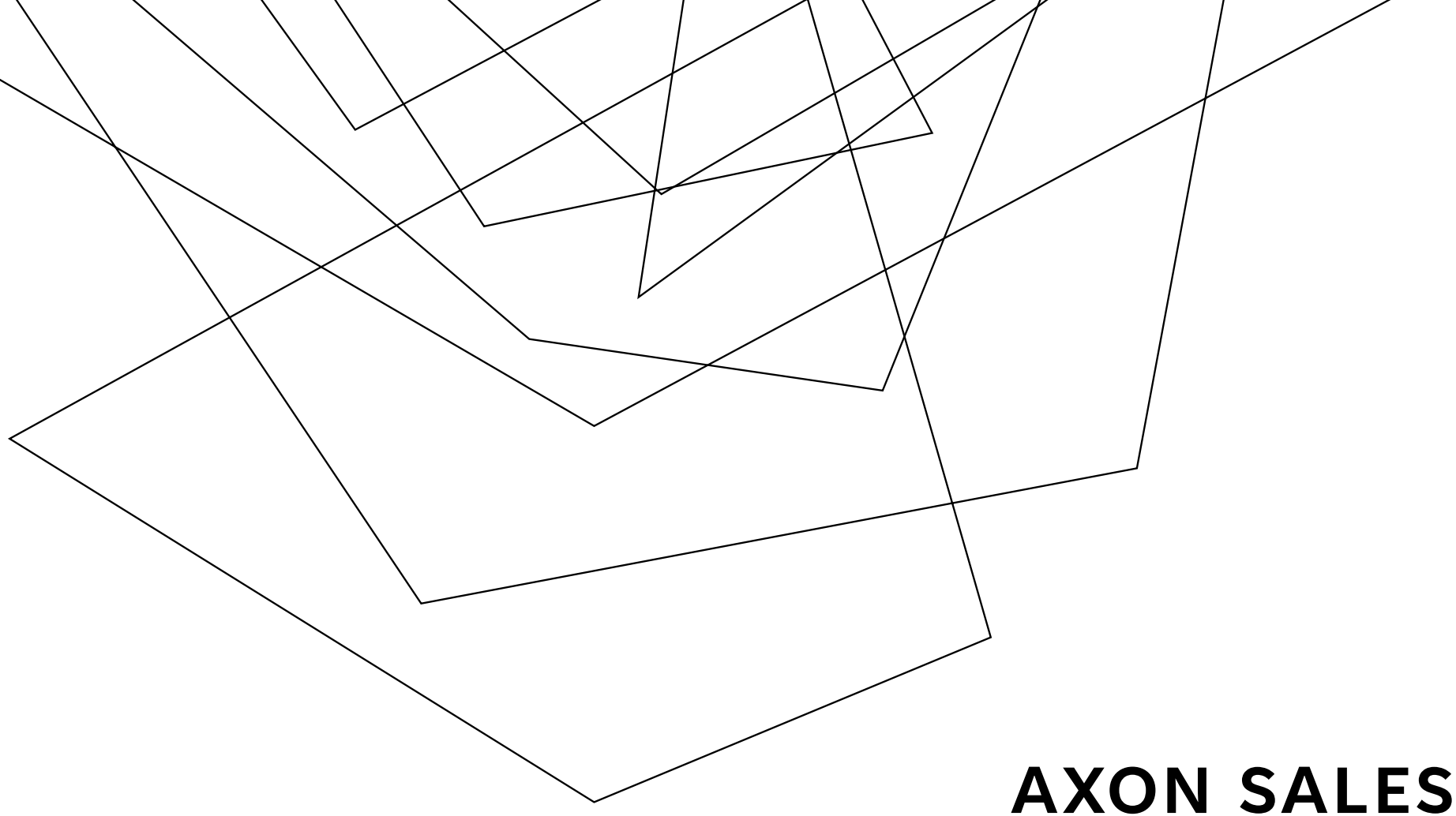
