Data Analytics SQL Mini-Project-1

Insight-1
Model-wise count of the cars, to count which cars are the most listed. Showing top 5
Query-

```
# Insight-1: Model wise count of the cars, to count which cars are the most listed . Showing top 5
Select name, count(name) as count_of_car
From cars24
Group by name #Getting a count of the model of the cars, grouping by name
Order by count_of_car DESC  #Ordering by the count in the descending order
Limit 5; #Seeing only the top 5
```

Output-

name	count_of_car
Maruti Swift Dzire VDi	162
Maruti Alto 800 LXI	82
Maruti Alto LXi	80
BMW X4 M Sport X xDrive20d	62
Maruti Swift VDI	61

Explanation- This helps us see which car is listed the most. In this case it is Maruti Swift Dzire VDi
Insight-2: Which type of fuel is mostly used by the listed cars
Query-

```
# Insight-2. Which type of fuel is mostly used by the listed cars
Select fuel, count(fuel) as count_fuel, concat(round(((count(fuel) / 8128) * 100 ),2), '%')  as percentage
From cars24 #Getting a count of the fuel type of the cars, and the percentage
Group by fuel #grouping by type
Order by count_fuel desc; #Ordering by the count in the descending order to get which is used the most above
```

Output-

fuel	count_fuel	percentage
Diesel	4402	54.16%
Petrol	3631	44.67%
CNG	57	0.70%
LPG	38	0.47%

Explanation- 54.16% (4402) of cars are diesel cars.

Insight-3: How many cars are of manual transmission type and how many are automatic?

Query-

```
# Insight-3 How many cars are of manual transmission type and how many are automatic?
Select transmission, count(transmission) as count, concat(round(((count(transmission) / 8128) * 100 ),2), '%')  as percentage
from cars24 #Getting a count of the transmission type of the cars,and the percentage (using round to get to 2 decimal places)
Group by transmission  #grouping by type
Order by count desc; #Ordering by the count in the descending order
```

Output-

transmission	count	percentage
Manual	7078	87.08%
Automatic	1050	12.92%

Explanation- 87% of the cars are of Manual type.
Insight-4 What is the average selling price of the all the cars listed. Also what is the highest and lowest price at which a listed car is sold
Query-

```
# Insight-4. What is the average selling price of the cars.
# Also what is the highest and lowest price at which a car is sold
Select avg(selling_price) as average_selling_price, max(selling_price) as maximum_selling_price,
 min(selling_price) as minimum_selling_price
from cars24; #Using the avg, max and min function to find the average, maximum and minmum price
```

Output-

average_selling_price	maximum_selling_price	minimum_selling_price
638271.8077	10000000	29999

Explanation – Helps us see what the average selling price of all the cars listed is as well as the maximum and minimum selling price.

Insight-5
How many total cars are there?
Query-

```
# Insight-5 How many total cars are there?
Select count(name)
from cars24; #using count to calculate the total number
```

Output-

	count(name)
▶	8128

Insight-6
Average number of kilometres driven by all the listed cars
Query-

```
# Insight 6 Average number of kilometers driven by the cars
Select avg(km_driven)
from cars24; # Using avg to calculate
```

Output-

	avg(km_driven)
▶	69819.5108

Explanation- Helps us see the average number of kilometres driven by all the listed cars. On an average the cars listed have driven 69819.51 km.
Insight-7:Which type of seller dominates the listings
Query-

```
# Insight-7. Which type of seller dominates the listings
Select seller_type, count(seller_type) as count, concat(round(((count(seller_type) / 8128) * 100 ),2), '%')  as percentage
from cars24 # Getting the seller type with their count and percentage of total( using round to round off the percentage to 2 decimal places)
Group by seller_type #grouping by type
Order by count  desc; #Ordering by the count
```

Output-

	seller_type	count	percentage
▶	Individual	6766	83.24%
	Dealer	1126	13.85%
	Trustmark Dealer	236	2.90%

Explanation- 83% of the sellers are of Individual seller type.

