1. IMPORTING LIBRARIES

```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import re
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error
from sklearn.metrics import mean_squared_error, mean_absolute_error
from IPython.display import display, HTML

df = pd.read_csv('/content/house_price.csv')
```

2. DATA EXPLORATION

```
df
```

{"summary":"{\n \"name\": \"df\",\n \"rows\": 13314,\n \"fields\":
[\n   {\n   \"column\": \"area_type\",\n   \"properties\": {\n
\"dtype\": \"category\",\n   \"num_unique_values\": 4,\n
\"samples\": [\n   \"Plot Area\",\n   \"Carpet
Area\",\n   \"Super built-up Area\"\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"location\",\n   \"properties\":
{\n   \"dtype\": \"category\",\n   \"num_unique_values\":
1304,\n   \"samples\": [\n   \"Gollarahatti\",\n
\"Marsur\",\n   \"Lake City\"\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"society\",\n   \"properties\":
{\n   \"dtype\": \"category\",\n   \"num_unique_values\":
2688,\n   \"samples\": [\n   \"DStra S\",\n
\"Aples M\",\n   \"DNlleks\"\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"size\",\n   \"properties\": {\n
\"dtype\": \"category\",\n   \"num_unique_values\": 31,\n
\"samples\": [\n   \"8 BHK\",\n   \"5 Bedroom\",\n
\"19 BHK\"\n   ],\n   \"semantic_type\": \"\",\n
\"description\": \"\"\n   }\n   },\n   {\n   \"column\":
\"total_sqft\",\n   \"properties\": {\n   \"dtype\":
\"category\",\n   \"num_unique_values\": 2111,\n
\"samples\": [\n   \"3100\",\n   \"1814\",\n
\"1160 - 1195\"\n   ],\n   \"semantic_type\": \"\",\n
\"description\": \"\"\n   }\n   },\n   {\n   \"column\":
\"sqft\",\n   \"properties\": {\n   \"dtype\": \"number\",\n
\"std\": 14278.686969614935,\n   \"min\": 45.0,\n   \"max\":
1306800.0,\n   \"num_unique_values\": 1964,\n   \"samples\":
[\n   2257.0,\n   5400.0,\n   845.0\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\