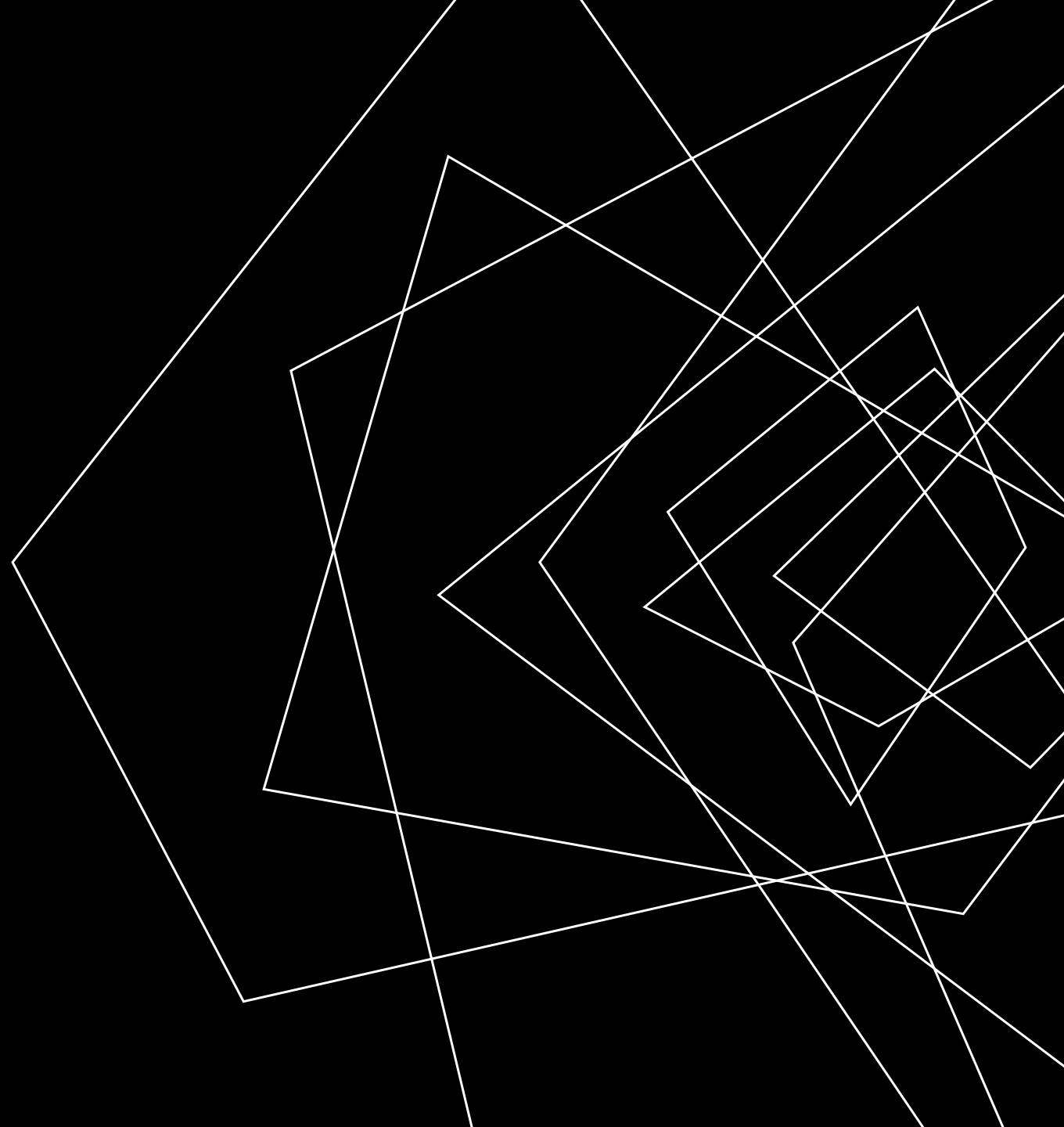