Insight-8 : Which seater type is most prevalent among the listed cars
Query-

```
# Insight-8 Which seater type is most prevalent among the listed cars
Select seats, count(seats) as count, concat(round(((count(seats) / 8128) * 100 ),2), '%')  as percentage
from cars24 # Fetching seater type, count and percentage of total
Group by seats #grouping by type
Order by count desc # Ordering by the count
```

Output-

seats	count	percentage
5	6475	79.66%
7	1120	13.78%
8	236	2.90%
4	133	1.64%
9	80	0.98%
6	62	0.76%
10	19	0.23%
2	2	0.02%
14	1	0.01%

Explanation- Most of the cars listed are 5 Seater. (79.66%)
Insight-9 : Ownership pattern of the listed cars
Query-

```
# Insight-9: Ownership pattern of the listed cars
Select owner, count(owner) as count, concat(round(((count(owner) / 8128) * 100 ),2), '%')  as percentage
from cars24 # Getting the number of previous owners, the count and the percentage of total
Group by owner #grouping by type
Order by count desc #Ordering by the count in descending order
```

Output-

owner	count	percentage
First Owner	5289	65.07%
Second Owner	2105	25.90%
Third Owner	555	6.83%
Fourth & Above Owner	174	2.14%
Test Drive Car	5	0.06%

Explanation- Most of the cars listed are First Owner cars (65.07%)
Insight-10: Is there a relationship between ownership and mileage?

Query-

```
#Insight-10 Is there a relationship between ownership and mileage?
Select owner, round(avg(mileage),2) as average, max(mileage) as maximum_mileage
from cars24 #Fetching owner column, and the average of mileage as well as the maximum mileage
Group by owner #Using average and max function to find the average and max mileage, grouping by ownership
Order by average desc;  #Ordering by the average in descending order
```

Output-

owner	average	maximum_mileage
First Owner	19.9	42
Second Owner	18.74	33.44
Third Owner	18.04	28.09
Fourth & Above Owner	17.56	26
Test Drive Car	16.91	22.27

Explanation- The lesser the number of previous owners the more the mileage on average.
Insight-11: Is there a relationship between ownership and price?
Query:

```
# Insight-11 Is there a relationship between ownership and price?
Select owner, avg(selling_price)as average_selling_price, max(selling_price) as maximum_selling_price ,
 min(selling_price) as minimium_selling_price
from cars24 #Fetching owner column, average selling price, mimimum selling price, and maximum selling price
Group by owner #Using average and max function to find the average, min , and max mileage, grouping by ownership
Order by average_selling_price desc;  # Ordering by average selling price
```

Output-

owner	average_selling_price	maximum_selling_price	minimium_selling_price
Test Drive Car	4403800.0000	6523000	1350000
First Owner	783086.4144	10000000	30000
Second Owner	392964.4684	3000000	33983
Third Owner	284015.3315	2000000	29999
Fourth & Above Owner	225813.1724	810000	31000

Explanation-The first-owner cars or cars with just one owner before have a higher price as compared to fourth and above owner cars. The lesser the number

of previous owners the more the price.

Insight 12: Ownership wise km driven
Query-

```
# Insight-12 Ownership wise kilometer driven
Select owner, avg(km_driven)as average_km, max(km_driven) as maximum_km , min(km_driven) as minimium_km
from cars24 #Fetching owner column, average km driven, mimimum km driven, and maximum km driven
Group by owner #Using average and max function to find the average, min , and max km driven, grouping by ownership
Order by average_km desc; # Ordering by average km driven
```

Output-

owner	average_km	maximum_km	minimium_km
Fourth & Above Owner	106116.6379	305000	1
Third Owner	100239.5730	475000	10000
Second Owner	89861.5325	2360457	2000
First Owner	57508.8000	1500000	1000
Test Drive Car	14631.4000	24857	5400

Explanation- On average the fourth and above owner cars have more km driven than the first owner cars. More the number of previous owners , more the average kilometre driven.

Insight-13: Fuel type wise selling price
Query-

```
# Insight-13 Fuel type wise selling price
Select fuel, avg(selling_price)as average_sp
from cars24 #Fetching fuel column, average selling price from cars24
Group by fuel #Grouping by fuel
Order by average_sp desc; # Ordering by average selling price
```

Output-

fuel	average_sp
Diesel	791452.9216
Petrol	462441.0617
CNG	301017.4912
LPG	200421.0526

Explanation- On average diesel cars are the most costly to buy.

