"Exploring CARS24 - SQL Analysis Project"

Project Overview:

"Leveraging SQL queries to gain insights into the CARS24 dataset and optimize business strategies."

Introduction:

- Cars24 is an Indian multinational online used cars marketplace headquartered in Gurgaon. It considered one of the major organized players in the used car segment in India.
- The Cars24 dataset encompasses details of used cars sold through the platform.
- The featuring information such as car model, manufacturing year, selling price, kilometers driven, fuel type, seller type, transmission, owner history, mileage, engine displacement, maximum power, and the number of seats.
- This analysis aims to extract meaningful business insights, understand market trends, and enhance decision-making processes.

By utilizing SQL queries, we can efficiently analyze large datasets, uncover patterns, and inform strategic decisions.

Dataset Overview:

Cars24 is a leading platform for buying and selling used cars. The company utilizes advanced technology and data analytics to streamline the car selling process, offering convenience and transparency to customers.

- The datasets analyzed from cars24 reveled several interesting trends and Insights.
- One Significant finding was the positive correlation between vehicle age and price reduction.
- Another interesting pattern discovered was the strong relationship between mileage and price.

Key Columns Include-:

- Car Model Name
- Year
- Mileage km_driven
- Fuel
- Seller Type
- Transmission
- Owner
- Mileage
- Engine [CC]
- Max Power
- Seats

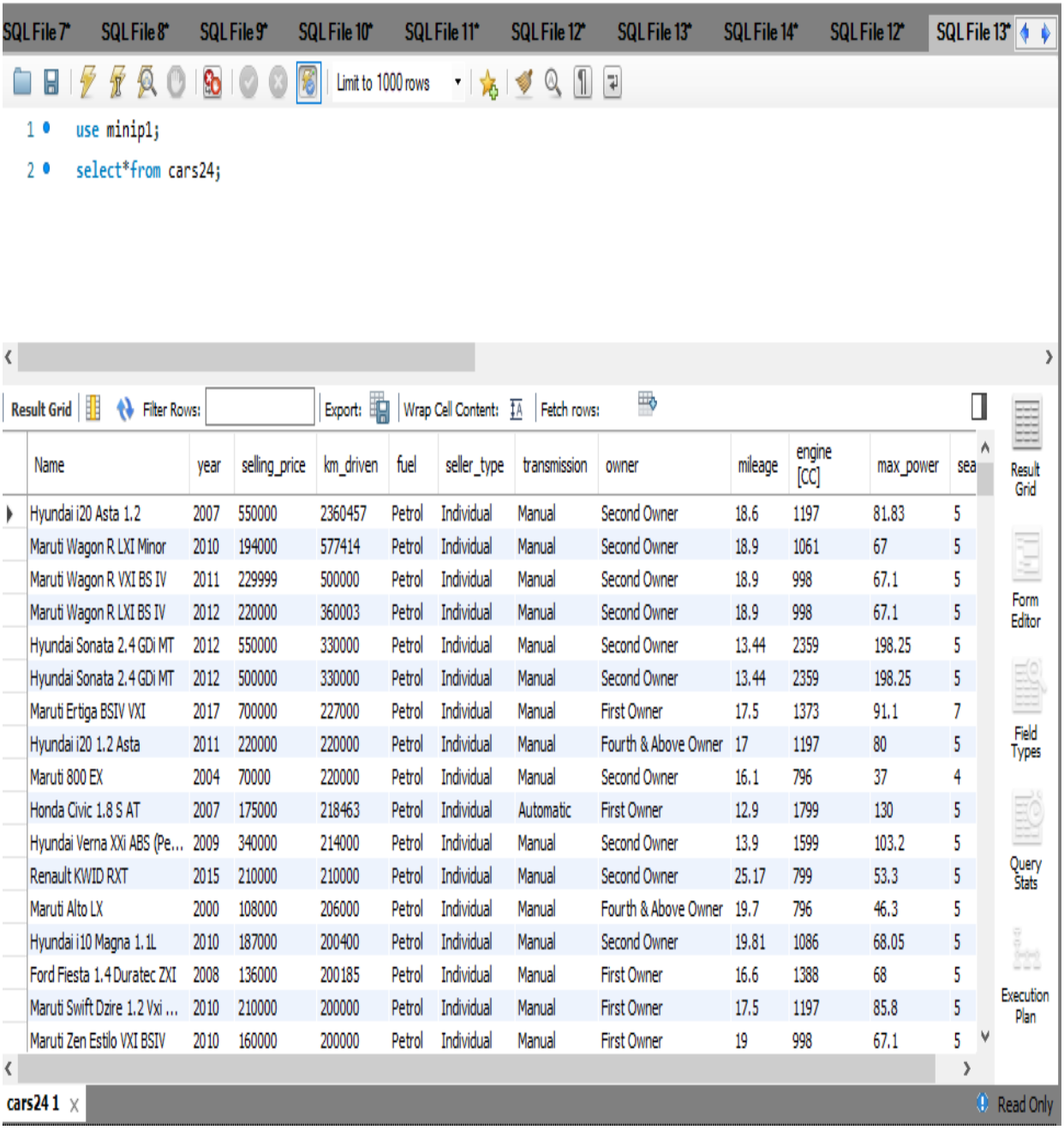
Methodology:

- We employed SQL queries to extract and analyze relevant data from the Cars24 database.
- Our methodology involved data cleaning, filtering outliers, and aggregating information for a comprehensive analysis.

- SELECT query: Retrieving specific columns and rows of data from a table.
- select * from table name;
- WHERE clause: Filtering data based on conditions.
- Select * from table name where condition (id, name, etc.)
- LOGICAL operator: Condition is a combination of one or more expression.
- - select * from table name where condition and / or / not condition;
- DISTINCT: Remove duplicate rows from the columns.
- - select distinct (column name) from table name.
- ORDER BY clause: Sorting data in a specific order.
- select column name from table name where condition order by column name asc / desc;
- JOINs: Combining data from multiple tables.
- select table name A. column name from table name A left / right / inner / cross join table
- name B on table name A = table name B order by column name;
- AGGREGATION function (SUM, AVG, COUNT, etc.): Calculating summary statistics.
- select sum / avg / count (column name) from table name;
- DELETE: Used to delete existing record in a table.
- Delete from table name where condition;
- GROUP BY clause: Grouping data and performing calculations on groups.
- select column name from table name where condition group by column name;
- SUB-QUERIES: Using one query within another for complex filtering or calculations.
- select column name from table name where condition A in (select condition A from table where condition B;

Insights:

Insight 1 Reading the whole table



Name	year	selling_price	km_driven	fuel	seller_type	transmission	owner	mileage	engine [CC]	max_power	sea
Hyundai i20 Asta 1.2	2007	550000	2360457	Petrol	Individual	Manual	Second Owner	18.6	1197	81.83	5
Maruti Wagon R LXI Minor	2010	194000	577414	Petrol	Individual	Manual	Second Owner	18.9	1061	67	5
Maruti Wagon R VXI BS IV	2011	229999	500000	Petrol	Individual	Manual	Second Owner	18.9	998	67.1	5
Maruti Wagon R LXI BS IV	2012	220000	360003	Petrol	Individual	Manual	Second Owner	18.9	998	67.1	5
Hyundai Sonata 2.4 GDi MT	2012	550000	330000	Petrol	Individual	Manual	Second Owner	13.44	2359	198.25	5
Hyundai Sonata 2.4 GDi MT	2012	500000	330000	Petrol	Individual	Manual	Second Owner	13.44	2359	198.25	5
Maruti Ertiga BSIV VXI	2017	700000	227000	Petrol	Individual	Manual	First Owner	17.5	1373	91.1	7
Hyundai i20 1.2 Asta	2011	220000	220000	Petrol	Individual	Manual	Fourth & Above Owner	17	1197	80	5
Maruti 800 EX	2004	70000	220000	Petrol	Individual	Manual	Second Owner	16.1	796	37	4
Honda Civic 1.8 S AT	2007	175000	218463	Petrol	Individual	Automatic	First Owner	12.9	1799	130	5
Hyundai Verna XXi ABS (Pe...	2009	340000	214000	Petrol	Individual	Manual	Second Owner	13.9	1599	103.2	5
Renault KWID RXT	2015	210000	210000	Petrol	Individual	Manual	Second Owner	25.17	799	53.3	5
Maruti Alto LX	2000	108000	206000	Petrol	Individual	Manual	Fourth & Above Owner	19.7	796	46.3	5
Hyundai i10 Magna 1.1L	2010	187000	200400	Petrol	Individual	Manual	Second Owner	19.81	1086	68.05	5
Ford Fiesta 1.4 Duratec ZXI	2008	136000	200185	Petrol	Individual	Manual	First Owner	16.6	1388	68	5
Maruti Swift Dzire 1.2 Vxi ...	2010	210000	200000	Petrol	Individual	Manual	First Owner	17.5	1197	85.8	5
Maruti Zen Estilo VXI BSIV	2010	160000	200000	Petrol	Individual	Manual	First Owner	19	998	67.1	5