AXON SALES ANALYSIS

Pankaj Rao

PROBLEM STATEMENT

Axon is a small retailer specializing in the scaled down models of vintage cars, classic cars, etc. However, they are facing challenges in managing and analyzing their sales data. The sales team is struggling to make sense of the data and they do not have a centralized system to manage and analyze the data . The management is unable to get accurate and up-to-date sales reports, which is affecting the decision making process.



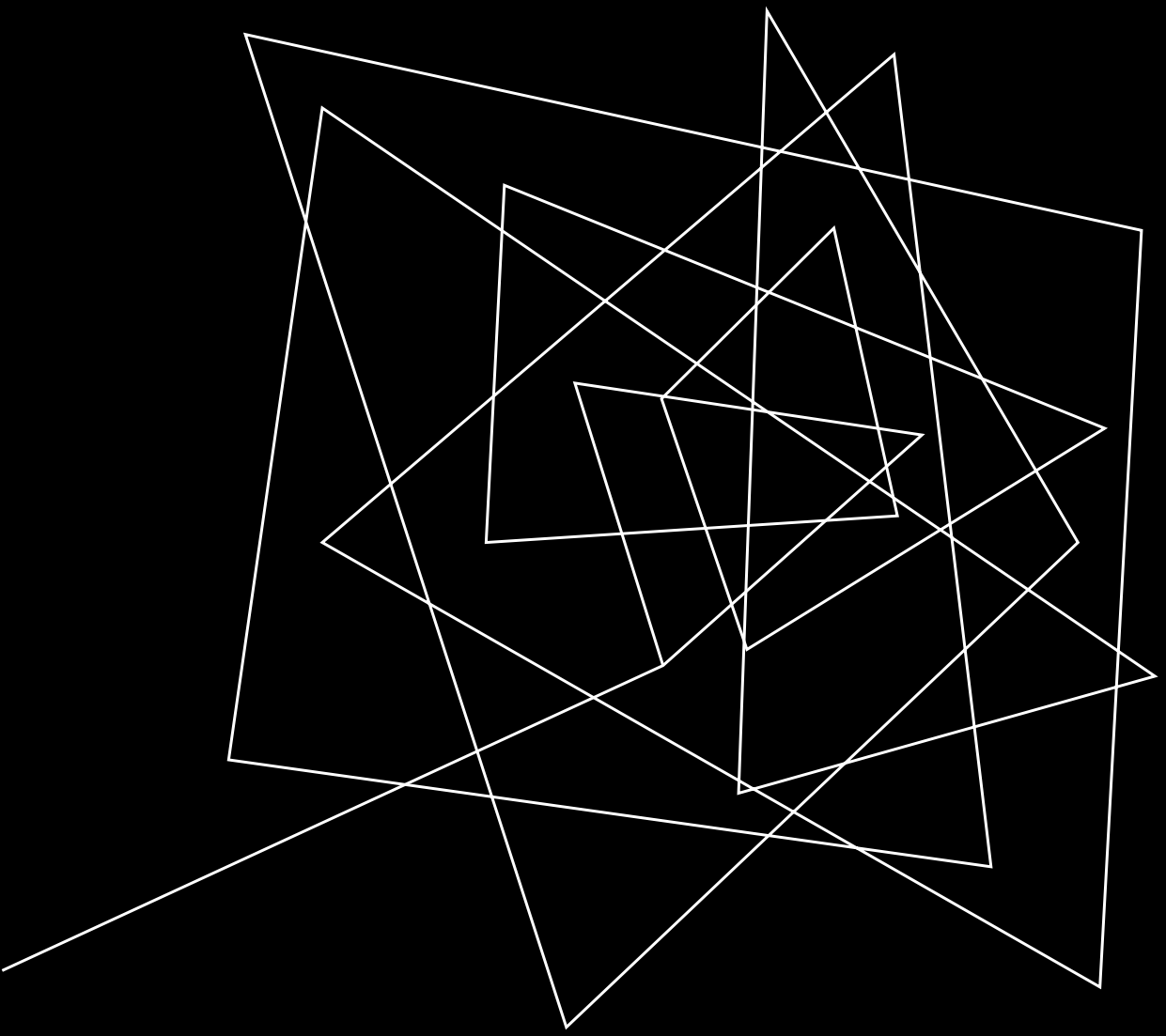
PROJECT GOAL

To design and implement a solution using Power BI and SQL to effectively manage and analyze the data .

TOOLS USED

MYSQL :- Used to create the database, import the data into the database and Query the data.

Power BI :- Used to clean and transform the data and create visualizations.

