate([

{

$group: {

\_id: "$size",

avgPrice: { $avg: "$price" }

}

},

{

$lookup: {

from: "sales",

localField: "\_id",

foreignField: "size",

as: "sales\_docs"

}

},

{

$unwind: "$sales\_docs"

},

{

$match: {

$expr: {

$gt: ["$sales\_docs.price", "$avgPrice"]

}

}

},

{

$replaceRoot: { newRoot: "$sales\_docs" }

}

]);

11. Find Sales Where the Day of Week Matches Quantity's Last Digit [Filter sales where the day of the week (0=Sunday, 1=Monday, etc.) matches the last digit of quantity]

db.sales.aggregate([

{

$addFields: {

dayOfWeek: { $dayOfWeek: "$date" }, // 1=Sunday, ..., 7=Saturday

quantityLastDigit: { $mod: ["$quantity", 10] }

}

},

{

$match: {

$expr: {

$eq: [

{ $mod: [{ $subtract: ["$dayOfWeek", 1] }, 7] }, // Shift to 0=Sunday

"$quantityLastDigit"

]

}

}

},

{

$project: {

item: 1,

date: 1,

quantity: 1,

price: 1

}

}

]);

12. Find Sales Where the Month is Prime and Quantity is Odd [Filter sales where the month (1-12) is a prime number (2,3,5,7,11) AND quantity is odd]

db.sales.aggregate([

{

$addFields: {

saleMonth: { $month: "$date" }

}

},

{

$match: {

$expr: {

$and: [

{ $in: ["$saleMonth", [2, 3, 5, 7, 11]] },

{ $eq: [{ $mod: ["$quantity", 2] }, 1] }

]

}

}

},

{

$project: {

item: 1,

price: 1,

quantity: 1,

date: 1

}

}

]);

13. Find Sales with "Suspicious Quantities" (Divisible by 5 or 7) [Filter sales where quantity is divisible by 5 or 7]

db.sales.find({

$expr: {

$or: [

{ $eq: [{ $mod: ["$quantity", 5] }, 0] },

{ $eq: [{ $mod: ["$quantity", 7] }, 0] }

]

}

});