Insight-14: Year wise average prices
Query-

```
# Insight-14: Year wise average prices
Select year, avg(selling_price)as average_selling_price
from cars24 #Fetching year, average selling price from cars 24
Group by year  #Grouping by year
Order by average_selling_price desc; # Ordering by average selling price
```

Output-

year	average_selling_price
2019	1776986.2504
2018	957769.4919
2017	889246.5305
2020	885270.2297
2016	699880.0605
2015	596613.3492
2014	516193.1723
2013	460005.9209
2012	351164.3241
2011	323775.2939
1983	300000.0000
2010	272621.7919
2009	226434.9146
2008	207488.3879
2007	177718.2131
2006	163904.4113
2005	141159.7835
2004	110965.4032
1995	107500.0000
2002	98999.9630
2003	95636.6939
2000	93041.5455

Explanation- As the years increase so does the selling price on average.

Insight-15: Decade-wise average selling prices-
Query:

```
# Decade wise average selling prices-
select CASE when year>=1980 and year<1990 then "1980-1989" WHEN year>=1990 and year<2000 then "1990-1999"
WHEN year>=2000 and year<2010 then "2000-2009" WHEN year>=2010 and year<2020  then "2010-2019"
 when year>=2020 and year<2030 then "2020-2029"end as Year_range, avg(selling_price) as average_sp
from cars24 # clubbing the years into different ranges using case
Group by Year_range # grouping by year range
Order by average_sp desc; # Ordering by average selling price
```

Output-

Year_range	average_sp
2020-2029	885270.2297
2010-2019	707901.4094
1980-1989	300000.0000
2000-2009	177384.4603
1990-1999	80562.4792

Explanation- As the years increase, so does the cost.

Insight-16 : Relationship between transmission and selling price

Query-

```
#  Insight-15 Relationship between transmission and selling price
Select transmission, avg(selling_price)as average_selling_price, max(selling_price) as maximum_selling_price, min(selling_price) as minimum_selling_price
from cars24 #Fetching transmission, average selling price, maximum selling price, minimum selling price
Group by  transmission #Using average and max function to find the average, min , and max selling price, grouping by transmission
Order by average_selling_price desc; #Ordering by average selling price
```

Output-

transmission	average_selling_price	maximum_selling_price	minimum_selling_price
Automatic	1870827.6038	10000000	75000
Manual	455425.8645	3200000	29999

Explanation: On average Automatic cars are more costly to buy as compared to manual cars.

Insight-17: Relationship between seats and selling price

Query:

```
#  Insight-17 Relationship between seats and selling price
Select seats, avg(selling_price)as average_selling_price
from cars24 #Fetching seats, average selling price from cars24
Group by  seats #grouping by seats
Order by average_selling_price desc; #Ordering by average selling price
```

Output-

seats	average_selling_price
7	812923.1848
2	700500.0000
5	616318.8576
8	583711.8263
6	581596.7742
9	500074.9375
4	486764.6617
10	344105.1053
14	235000.0000

Explanation- 7 seater cars cost more on average than the other cars to buy.
Insight-18: Relationship between mileage and transmission
Query-

```
# Insight-18 Relationship between mileage and transmission
Select transmission, round(avg(mileage),2)as average_mileage
from cars24 #Fetching transmission, average mileage from cars24
Group by transmission # #grouping by transmission
Order by average_mileage desc; #Ordering by average mileage
```

Output-

	transmission	average_mileage
▶	Manual	19.69
	Automatic	17.58

Explanation- On average manual cars have greater mileage than automatic.

Insight 19: Relationship between mileage and fuel type
Query-

```
# Insight-19 Relationship between mileage and fuel type
Select fuel, round(avg(mileage),2)as average_mileage, max(mileage)
from cars24 #Fetching fuel, average mileage from cars24
Group by fuel  #grouping by transmission
Order by average_mileage desc; #Ordering by average mileage
```

Output-

fuel	average_mileage	max(mileage)
CNG	23.83	33.44
Diesel	19.64	28.4
Petrol	19.09	42
LPG	18.64	26.2

Explanation- CNG cars have the highest mileage followed by diesel and petrol

on average.