Insight 2: Overview of the Dataset

SQL File 5*

Limit to 1000 rows

```
1   CREATE DATABASE MINIP1;
2   USE MINIP1;
3   SELECT COUNT(*)FROM CARS24;
4   -- Get a general overview of the dataset
5   SELECT COUNT(*) AS total_records,
6          MIN(year) AS min_year,
7          MAX(year) AS max_year,
8          AVG(selling_price) AS avg_price
9   FROM CARS24;
10
```

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

total_records	min_year	max_year	avg_price
8128	1983	2020	638271.8077

Insight 3: Top 5 Most Sold Car Models

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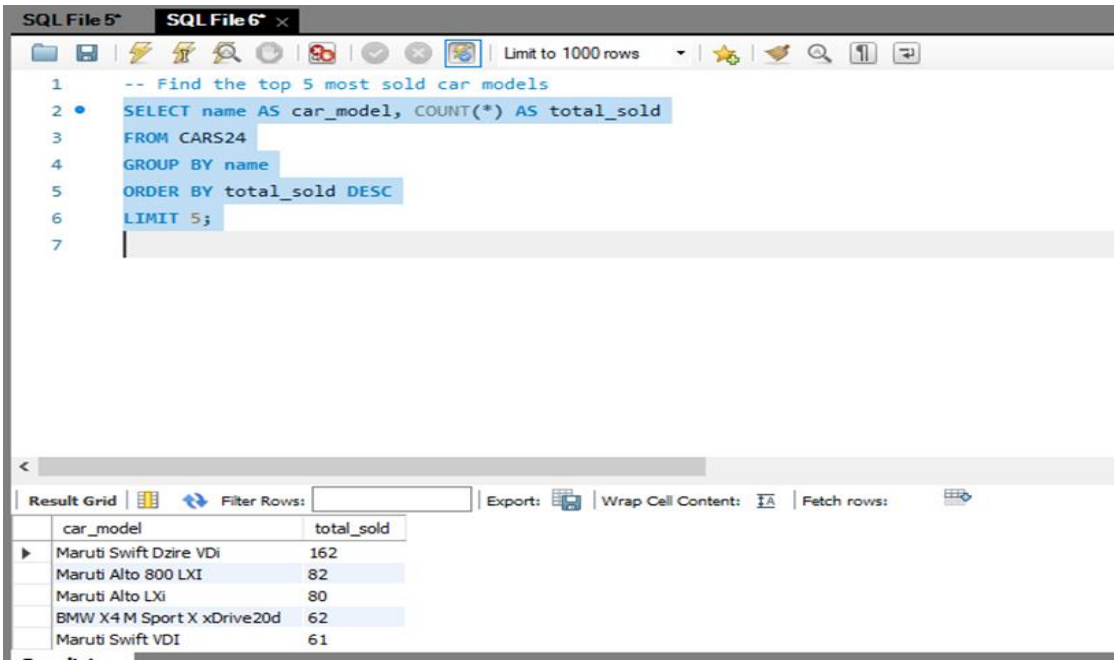
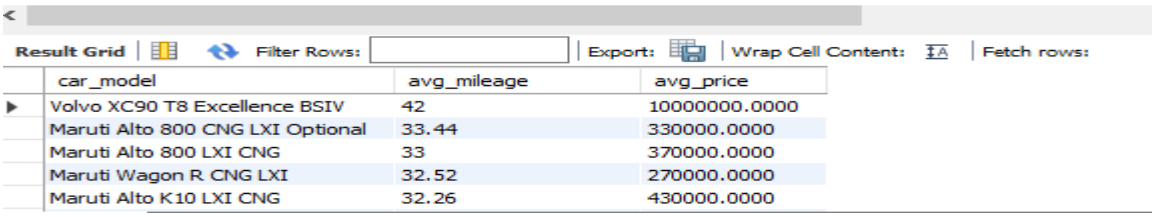


Insight 4: Average Mileage by Year

```
-- Calculate the average mileage for each year
SELECT year, AVG(mileage) AS avg_mileage
FROM CARS24
GROUP BY year
ORDER BY year;
```