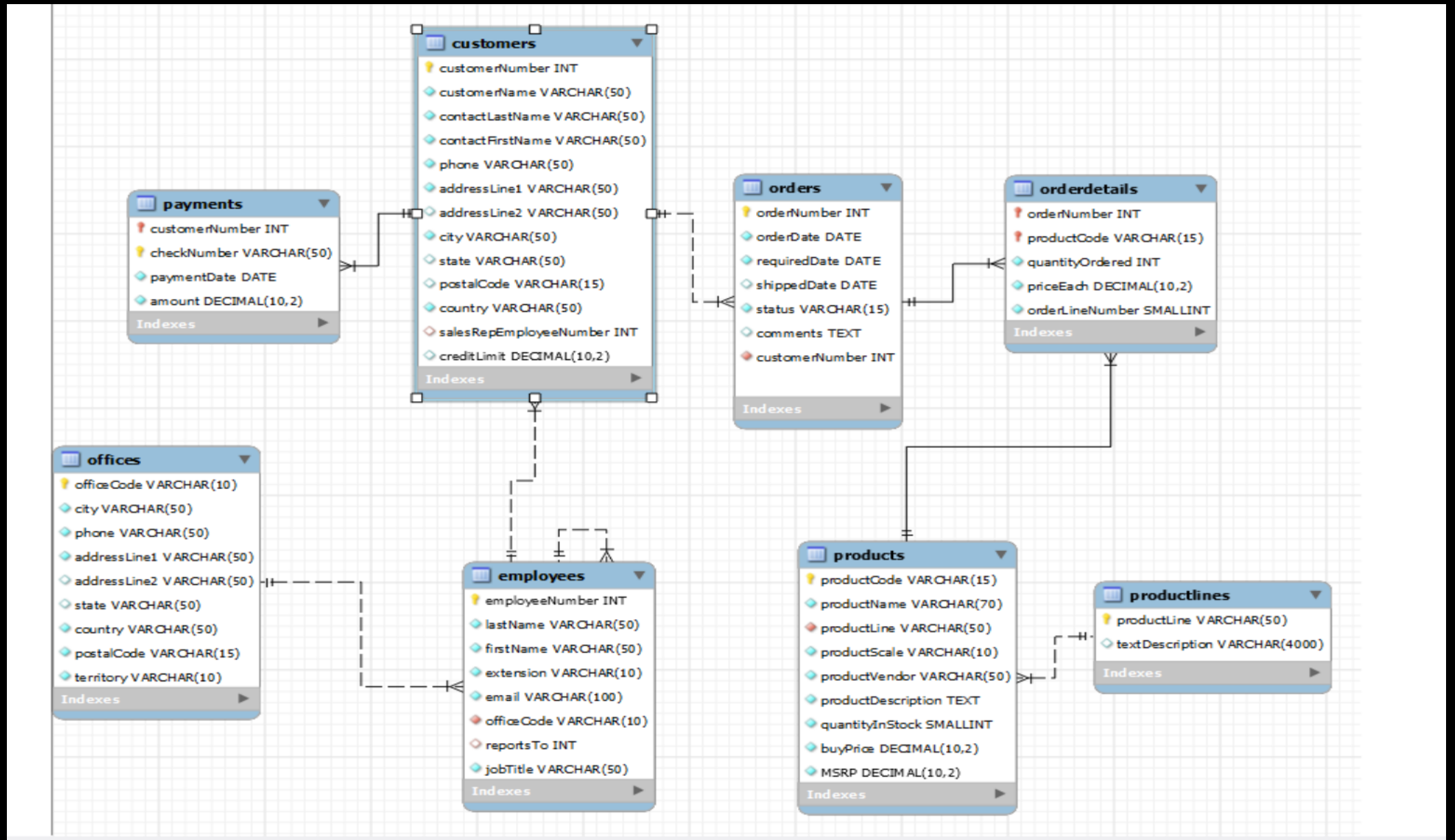


DATABASE DESCRIPTION

The MySQL sample database schema comprises eight tables containing typical business data:

1. Customers: Stores customer data.
2. Products: Contains a list of scale model cars.
3. Product Lines: Lists product line categories.
4. Orders: Stores sales orders placed by customers.
5. Order Details: Contains sales order line items for each sales order.
6. Payments: Stores payments made by customers based on their accounts.
7. Employees: Contains employee information and organizational structure data.
8. Offices: Stores sales office data.