Insight-20: Relationship between km driven and price.
Query-

```
# Insight 20 : Relationship between km driven and price
select CASE when km_driven<=1000  then "less than 1000 km"
WHEN km_driven >1000 and km_driven <=100000 then "Between 1000 and 1L km"
WHEN km_driven>100000 and km_driven<=1000000 then "Between 1L and 10L KM"
WHEN km_driven>1000000 and km_driven<=2000000  then "Between 10L and 20L" when km_driven>=2000000 then "More than 20L KM"end as Km_driven_range,
avg(selling_price) as average_selling_price
from cars24 # Clubbing the km_driven into different ranges using case, and selecting average selling price from cars 24
Group by Km_driven_range # grouping by km driven
Order by average_selling_price desc; # Ordering by average selling price
```

Output-

Km_driven_range	average_selling_price
less than 1000 km	805428.5714
Between 1000 and 1L km	697940.1284
More than 20L KM	550000.0000
Between 10L and 20L	500000.0000
Between 1L and 10L KM	407287.0449

Explanation- Lesser the km driven. More the selling price.
Insight 21: Relationship between engine displacement and fuel type
Query-

```
# Insight 21: Relationship between engine displacement and fuel type
Select fuel, round(avg(engine),2)as average_engine_disp, max(engine) as max_engine_disp,min(engine) as min_engine_disp
from cars24 #Selecting fuel column, average engine displacement, maximium engine displacement ,minimum engine displacement from cars24
Group by fuel #group by fuel
Order by average_engine_disp desc; # Ordering by average engine displacement
```

Output-

fuel	average_engine_disp	max_engine_disp	min_engine_disp
Diesel	1687.39	3198	793
Petrol	1190.87	3604	624
CNG	1108.93	1586	796
LPG	1064.18	1495	796

Explanation- On an average Diesel cars have a higher engine displacement than the other cars.

Insight-22: Relationship between engine displacement and transmission
Query:

```
# Insight22 :Relationship between engine displacement and transmission
Select transmission, round(avg(engine),2)as average_engine_disp, max(engine) as max_engine_disp,min(engine) as min_engine_disp
from cars24  #Selecting transmission column, average engine displacement, maximium engine displacement ,minimum engine displacement from cars24
Group by transmission #grouping by transmission
Order by average_engine_disp desc;  #Ordering by average engine displacement
```

Output-

transmission	average_engine_disp	max_engine_disp	min_engine_disp
Automatic	1822.01	3604	624
Manual	1404.70	2982	624

Explanation- Automatic cars have more engine displacement on average than manual cars.

Insight 23: Relationship between max_power and fuel type
Query-

```
# Insight 23: Relationship between max_power and fuel type
Select fuel, round(avg(max_power),2)as average_max_power
from cars24  #Selecting fuel column, average engine displacement from cars24
Group by fuel # grouping by fuel column
Order by average_max_power desc; #Ordering by average maximum power
```

Output-

fuel	average_max_power
Diesel	101.25
Petrol	80.47
CNG	63.67
LPG	61.87

Explanation- On average, Diesel cars have the highest maximum power output of the car's engine.

Insight 24: Relationship between transmission and max_power
Query-

```
# Insight 24 : Relationship between transmission and max_power
Select transmission, round(avg(max_power),2)as average_max_power
from cars24 #Selecting transmission column, average engine displacement from cars24
Group by transmission # grouping by transmission columns
Order by average_max_power desc; #Ordering by average maximum power
```

Output-

transmission	average_max_power
Automatic	140.9
Manual	84.19

Explanation- On average, Automatic cars have a higher maximum power output of the car's engine than manual cars.

Insight 25: Relationship between price, transmission, ownership and fuel
Query:

```
# Insight 25- Relationship between price, transmission, ownership and fuel
Select transmission,owner, fuel, avg(selling_price) as average_selling_price
from cars24 #Selecting transmission column,owner, fuel, average selling prices from cars24
group by transmission,owner, fuel # Grouping by fuel , transmission, owner
order by average_selling_price desc; #Ordering by average selling price
```

