Query 1: Aggregation Queries for Industry-Wide Analysis:

db.SP100Metadata.aggregate([ { "$group": { "\_id": "$sicDescription", "count": { "$sum": 1 } } } ])

Query 2:

db.SP100Metadata.aggregate([

{

$unwind: "$exchanges" // Deconstructs the exchanges array field to output a document for each exchange

},

{

$group: {

\_id: "$exchanges", // Group by exchange

count: { $sum: 1 } // Count the number of documents for each exchange

}

},

{

$sort: {

count: -1 // Optional: sort the results by count in descending order

}

}

])

Result: [ { \_id: 'NYSE', count: 120 }, { \_id: 'Nasdaq', count: 37 } ]

Query3: Retrieval of Documents by Company Name:

db. SP100Metadata.find({ "tickers": "AMZN” })

Query 4: Compare Current Assets to Liabilities: Analysts often compare a company's current assets to its liabilities to assess liquidity. This query could be used to calculate the current ratio for each company.

db.SP100CompanyFact.aggregate([

{

$project: {

entityName: 1,

currentAssets: { $arrayElemAt: ["$facts.us-gaap.AssetsCurrent.units.USD.val", -1] },

currentLiabilities: { $arrayElemAt: ["$facts.us-gaap.LiabilitiesCurrent.units.USD.val", -1] },

currentRatio: {

$divide: [

{ $arrayElemAt: ["$facts.us-gaap.AssetsCurrent.units.USD.val", -1] },

{ $arrayElemAt: ["$facts.us-gaap.LiabilitiesCurrent.units.USD.val", -1] }

]

}

}

}

])

Query 5: Find Companies with Specific Insider Transaction Activities: This query can be used to find companies with both insider transactions for the owner and issuer exists, which might be of interest to analysts tracking insider activities.

db.SP100Metadata.aggregate([

{

$project: {

name: 1,

ownerTransactions: "$insiderTransactionForOwnerExists",

issuerTransactions: "$insiderTransactionForIssuerExists"

}

},

{

$group: {

\_id: "$name",

totalOwnerTransactions: { $sum: "$ownerTransactions" },

totalIssuerTransactions: { $sum: "$issuerTransactions" },

totalTransactions: { $sum: { $add: ["$ownerTransactions", "$issuerTransactions"] } }

}

},

{

$sort: {

totalTransactions: -1 // Sorting in descending order so that largest total transactions come first

}

}

])

Query 6 Comparison of Debt to Equity Ratios:

The debt-to-equity ratio is a critical financial metric. This query will calculate the debt-to-equity ratio for companies by comparing their total liabilities to shareholders' equity.

db.SP100CompanyFact.aggregate([

{

$project: {

entityName: 1,

totalLiabilities: { $arrayElemAt: ["$facts.us-gaap.Liabilities.units.USD.val", -1] },

shareholdersEquity: { $arrayElemAt: ["$facts.us-gaap.StockholdersEquity.units.USD.val", -1] },

currentRatio: {

$divide: [

{ $arrayElemAt: ["$facts.us-gaap.Liabilities.units.USD.val", -1] },

{ $arrayElemAt: ["$facts.us-gaap.StockholdersEquity.units.USD.val", -1] }

]

}

}

}

])

Query 7: Common Stock Trend Analysis

db.SP100CompanyFact.aggregate([

{

$match: {

"facts.dei.EntityCommonStockSharesOutstanding.units.shares.form": "10-K"

}

},

{

$project: {

entityName: 1,

sharesOutstanding: {

$filter: {

input: "$facts.dei.EntityCommonStockSharesOutstanding.units.shares",

as: "share",

cond: { $eq: ["$$share.form", "10-K"] }

}

}

}

},

{

$unwind: "$sharesOutstanding"

},

{

$group: {

\_id: "$entityName",

sharesOutstandingTrend: {

$push: {

end: "$sharesOutstanding.end",

val: "$sharesOutstanding.val"

}

}

}

}

], { allowDiskUse: true })