ER DIAGRAM


customers
customerNumber INT
customerName VARCHAR(50)
contactLastName VARCHAR(50)
contactFirstName VARCHAR(50)
phone VARCHAR(50)
addressLine1 VARCHAR(50)
addressLine2 VARCHAR(50)
city VARCHAR(50)
state VARCHAR(50)
postalCode VARCHAR(15)
country VARCHAR(50)
salesRepEmployeeNumber INT
creditLimit DECIMAL(10,2)
Indexes
payments
customerNumber INT
checkNumber VARCHAR(50)
paymentDate DATE
amount DECIMAL(10,2)
Indexes
orders
orderNumber INT
orderDate DATE
requiredDate DATE
shippedDate DATE
status VARCHAR(15)
comments TEXT
customerNumber INT
Indexes
orderdetails
orderNumber INT
productCode VARCHAR(15)
quantityOrdered INT
priceEach DECIMAL(10,2)
orderLineNumber SMALLINT
Indexes
offices
officeCode VARCHAR(10)
city VARCHAR(50)
phone VARCHAR(50)
addressLine1 VARCHAR(50)
addressLine2 VARCHAR(50)
state VARCHAR(50)
country VARCHAR(50)
postalCode VARCHAR(15)
territory VARCHAR(10)
Indexes
employees
employeeNumber INT
lastName VARCHAR(50)
firstName VARCHAR(50)
extension VARCHAR(10)
email VARCHAR(100)
officeCode VARCHAR(10)
reportsTo INT
jobTitle VARCHAR(50)
Indexes
products
productCode VARCHAR(15)
productName VARCHAR(70)
productLine VARCHAR(50)
productScale VARCHAR(10)
productVendor VARCHAR(50)
productDescription TEXT
quantityInStock SMALLINT
buyPrice DECIMAL(10,2)
MSRP DECIMAL(10,2)
Indexes
productlines
productLine VARCHAR(50)
textDescription VARCHAR(4000)
Indexes

SQL QUERIES

```sql
-- Top 5 employees ?
SELECT
    e.employeeNumber,
    e.firstname,
    e.lastName,
    COUNT(od.orderNumber) AS 'no_of_orders_recived',
    SUM(od.quantityOrdered) AS 'Total_quantity_sold'
FROM
    employees e
        JOIN
    customers c ON e.employeeNumber = c.salesRepemployeeNumber
        JOIN
    orders o ON c.customerNumber = o.customerNumber
        JOIN
    orderdetails od ON o.orderNumber = od.orderNumber
GROUP BY e.employeeNumber , e.firstname , e.lastName
ORDER BY no_of_orders_recived DESC , Total_quantity_sold DESC
LIMIT 5;
# In the above query table customers orders and orderdetails are joined with each other to find the count of orders,
# and the total quantity sold in these orders and the output is limited to 5
```

OUTPUT ->

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

employeeNumber	firstname	lastName	no_of_orders_recived	Total_quantity_sold
1370	Gerard	Hernandez	396	14231
1165	Leslie	Jennings	331	11854
1401	Pamela	Castillo	272	9290
1501	Larry	Bott	236	8205
1504	Barry	Jones	220	7486

SQL QUERIES

```sql
-- Top 5 countries by Who orders the most?
SELECT
    c.country, SUM(od.quantityordered) AS 'Quantity_ordered'
FROM
    customers c
        JOIN
    orders o ON c.customerNumber = o.customerNumber
        JOIN
    orderdetails od ON o.orderNumber = od.orderNumber
GROUP BY c.country
ORDER BY SUM(o.orderNumber) DESC
LIMIT 5;
```

OUTPUT ->

Result Grid | Filter Rows: | Ex

country	Quantity_ordered
USA	35844
Spain	12429
France	11090
Australia	6246
New Zealand	5396

