Analyze Data in a Model Car Database with MySQL Workbench

Project Scenario

Mint Classics Company, a retailer of classic model cars and other vehicles, is looking at closing one of their storage facilities.

To support a data-based business decision, they are looking for suggestions and recommendations for reorganizing and reducing inventory, while still maintaining timely service to their customers. For example, they would like to be able to ship a product to a customer within 24 hours of the order being placed.

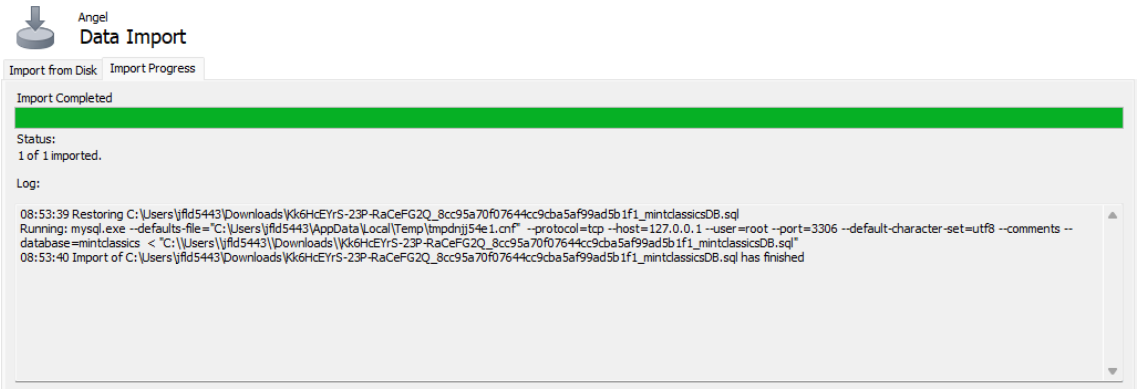
As a data analyst, you have been asked to use MySQL Workbench to familiarize yourself with the general business by examining the current data. You will be provided with a data model and sample data tables to review. You will then need to isolate and identify those parts of the data that could be useful in deciding how to reduce inventory.

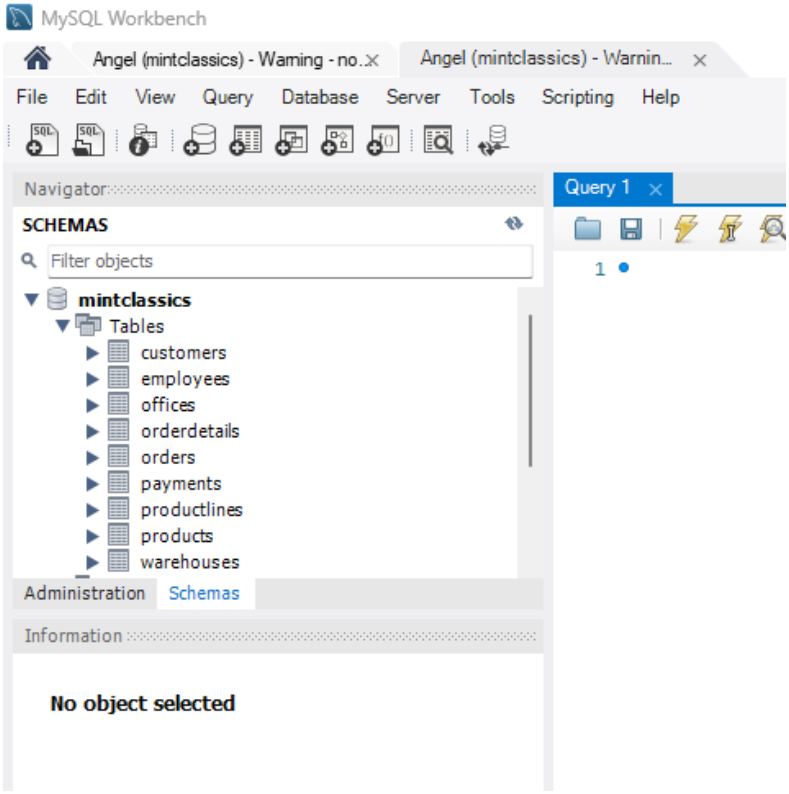
Project plan

This project requires you to independently complete the following steps:

1. Import the classic model car relational database
2. Familiarize yourself with the Mint Classic database and business processes
3. Investigate the business problem and identify tables impacted
4. Formulate suggestions and recommendations for solving the business problem