Output-

transmission	owner	fuel	average_selling_price
Automatic	Test Drive Car	Petrol	5167250.0000
Automatic	First Owner	Diesel	2808103.5923
Manual	Test Drive Car	Diesel	1350000.0000
Automatic	Second Owner	Diesel	1260012.9610
Automatic	First Owner	Petrol	1242015.7169
Automatic	Third Owner	Diesel	1191000.0000
Manual	First Owner	Diesel	635156.7415
Automatic	Second Owner	Petrol	559923.0385
Automatic	Fourth & Above Owner	Diesel	511666.6667
Manual	Second Owner	Diesel	439647.6422
Manual	First Owner	Petrol	415775.3394
Manual	First Owner	CNG	354029.3235
Automatic	Fourth & Above Owner	Petrol	352333.3333
Manual	Third Owner	Diesel	348529.5870
Manual	Fourth & Above Owner	Diesel	310135.2235
Automatic	Third Owner	Petrol	297166.5833
Manual	First Owner	LPG	250882.3529
Manual	Second Owner	Petrol	239003.7744
Manual	Second Owner	CNG	233055.5556
Manual	Fourth & Above Owner	CNG	189500.0000
Manual	Third Owner	CNG	182333.3333
Manual	Third Owner	Petrol	179226.2811
Manual	Second Owner	LPG	164071.4286
Manual	Third Owner	LPG	156800.0000
Manual	Fourth & Above Owner	LPG	135000.0000
Manual	Fourth & Above Owner	Petrol	122645.5443

Explanation- On average, automatic first owner diesel cars have the highest selling price.

Insight 26: Relationship between mileage, transmission, ownership and fuel
Query-

```
# Insight 26- Relationship between mileage, transmission, ownership and fuel
Select transmission,owner, fuel, round(avg(mileage),2) as average
from cars24 #Selecting transmission column,owner, fuel, average mileage from cars24
group by transmission,owner, fuel  # Grouping by fuel , transmission, owner
order by average desc;# Ordering by average mileage
```

Output-

transmission	owner	fuel	average
Manual	Second Owner	CNG	25.14
Manual	First Owner	CNG	23.9
Manual	Test Drive Car	Diesel	22.27
Manual	First Owner	Diesel	20.8
Manual	First Owner	LPG	20.42
Manual	First Owner	Petrol	19.64
Manual	Third Owner	CNG	19.6
Manual	Second Owner	Diesel	19.05
Automatic	First Owner	Petrol	18.85
Automatic	Fourth & Above Owner	Petrol	18.83
Manual	Second Owner	Petrol	18.6
Manual	Third Owner	Diesel	18.44
Manual	Fourth & Above Owner	LPG	18.36
Manual	Third Owner	Petrol	18.03
Manual	Fourth & Above Owner	Diesel	17.68
Manual	Fourth & Above Owner	Petrol	17.47
Manual	Second Owner	LPG	17.3
Manual	Fourth & Above Owner	CNG	17.26
Automatic	First Owner	Diesel	16.96
Automatic	Second Owner	Petrol	16.49
Manual	Third Owner	LPG	16.47
Automatic	Second Owner	Diesel	15.97
Automatic	Test Drive Car	Petrol	15.57
Automatic	Third Owner	Petrol	15
Automatic	Fourth & Above Owner	Diesel	14.78
Automatic	Third Owner	Diesel	11.18

Explanation- Manual second owner fuel cars have the highest average mileage.

Insight 27- Top 5 cars with the highest mileage-
Query-

```
# Insight 27-Top 5 cars with the highest mileage-
Select distinct(name),mileage
from cars24  #Selecting name column values without duplicates and ,mileage column from cars 24
order by mileage desc # Ordering by mileage in descending order
limit 5; #Limiting to only 5 values so as to see the top 5
```

Output-

name	mileage
Volvo XC90 T8 Excellence BSIV	42
Maruti Alto 800 CNG LXI	33.44
Maruti Alto 800 CNG LXI Optional	33.44
Maruti Alto 800 LXI CNG	33
Maruti Wagon R CNG LXI	32.52

Explanation- Volvo XC90 T8 Excellence BSIV has the highest mileage.

Insight 28- Top 5 cars with the least mileage-
Query-

```
# Insight 28- Top 5 cars with the least mileage-
Select distinct(name), mileage
from cars24 #Selecting name column values without duplicates and ,mileage column from cars 24
where mileage!=0 # Ignoring the 0 mileage values
order by mileage asc   # Ordering by mileage in ascending order
limit 5; #Limiting to only 5 values so as to see the top 5
```

Output-

name	mileage
Honda Accord V6 AT	9
Volvo S60 D4 SUMMUM	9
Jeep Wrangler 2016-2019 3.6 4X4	9.5
Mercedes-Benz E-Class E 220 CDI Avantgarde	10
Honda CR-V 2.4 4WD AT	10.1