SQL QUERIES

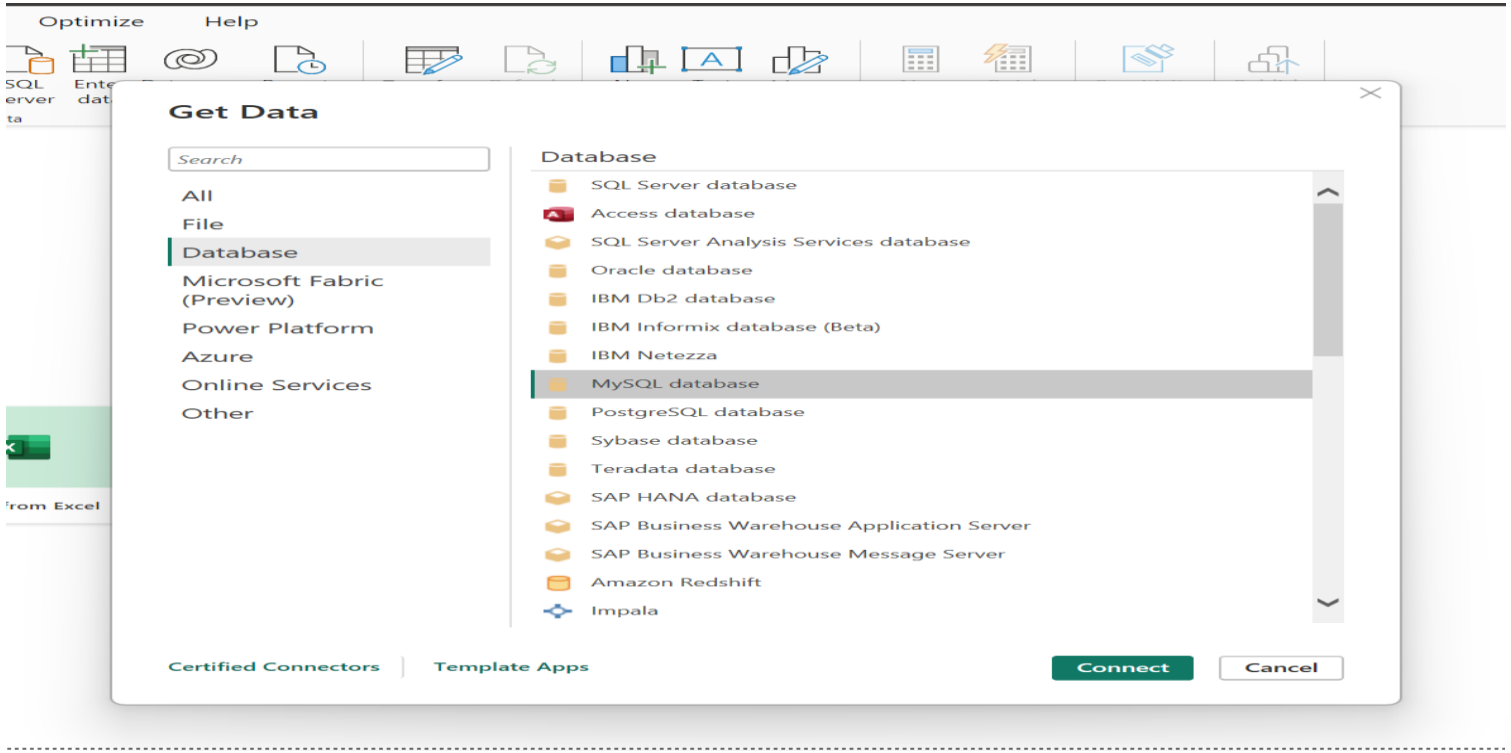
```sql
-- Yearly profit
SELECT
    YEAR(orderDate) AS 'Year',
    SUM((od.priceEach - p.buyprice) * od.quantityOrdered) AS profit
FROM
    products p
        JOIN
    orderdetails od ON p.productCode = od.productCode
        JOIN
    orders o ON od.orderNumber = o.orderNumber
GROUP BY YEAR(orderDate)
ORDER BY profit DESC;

# this shows that 2004 is the most profitable Year
```

OUTPUT ->

Result Grid | Filter Rows:

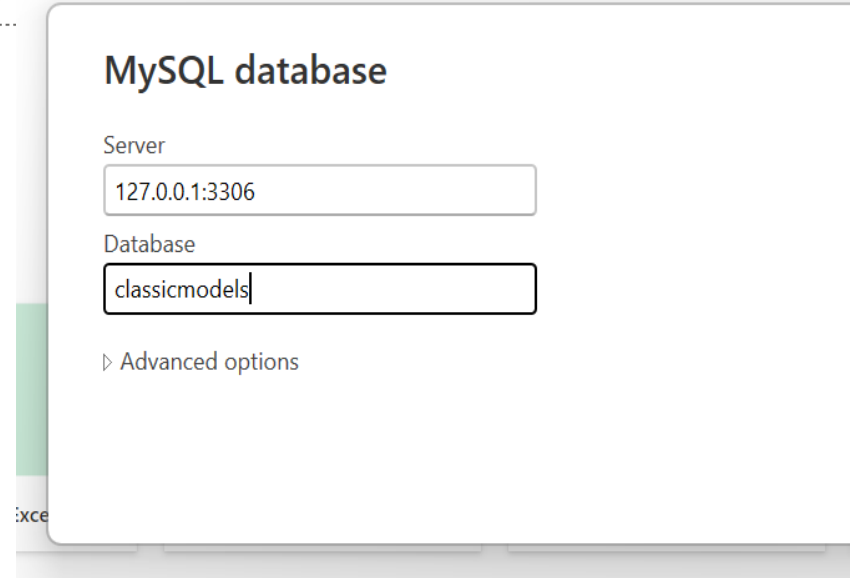
Year	profit
2004	1809381.14
2003	1320622.94
2005	695876.17