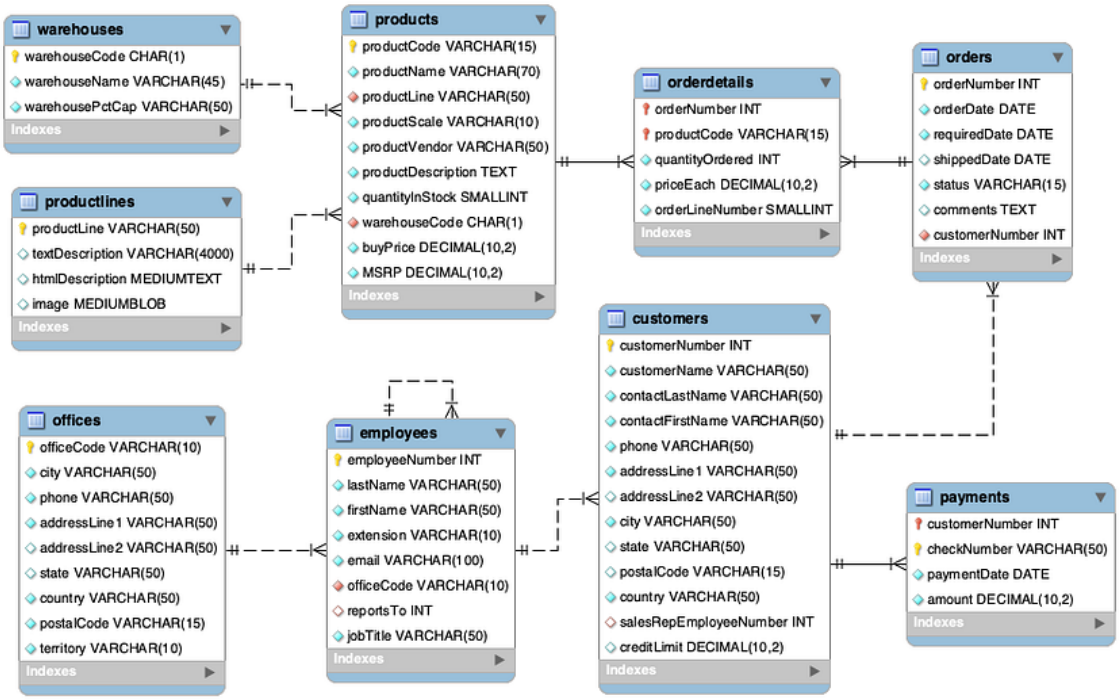
1.1. Import Mint Classic Db





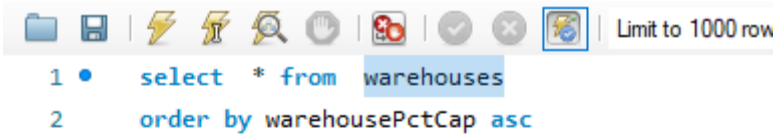
2.1. Mint Classic Db and business processes Data Exploration

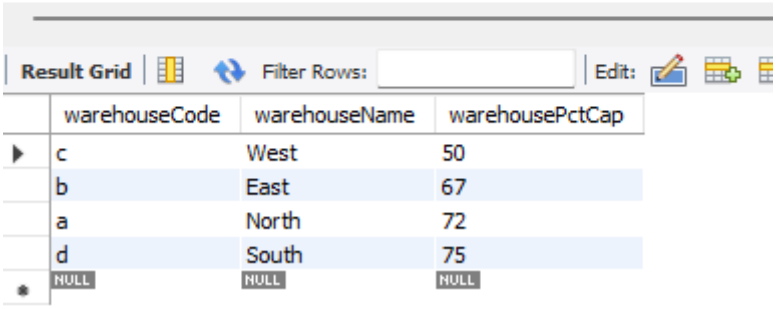
This is the EER diagram that models the structure of the Mint Classics database.



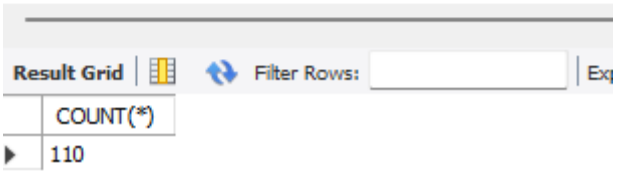
3.1. Table Analysis

- Analyzing warehouses table, I conclude that from **West** is with less capacity.





- Analyzing Products table, I found total of 110 products.