Explanation- Honda Accord V6 AT has the lowest mileage.
Insight 29- Top 5 cars with the highest price
Query-

```
# Insight 29 - Top 5 cars with the highest price
Select name,km_driven,transmission,owner,fuel,transmission, mileage, selling_price
from cars24 #Selecting name, km_driven,transmission,owner,fuel,transmission, mileage, selling_price  from cars 24
order by selling_price desc # Ordering by selling price in descending order
limit 5;  #Limiting to only 5 values so as to see the top 5
```

Output-

name	km_driven	transmission	owner	fuel	transmission	mileage	selling_price
Volvo XC90 T8 Excellence BSIV	30000	Automatic	First Owner	Petrol	Automatic	42	10000000
BMW X7 xDrive 30d DPE	5000	Automatic	First Owner	Diesel	Automatic	13.38	7200000
Audi A6 35 TFSI Matrix	23600	Automatic	Test Drive Car	Petrol	Automatic	15.26	6523000
Audi A6 35 TFSI Matrix	7800	Automatic	Test Drive Car	Petrol	Automatic	15.26	6223000
BMW 6 Series GT 630d Luxury Line	28156	Automatic	First Owner	Diesel	Automatic	17.09	6000000

Insight 30- top 5 cars with the lowest selling price
Query-

```
# Insight 30 - top 5 cars with the lowest selling price

Select name,km_driven,transmission,owner,fuel,transmission, mileage, selling_price
from cars24  #Selecting name, km_driven,transmission,owner,fuel,transmission, mileage, selling_price  from cars 24
order by selling_price asc  # Ordering by selling price in ascending order
limit 5; #Limiting to only 5 values so as to see the top 5
```

Output-

name	km_driven	transmission	owner	fuel	transmission	mileage	selling_price
Maruti 800 AC	80000	Manual	Third Owner	Petrol	Manual	16.1	29999
Hyundai Santro GLS I - Euro I	90000	Manual	Third Owner	Petrol	Manual	19.41	30000
Maruti Zen LXI	10000	Manual	First Owner	Petrol	Manual	17.3	30000
Maruti 800 Std	56194	Manual	Fourth & Above Owner	Petrol	Manual	16.1	31000
Maruti 800 Std	110000	Manual	Third Owner	Petrol	Manual	16.1	31504

Insight 31- Top 5 Cars with the highest engine displacement
Query-

```
# Insight 31 - Top 5 Cars with the highest engine displacement
Select distinct(name), engine
from cars24 #Selecting name column values without duplicates and ,engine column from cars 24
order by engine desc # Ordering by engine column in descending order
limit 5; #Limiting to only 5 values so as to see the top 5
```

Output-

name	engine
Jeep Wrangler 2016-2019 3.6 4X4	3604
Mercedes-Benz E-Class E350 Petrol	3498
Ford Endeavour 3.2 Titanium AT 4X4	3198
Isuzu MU 7 AT Premium	2999
Isuzu MUX 2WD	2999

Insight 32- Top 5 Cars with the lowest engine displacement
Query-

```
# Insight 32 - Top 5 Cars with the lowest engine displacement
Select distinct(name),engine
from cars24 #Selecting name column values without duplicates and ,engine column from cars 24
order by engine asc # Ordering by engine column in ascending order
limit 5; #Limiting to only 5 values so as to see the top 5
```

Output-

name	engine
Tata Nano Cx	624
Tata Nano Cx BSIII	624
Tata Nano Cx BSIV	624
Tata Nano LX	624
Tata Nano Lx BSIV	624

Insight 33- Top 5 cars with the highest max output the car's engine.
Query-

```
# Insight 33- Top 5 cars with the highest max output the car's engine.
Select distinct(name),max_power
from cars24 #Selecting name column values without duplicates and ,max_power column from cars 24
order by max_power desc # Ordering by max_power in descending order
limit 5; #Limiting to only 5 values so as to see the top 5
```

Output-

name	max_power
Volvo XC90 T8 Excellence BSIV	400
Mercedes-Benz S-Class S 350 CDI	282
Jeep Wrangler 2016-2019 3.6 4X4	280
Mercedes-Benz E-Class E350 Petrol	272
Jaguar XF 3.0 Litre S Premium Luxury	270.9