Insight 5: Fuel Efficiency Analysis

```sql
-- Analyze fuel efficiency across different car models
SELECT name AS car_model,
       AVG(mileage) AS avg_mileage,
       AVG(selling_price) AS avg_price
FROM CARS24
GROUP BY name
ORDER BY avg_mileage DESC;
```



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

car_model	avg_mileage	avg_price
Volvo XC90 T8 Excellence BSIV	42	10000000.0000
Maruti Alto 800 CNG LXI Optional	33.44	330000.0000
Maruti Alto 800 LXI CNG	33	370000.0000
Maruti Wagon R CNG LXI	32.52	270000.0000
Maruti Alto K10 LXI CNG	32.26	430000.0000

Insight 6: Average Selling Price by Fuel Type

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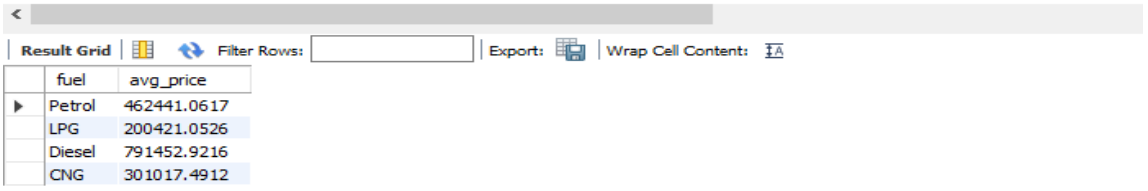
```sql
-- Calculate the average selling price for each fuel type
SELECT fuel, AVG(selling_price) AS avg_price
FROM CARS24
GROUP BY fuel;
```



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

fuel	avg_price
Petrol	462441.0617
LPG	200421.0526
Diesel	791452.9216
CNG	301017.4912

Insight 7: Transmission Preference Analysis

```sql
-- Analyze the distribution of manual and automatic transmissions
SELECT transmission, COUNT(*) AS total_cars
FROM CARS24
GROUP BY transmission;
```

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

transmission	total_cars
Manual	7078
Automatic	1050

Insight 8: Seller Type Distribution

```sql
-- Analyze the distribution of seller types
SELECT seller_type, COUNT(*) AS total_cars
FROM CARS24
GROUP BY seller_type;
```

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

seller_type	total_cars
Individual	6766
Dealer	1126
Trustmark Dealer	236

Insight 9: Average Selling Price by Owner History

```sql
-- Calculate the average selling price for each owner history
SELECT owner, AVG(selling_price) AS avg_price
FROM CARS24
GROUP BY owner;
```

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

owner	avg_price
Second Owner	392964.4684
First Owner	783086.4144
Fourth & Above Owner	225813.1724
Third Owner	284015.3315
Test Drive Car	4403800.0000

Insight 10: Mileage vs. Engine Power Correlation

```sql
-- Calculate the correlation between mileage and engine power
SELECT
    COUNT(*) AS n,
    SUM(mileage * max_power) AS sum_xy,
    SUM(mileage) AS sum_x,
    SUM(max_power) AS sum_y,
    SUM(mileage * mileage) AS sum_x_squared,
    SUM(max_power * max_power) AS sum_y_squared
FROM CARS24;
```

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

n	sum_xy	sum_x	sum_y	sum_x_squared	sum_y_squared
8128	14017280.297999898	157833.9300000005	743853.7749999833	3193761.4747000304	78227397.31427416

Insight 11: Seats Distribution

```sql
-- Analyze the distribution of the number of seats
SELECT seats, COUNT(*) AS total_cars
FROM CARS24
GROUP BY seats;
```

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

seats	total_cars
5	6475
7	1120
4	133
8	236
6	62

Conclusion:

- CARS24 is the best platform to buy or sell used cars because it provides detailed information about aspects such as mileage, engine capacity (cc), the age of the car model, fuel types, and transmission.
- Cars24 has two types of seller.
- Individuals: These are private individuals who buy or sell cars for personal use. They may be individuals acting alone or with their family.
- Dealer: Dealers are businessperson who buy or sell cars to meet the needs of others. They operate in specific market or regions and advice to customers based on their requirements.
- Cars24 has the most individual's seller and they all sell their cars in good conditions.

Future Work:

- As Cars24 continues to expand its market presence and technological capabilities, the company is poised to further transform the automotive industry. The future holds immense potential for growth and innovation.

THANKS & REGARDS

SUBMITTED BY:

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