- Analyzing if product is available in multiple warehouses. Answer is **No**

```sql
SELECT  productCode,
 COUNT(warehouseCode)
FROM products
GROUP BY productCode
HAVING COUNT(warehouseCode) > 1;
```

Result Grid | Filter Rows: | Export:

productCode	COUNT(warehouseCode)

- Analyzing counting total product per warehouse order from highest to lowest.

```sql
SELECT
        w.warehouseName,
    SUM(p.quantityInStock) AS InventarioTotal
FROM
    warehouses AS w
LEFT JOIN
    products AS p ON w.warehouseCode = p.warehouseCode
GROUP BY
        w.warehouseName
order by
    InventarioTotal desc
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

warehouseName	InventarioTotal
East	219183
North	131688
West	124880
South	79380

- Analyzing counting product, their total stock per warehouse

```sql
SELECT
 w.warehouseName,
 p.productLine,
 COUNT(productCode) AS total_product,
 SUM(p.quantityInStock) AS total_stock
FROM products AS p
JOIN warehouses AS w ON p.warehouseCode = w.warehouseCode
GROUP BY w.warehouseCode, w.warehouseName, p.productLine;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

warehouseName	productLine	total_product	total_stock
North	Motorcycles	13	69401
North	Planes	12	62287
East	Classic Cars	38	219183
West	Vintage Cars	24	124880
South	Trucks and Buses	11	35851

Notice that ***East*** warehouse has totally of 38 different products with total 219.183 of products in stock, It's the one with most capability to stock Classic Cars. In order hands ***West*** stocks cars as well but vintage one.

- Checking Order status and quantity

```sql
SELECT distinct status, count(orderNumber)
FROM orders
group by  status
```

esult Grid | Filter Rows: | Export: | Wrap Cell

status	count(orderNumber)
Shipped	303
Resolved	4
Cancelled	6
On Hold	4
Disputed	3
In Process	6

- Checking total inventory per each product in each warehouse. // Join btw 2 tables (products & warehouse)

Query 1 | Kk6HcEYrS-23P-RaCeFG2Q_8...

Limit to 1000 rows

```
1  select
2  p.productName,
3  w.warehouseName,
4  sum(p.quantityInStock) as InventarioTotal
5  from
6  products as p
7  join warehouses as w on p.warehouseCode=w.warehouseCode
8  group by
9  p.productName,w.warehouseName
10 order by
11 InventarioTotal asc
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

productName	warehouseName	InventarioTotal
1960 BSA Gold Star DBD34	North	15
1968 Ford Mustang	East	68
1928 Ford Phaeton Deluxe	West	136
1997 BMW F650 ST	North	178
Pont Yacht	South	414
1911 Ford Town Car	West	540
1928 Mercedes-Benz SSK	West	548
F/A 18 Hornet 1/72	North	551
2002 Yamaha YZR M1	North	600
The Mayflower	South	737
1996 Peterbilt 379 Stake ...	South	814
P-51-D Mustang	North	992
1970 Chevy Chevelle SS ...	East	1005
Diamond T620 Semi-Skirte...	South	1016
1969 Ford Falcon	East	1049
1957 Corvette Convertible	East	1249
1952 Citroen-15CV	East	1452
1958 Setra Bus	South	1579
1962 City of Detroit Stree...	South	1645
The Schooner Bluenose	South	1897
18th century schooner	South	1898
1969 Dodge Super Bee	East	1917

- Getting a list of products with the highest purchase prices, followed by the total quantity of products ordered for each of these products.

```sql
SELECT
    p.productCode,
    p.productName,
    p.buyPrice,
    SUM(od.quantityOrdered) AS Tot_Ordered
FROM
    mintclassics.products AS p
LEFT JOIN
    mintclassics.orderdetails AS od ON p.productCode = od.productCode
GROUP BY
    p.productCode, p.productName, p.buyPrice
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

productCode	productName	buyPrice	Tot_Ordered
S10_4962	1962 LanciaA Delta 16V	103.42	932
S18_2238	1998 Chrysler Plymouth Prowler	101.51	986
S10_1949	1952 Alpine Renault 1300	98.58	961
S24_3856	1956 Porsche 356A Coupe	98.30	1052
S12_1108	2001 Ferrari Enzo	95.59	1019
S12_1099	1968 Ford Mustang	95.34	933
S18_1984	1995 Honda Civic	93.89	917
S18_4027	1970 Triumph Spitfire	91.92	945
S10_4698	2003 Harley-Davidson Eagle Drag Bike	91.02	985