CONNECTING POWER BI WITH MYSQL



<- Selecting the Database

Adding the details ->



POWER QUERY

Some Data transformations were done in Power Query Editor :-

- Table names were changed.

- Null values were replaced with “Unknown” if the column type was text.

- Column customer first name & customer last name were merged using the transform menu in text column to create a new column named Customer Name.

- Checked column profiling and distribution in view menu in the Data Preview tab.

DATA ANALYSIS EXPRESSIONS (DAX)

Few DAX formulae used to create calculated columns and measures are :-

This DAX formula was used to create a calculated column named Continent in the customers table

```
Continent =
SWITCH (
    TRUE (),
    'Customers Dim'[country] IN { "France", "Norway", "Poland", "Germany", "Spain", "Sweden", "Denmark", "Portugal", "UK", "Ireland", "Finland", "Switzerland",
    "Netherlands", "Belgium", "Italy", "Austria" }, "Europe",
    'Customers Dim'[country] IN { "USA", "Canada" }, "North America",
    'Customers Dim'[country] IN { "Singapore", "Japan", "Hong Kong", "Philippines","Israel","Russia" }, "Asia",
    'Customers Dim'[country] IN { "Australia", "New Zealand" }, "Oceania",
    'Customers Dim'[country] IN { "South Africa" }, "Africa",
    'Customers Dim'[country] IN {"Brazil", "Argentina", "Chile"}, "South America",
    BLANK ()
)

```

This DAX formula was used to create a calculated column named Shipment Days in the Orders table

```
Shipment Days =
DATEDIFF(
    'Orders Dim'[orderDate],
    'Orders Dim'[shippedDate],
    DAY
)
```

This DAX formula was used to create a calculated column named Profit in the Order details table

```
Profit =
('Orderdetails Fact'[priceEach] - RELATED('Products Dim'[buyPrice])) * 'Orderdetails Fact'[quantityOrdered]
```

This DAX formula was used to create a Explicit measure named Total customers who did not ordered

```
Total customer who did not ordered =
COUNTROWS(
    FILTER(
        'Customers Dim',
        ISBLANK(
            'Customers Dim'[salesRepEmployeeNumber]
        )
    )
)
```

This DAX formula was used to create a Explicit measure named Total orders by ProductLine.

```
Total Orders by ProductLine =
SUMX(
    SUMMARIZE(
        'Products Dim',
        'Products Dim'[productLine],
        "ProductLineOrders", COUNTROWS(RELATEDTABLE('Orderdetails Fact'))
    ),
    [ProductLineOrders]
)
```

