HW4

Jinglei “Lesly” Liu

**Q1**

db.widgetSales.aggregate( [

{ $project: { date: { $dateToString: { format: "%Y-%m", date: "$date" } }, quantity: 1, unitPrice: 1 } },

{ $group: { \_id: "$date", monthlySales: { $sum: { $multiply: [ "$quantity", "$unitPrice" ] } } } },

{ $sort: { "\_id": 1 } },

{ $out: "widgetSalesMonthlyAgg" }

] )

Text

Description automatically generated

**Q2**

Sample query

Suppose we want to filter out productName of "Iron rod" and return only productName and status:

db.orders.aggregate( [

{ $match: { productName: "Iron rod" } },

{ $project: { \_id: 0, productName: 1, status: 1 } }

] )

Text

Description automatically generated

I would suggest setting productName and status as the index for the fastest query response.

db.orders.createIndex( { "productName": 1, "status": 1 } )

Text

Description automatically generated

db.orders.stats( )

Graphical user interface, text, application, email

Description automatically generated

The index size that I created is 20480 bytes. The total index size is 28672 bytes.

This index will make the query fast because the query (covered query) could only look at the index and give the result (as we only need to return productName and status). There is no need to get into documents.

**Q3**

Diagram

Description automatically generated

Order Details, EmployeeTerritories and CustomerCustomerDemo are not included in the nodes because these are linked tables for Many to Many relationship.