
"House Price Prediction Project"

Using SQL



Objective of the Project:

To analyze and predict house prices based on various factors such as area, number of bedrooms, bathrooms, presence of amenities (like a basement, air conditioning, etc.), and location features (such as being on a main road or in a preferred area). This project aims to identify key variables that significantly impact house prices and provide insights into the real estate market trends.

Data Exploration:

```
SELECT * FROM house_pricing_predication.housing;
```

[illegible]

View the total number of records:

```
SELECT COUNT(*) AS TotalHouses FROM Housing;
```

TotalHouses
545

Guest Room:

```
SELECT DISTINCT guestroom FROM Housing;
```

guestroom
no
yes

Furnishing Status:

```
SELECT DISTINCT furnishingstatus FROM Housing;
```

furnishingstatus	^
furnished	
semi-furnished	
unfurnished	

Aggregation and Summary Statistics:

Average price of houses by the number of bedrooms:

```
SELECT bedrooms, AVG(price) AS AvgPrice  
FROM Housing  
GROUP BY bedrooms  
ORDER BY AvgPrice DESC;
```

bed...	▼	AvgPrice
6		4791500.0000
5		5819800.0000
4		5729757.8947
3		4954598.1333
2		3632022.0588
1		2712500.0000

Count of houses with and without air conditioning:

```
SELECT airconditioning, COUNT(*) AS NumHouses  
FROM Housing  
GROUP BY airconditioning;
```

airconditioni...	NumHouses	
yes	172	
no	373	

Total parking spaces available by neighborhood preference area:

```
SELECT prefarea, SUM(parking) AS TotalParkingSpaces
FROM Housing
GROUP BY prefarea;
```

airconditioni...	NumHouses
------------------	-----------

yes	172
-----	-----

no	373
----	-----

Filtering Data:

1. Houses with more than 2 stories and located on the main road:

```
SELECT *  
FROM Housing  
WHERE stories > 2 AND mainroad = 'yes';
```

price	area	bedrooms	bathrooms	stories	mainroad	guestroom	basement	hotwaterheati...	airconditioni...	parking	prefarea	furnishingstatus
2852500	5200	4	1	3	yes	no	no	no	no	0	no	unfurnished
3430000	2145	3	1	3	yes	no	no	no	no	0	yes	furnished
3465000	2145	3	1	3	yes	no	no	no	no	0	yes	furnished
3640000	2275	3	1	3	yes	no	no	yes	yes	0	yes	semi-furnished
3780000	2856	3	1	3	yes	no	no	no	no	0	yes	furnished
4060000	3000	4	1	3	yes	no	yes	no	yes	2	no	semi-furnished
4200000	4079	3	1	3	yes	no	no	no	no	0	no	semi-furnished
4200000	2145	3	1	3	yes	no	no	no	no	1	yes	unfurnished
4340000	4500	3	2	3	yes	no	no	yes	no	1	no	furnished
4515000	3510	3	1	3	yes	no	no	no	no	0	no	semi-furnished
4550000	8400	4	1	4	yes	no	no	no	no	3	no	unfurnished
4690000	5170	3	1	4	yes	no	no	no	yes	0	no	semi-furnished
4795000	8100	4	1	4	yes	no	yes	no	yes	2	no	semi-furnished
4830000	4160	3	1	3	yes	no	no	no	no	0	no	unfurnished
4900000	2970	3	1	3	yes	no	no	no	no	0	no	semi-furnished
5160000	6210	4	1	4	yes	yes	no	no	yes	0	no	furnished

2. Houses with a guestroom, basement, and air conditioning:

```
SELECT *
```

```
FROM Housing
```

```
WHERE guestroom = 'yes' AND basement = 'yes' AND airconditioning = 'yes';
```

price	area	bedrooms	bathrooms	stories	mainroad	guestroom	basement	hotwaterheati...	airconditioni...	parking	prefarea	furnishingstatus
2852500	5200	4	1	3	yes	no	no	no	no	0	no	unfurnished
3430000	2145	3	1	3	yes	no	no	no	no	0	yes	furnished
3465000	2145	3	1	3	yes	no	no	no	no	0	yes	furnished
3640000	2275	3	1	3	yes	no	no	yes	yes	0	yes	semi-furnished
3780000	2856	3	1	3	yes	no	no	no	no	0	yes	furnished
4060000	3000	4	1	3	yes	no	yes	no	yes	2	no	semi-furnished
4200000	4079	3	1	3	yes	no	no	no	no	0	no	semi-furnished
4200000	2145	3	1	3	yes	no	no	no	no	1	yes	unfurnished
4340000	4500	3	2	3	yes	no	no	yes	no	1	no	furnished
4515000	3510	3	1	3	yes	no	no	no	no	0	no	semi-furnished
4550000	8400	4	1	4	yes	no	no	no	no	3	no	unfurnished
4690000	5170	3	1	4	yes	no	no	no	yes	0	no	semi-furnished
4795000	8100	4	1	4	yes	no	yes	no	yes	2	no	semi-furnished
4830000	4160	3	1	3	yes	no	no	no	no	0	no	unfurnished
4900000	2970	3	1	3	yes	no	no	no	no	0	no	semi-furnished
5160000	6210	4	1	4	yes	yes	no	no	yes	0	no	furnished