This is a glimpse of the executive dashboard of the Report

AXON

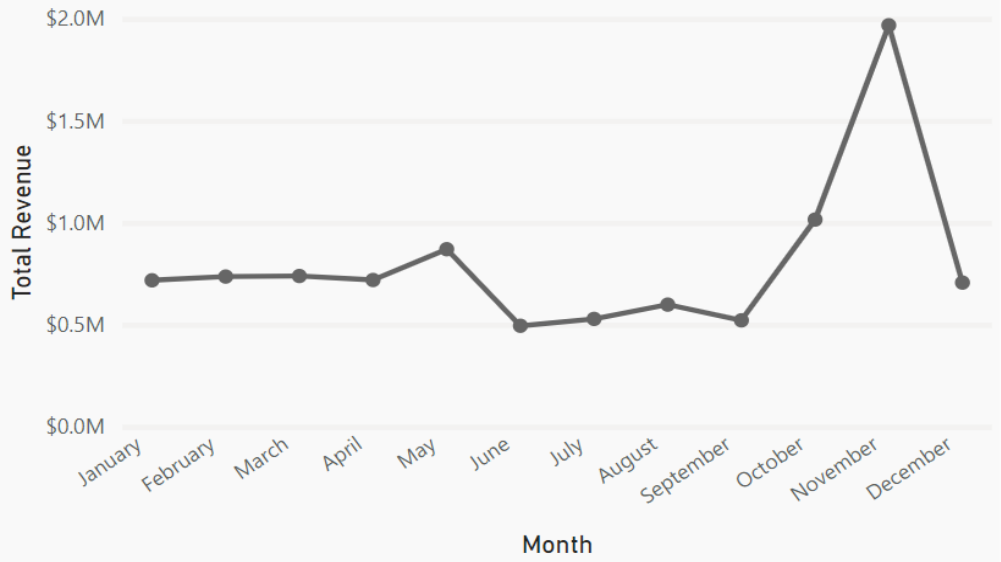
$9.60M
Total Revenue

$3.83M
Profit

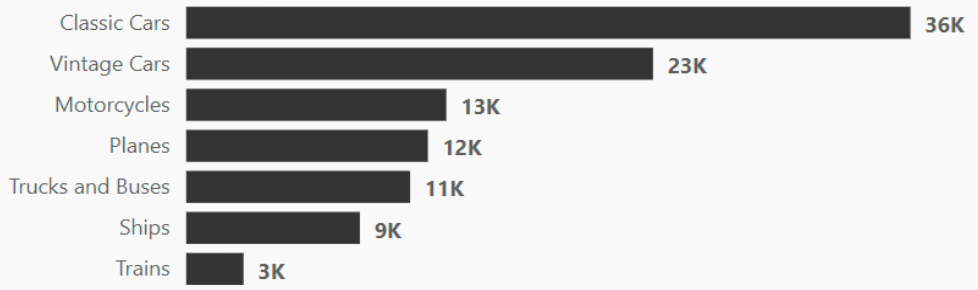
2996
Orders by ProductLine

39.84%
AVG Profit Margin

Total Revenue by Month



Quantity Ordered by Product Category



Monthly Revenue

$705.56K

Monthly Orders

22

Top 10 Products

productName	Total Orders	Total Revenue	Total Profit (M)
1992 Ferrari 360 Spider red	53	$2,76,839.98	$1,35,996.78
1952 Alpine Renault 1300	28	$1,90,017.96	$95,282.58
2001 Ferrari Enzo	27	$1,90,755.86	$93,349.65
2003 Harley-Davidson Eagle Drag Bike	28	$1,70,686.00	$81,031.30
1968 Ford Mustang	27	$1,61,531.48	$72,579.26
1969 Ford Falcon	27	$1,52,543.02	$72,399.77
2002 Suzuki XREO	28	$1,35,767.03	$67,641.47
1980s Black Hawk Helicopter	28	$1,44,959.91	$64,599.11
1917 Grand Touring Sedan	25	$1,40,535.60	$60,945.00
1998 Chrysler Plymouth Prowler	28	$1,42,530.63	$42,441.77
Total	**299**	**$17,06,167.47**	**$7,86,266.69**

KEY POINTS

- The Dataset contains the data of two whole years (2003,2004) and of first 5 months till may of the year 2005.
- There are total 122 customer out of which 22 customers have not ordered single time.
- The maximum credit limit is $228 thousand and it is of Euro+Shopping channel.
- There are 7 different product lines that are offered by the company which are further divided into 110 subcategories.
- USA has the highest sale out of all the 27 countries.
- Classic cars and Vintage cars categories are the most selling categories.
- The company earned 9.63 million dollars total in revenue and the profit out of this was 3.83 million dollars.
- Monthly revenue of the company is 705.56 thousand dollars and monthly profit is 279.87 thousand dollars.

SUMMARY

- Some countries have high customers present but most of them do not order for example Germany which have a total of 13 customers but only 3 of them order.
- The company should start giving attractive offers in such countries so that it can increase it’s sales.
- The peak orders of the company are always in the month of November so company should increase it’s stock in the last quarter of the year.
- For year 2005 the peak sales is in may because the data is available only till that month.
- There are total 25 employees in the company out of which 17 are sales representatives.
- The top employee of the company is Gerald Hernandez who has received more 396 orders and sold more than 14000 quantities of product.
- Best selling product of the company is 1922 Ferrari 360 Spider Red Total quantity sold is 1808.
- Least selling product of the company is 1957 Ford Thunderbird, Total quantity sold is of 767.

THANK YOU

Pankaj Rao

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