Result 17

- Identifying the customers who contribute the most to sales with the total sales amount accompany by each of these customers. // Join btw 2 tables(customers & orders)

```sql
SELECT
    c.customerNumber,
    c.customerName,
    count(o.orderNumber) AS totalSales
FROM
    mintclassics.customers AS c
JOIN
    mintclassics.orders AS o ON c.customerNumber = o.customerNumber
GROUP BY
    c.customerNumber, c.customerName
order by
    totalSales desc
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

customerNumber	customerName	totalSales
141	Euro+ Shopping Channel	26
124	Mini Gifts Distributors Ltd.	17
114	Australian Collectors, Co.	5
353	Reims Collectables	5
145	Danish Wholesale Imports	5
148	Dragon Souveniers, Ltd.	5
323	Down Under Souveniers, Inc	5
381	Royale Belge	4
276	Anna's Decorations, Ltd	4
119	La Rochelle Gifts	4
121	Baane Mini Imports	4
128	Blauer See Auto, Co.	4
131	Land of Toys Inc.	4
144	Volvo Model Replicas, Co	4
496	Kelly's Gift Shop	4
151	Muscle Machine Inc	4
157	Diecast Classics Inc.	4
161	Technics Stores Inc.	4
166	Handji Gifts& Co	4
450	The Sharp Gifts Warehouse	4

- Search for employee's jobs with the highest total sales, and total sales amount associated with each employee.

```sql
SELECT
    e.employeeNumber,
    e.firstName,
    e.lastName,
    e.jobTitle,
    SUM(od.quantityOrdered *  od.priceEach  ) AS TOTSale
FROM
    employees AS e
LEFT JOIN
    customers AS c ON e.employeeNumber = c.salesRepEmployeeNumber
LEFT JOIN
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

employeeNumber	firstName	lastName	jobTitle	TOTSale
1370	Gerard	Hernandez	Sales Rep	1258577.81
1165	Leslie	Jennings	Sales Rep	1081530.54
1401	Pamela	Castillo	Sales Rep	868220.55
1501	Larry	Bott	Sales Rep	732096.79
1504	Barry	Jones	Sales Rep	704853.91

Result 26

- Comparison of many product lines including: Product line ,total sales ,total revenue and the percentage of sales to inventory

```sql
SELECT
    p.productLine,
    pl.textDescription AS PRODLineDesc,
    SUM(p.quantityInStock) AS TOTInventario,
    SUM(od.quantityOrdered) AS TOTSale,
    SUM(od.priceEach * od.quantityOrdered) AS TOTRevenue,
    concat(SUM(od.quantityOrdered) / SUM(p.quantityInStock) * 100,'%')
    AS SALESToInventarioPercent
FROM
    products AS p
LEFT JOIN
    productlines AS pl ON p.productLine = pl.productLine
LEFT JOIN
   orderdetails AS od ON p.productCode = od.productCode
GROUP BY
    p.productLine, pl.textDescription
ORDER BY
    SALESToInventarioPercent desc
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

productLine	PRODLineDesc	TOTInventario	TOTSale	TOTRevenue	SALESToInventarioPercent
Ships	The perfect holiday or anniversary gift for exec...	732251	8532	663998.34	1.1652%
Trucks and Buses	The Truck and Bus models are realistic replicas o...	1003828	11001	1024113.57	1.0959%
Planes	Unique, diecast airplane and helicopter replicas ...	1744036	11872	954637.54	0.6807%
Motorcycles	Our motorcycles are state of the art replicas of ...	1915517	12778	1121426.12	0.6671%
Vintage Cars	Our Vintage Car models realistically portray aut...	3439570	22933	1797559.63	0.6667%
Trains	Model trains are a rewarding hobby for enthusi...	450792	2818	188532.92	0.6251%
Classic Cars	Attention car enthusiasts: Make your wildest ca...	5851766	35582	3853922.49	0.6081%

4.1. Suggestions / Recommendation to solve “biz” the problem

- ✓ **Inventory:** After analyzing the data, found some products with high inventory but low sales. Recommend reducing the inventory of these products will optimize resource allocation and lower storage costs.
- ✓ **Warehouse:** Identified warehouses with low inventory. Maybe can Consider close This will reduce warehouse rental costs and redistribute the inventory.
- ✓ **Product Line:** Taking in account product improvements, discontinue incapable products. By this way the profitability will improve