3.Houses with a specific furnishing status:

```
SELECT *
```

```
FROM Housing
```

```
WHERE furnishingstatus = 'furnished';
```

price	area	bedrooms	bathrooms	stories	mainroad	guestroom	basement	hotwaterheati...	airconditioni...	parking	prefarea	furnishingstatus
2852500	5200	4	1	3	yes	no	no	no	no	0	no	unfurnished
3430000	2145	3	1	3	yes	no	no	no	no	0	yes	furnished
3465000	2145	3	1	3	yes	no	no	no	no	0	yes	furnished
3640000	2275	3	1	3	yes	no	no	yes	yes	0	yes	semi-furnished
3780000	2856	3	1	3	yes	no	no	no	no	0	yes	furnished
4060000	3000	4	1	3	yes	no	yes	no	yes	2	no	semi-furnished
4200000	4079	3	1	3	yes	no	no	no	no	0	no	semi-furnished
4200000	2145	3	1	3	yes	no	no	no	no	1	yes	unfurnished
4340000	4500	3	2	3	yes	no	no	yes	no	1	no	furnished
4515000	3510	3	1	3	yes	no	no	no	no	0	no	semi-furnished
4550000	8400	4	1	4	yes	no	no	no	no	3	no	unfurnished
4690000	5170	3	1	4	yes	no	no	no	yes	0	no	semi-furnished
4795000	8100	4	1	4	yes	no	yes	no	yes	2	no	semi-furnished
4830000	4160	3	1	3	yes	no	no	no	no	0	no	unfurnished
4900000	2970	3	1	3	yes	no	no	no	no	0	no	semi-furnished
5160000	6210	4	1	4	yes	yes	no	no	yes	0	no	furnished

.Advanced Analysis:

Average price per square foot of area:

```
SELECT area, (price/area) AS PricePerSqFt
FROM Housing
ORDER BY PricePerSqFt DESC;
```

area	PricePerSqFt	
16200	626.5432	
15600	380.9615	
13200	742.4242	
13200	525.0000	
12944	270.3956	
12000	270.8450	

Average price per square foot of area:

```
SELECT *  
FROM Housing  
ORDER BY price DESC, area DESC  
LIMIT 5;
```

price	area	bedrooms	bathrooms	stories	mainroad	guestroom	basement	hotwaterheati...	airconditioni...	parking	prefarea	furnishingstatus	
13300000	7420	4	2	3	yes	no	no	no	yes	2	yes	furnished	
12250000	9960	3	2	2	yes	no	yes	no	no	2	yes	semi-furnished	
12250000	8960	4	4	4	yes	no	no	no	yes	3	no	furnished	
12215000	7500	4	2	2	yes	no	yes	no	yes	3	yes	furnished	
11410000	7420	4	1	2	yes	yes	yes	no	yes	2	no	furnished	

3.Houses with parking more than 2 spaces and preferred area:

```
SELECT *
FROM Housing
WHERE parking > 2 AND prefarea = 'yes';
```

[illegible]

Predictive Queries:

1. Estimate the average price based on the number of bedrooms and

b **SELECT** bedrooms, bathrooms, **AVG**(price) **AS** AvgPrice
FROM Housing
GROUP BY bedrooms, bathrooms
ORDER

bed...	^	bathrooms	AvgPrice
1		1	2712500.0000
2		2	4194750.0000
2		1	3596851.5625
3		3	6807500.0000
3		2	6379568.6111
3		1	4463484.3750

bed... ^	bathrooms	AvgPrice	
1	1	2712500.0000	
2	2	4194750.0000	
2	1	3596851.5625	
3	3	6807500.0000	
3	2	6379568.6111	
3	1	4463484.3750	
4	4	12250000.0000	
4	3	7250250.0000	
4	2	6358989.5833	
4	1	4710583.3333	
5	3	8295000.0000	

Predicting the price of houses with certain features (e.g., 3 bedrooms, 2 bathrooms, and air conditioning):

```
SELECT AVG(price) AS EstimatedPrice  
FROM Housing  
WHERE bedrooms = 3 AND bathrooms = 2 AND airconditioning = 'yes';
```

EstimatedPrice
6934236.6667