n   },\n   {\n   \"column\": \"bath\",\n   \"properties\": {\n
\"dtype\": \"number\",\n   \"std\": 1.3399042810843076,\n
\"min\": 1.0,\n   \"max\": 40.0,\n   \"num_unique_values\":
19,\n   \"samples\": [\n   2.0,\n   1.0,\n
14.0\n   ],\n   \"semantic_type\": \"\",\n
\"description\": \"\"\n   }\n   },\n   {\n   \"column\":
\"balcony\",\n   \"properties\": {\n   \"dtype\": \"number\",\
n   \"std\": 0.8171981248480781,\n   \"min\": 0.0,\n
\"max\": 3.0,\n   \"num_unique_values\": 4,\n   \"samples\":
[\n   3.0,\n   0.0,\n   1.0\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"possession date\",\n
\"properties\": {\n   \"dtype\": \"category\",\n
\"num_unique_values\": 1430,\n   \"samples\": [\n
\"44996\",\n   \"43897\",\n   \"44341\"\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"price\",\n   \"properties\": {\
n   \"dtype\": \"number\",\n   \"std\": 148.99842584713295,\
n   \"min\": 8.0,\n   \"max\": 3600.0,\n
\"num_unique_values\": 1994,\n   \"samples\": [\n
93.25,\n   33.645,\n   265.0\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   }\n]\n}","type":"dataframe","variable_name":"df"}

```python
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 13314 entries, 0 to 13313
Data columns (total 10 columns):
 #   Column           Non-Null Count  Dtype
---  ------           --------------  -----
 0   area_type        13314 non-null  object
 1   location         13314 non-null  object
 2   society          7817 non-null   object
 3   size             13298 non-null  object
 4   total_sqft       13314 non-null  object
 5   sqft             13314 non-null  float64
 6   bath             13241 non-null  float64
 7   balcony          12706 non-null  float64
 8   possession date  13314 non-null  object
 9   price            13314 non-null  float64
dtypes: float64(4), object(6)
memory usage: 1.0+ MB
```

```python
print(df.columns)
```

```
Index(['area_type', 'location', 'society', 'size', 'total_sqft',
'sqft',
       'bath', 'balcony', 'possession date', 'price'],
      dtype='object')
```

```
df.describe()
```

```
{"summary":"{\n  \"name\": \"df\",\n  \"rows\": 8,\n  \"fields\": [\n
{\n      \"column\": \"sqft\",\n      \"properties\": {\n
\"dtype\": \"number\",\n        \"std\": 460366.59974636184,\n
\"min\": 45.0,\n        \"max\": 1306800.0,\n
\"num_unique_values\": 8,\n        \"samples\": [\n
1817.2405475439386,\n          1277.0,\n          13314.0\n        ],\
n        \"semantic_type\": \"\",\n        \"description\": \"\"\n
}\n    },\n    {\n      \"column\": \"bath\",\n      \"properties\":
{\n        \"dtype\": \"number\",\n        \"std\":
4678.791393656848,\n        \"min\": 1.0,\n        \"max\": 13241.0,\n
\"num_unique_values\": 7,\n        \"samples\": [\n          13241.0,\
n          2.6915640812627446,\n          3.0\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n        }\
n    },\n    {\n      \"column\": \"balcony\",\n      \"properties\":
{\n        \"dtype\": \"number\",\n        \"std\":
4491.724125290002,\n        \"min\": 0.0,\n        \"max\": 12706.0,\n
\"num_unique_values\": 7,\n        \"samples\": [\n          12706.0,\
n          1.5841334802455533,\n          2.0\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n        }\
n    },\n    {\n      \"column\": \"price\",\n      \"properties\": {\
n        \"dtype\": \"number\",\n        \"std\": 4664.813809363791,\n
\"min\": 8.0,\n        \"max\": 13314.0,\n
\"num_unique_values\": 8,\n        \"samples\": [\n
112.54507623554154,\n          72.0,\n          13314.0\n        ],\n
\"semantic_type\": \"\",\n        \"description\": \"\"\n        }\
n    }\n  ]\n}","type":"dataframe"}
```

```
df.dtypes
```

```
area_type          object
location           object
society            object
size               object
total_sqft         object
sqft              float64
bath              float64
balcony           float64
possession date    object
price             float64
dtype: object
```

```
df.shape
```

```
(13314, 10)
```

3. EXPLORARTORY DATA ANALYSIS

```
df.isnull().sum()
```

```
area_type              0
location               0
society             5497
size                  16
total_sqft             0
sqft                   0
bath                  73
balcony              608
possession date        0
price                  0
dtype: int64
```

df['area_type'].value_counts()

```
Super built-up  Area    8789
Built-up  Area          2414
Plot  Area              2024
Carpet  Area              87
Name: area_type, dtype: int64
```

df['location'].value_counts()

```
Whitefield            540
Sarjapur  Road        399
Electronic City       302
Kanakpura Road        273
Thanisandra           234
                     ...
Meenakshi Layout        1
Vidyapeeta              1
Maruthi Extension       1
Okalipura               1
Abshot Layout           1
Name: location, Length: 1304, dtype: int64
```

df['society'].value_counts()

```
GrrvaGr    80
PrarePa    76
Prtates    59
Sryalan    59
GMown E    56
           ..
Amionce     1
JaghtDe     1
Jauraht     1
Brity U     1
RSntsAp     1
Name: society, Length: 2688, dtype: int64
```

df['size'].value_counts()

```
2 BHK          5199
3 BHK          4309
4 Bedroom       826
4 BHK           590
3 Bedroom       547
1 BHK           538
2 Bedroom       329
5 Bedroom       295
6 Bedroom       191
1 Bedroom       105
8 Bedroom        84
7 Bedroom        83
5 BHK            59
9 Bedroom        45
6 BHK            30
7 BHK            16
1 RK             13
10 Bedroom       12
9 BHK             8
8 BHK             5
11 BHK            2
11 Bedroom        2
10 BHK            2
14 BHK            1
13 BHK            1
12 Bedroom        1
27 BHK            1
43 Bedroom        1
16 BHK            1
19 BHK            1
18 Bedroom        1
Name: size, dtype: int64
```

```python
df['possession date'].value_counts()
```

```
Ready to move     10591
44158                 6
43562                 6
44154                 6
44294                 6
                  ...
44739                 1
43628                 1
45029                 1
43823                 1
43820                 1
Name: possession date, Length: 1430, dtype: int64
```
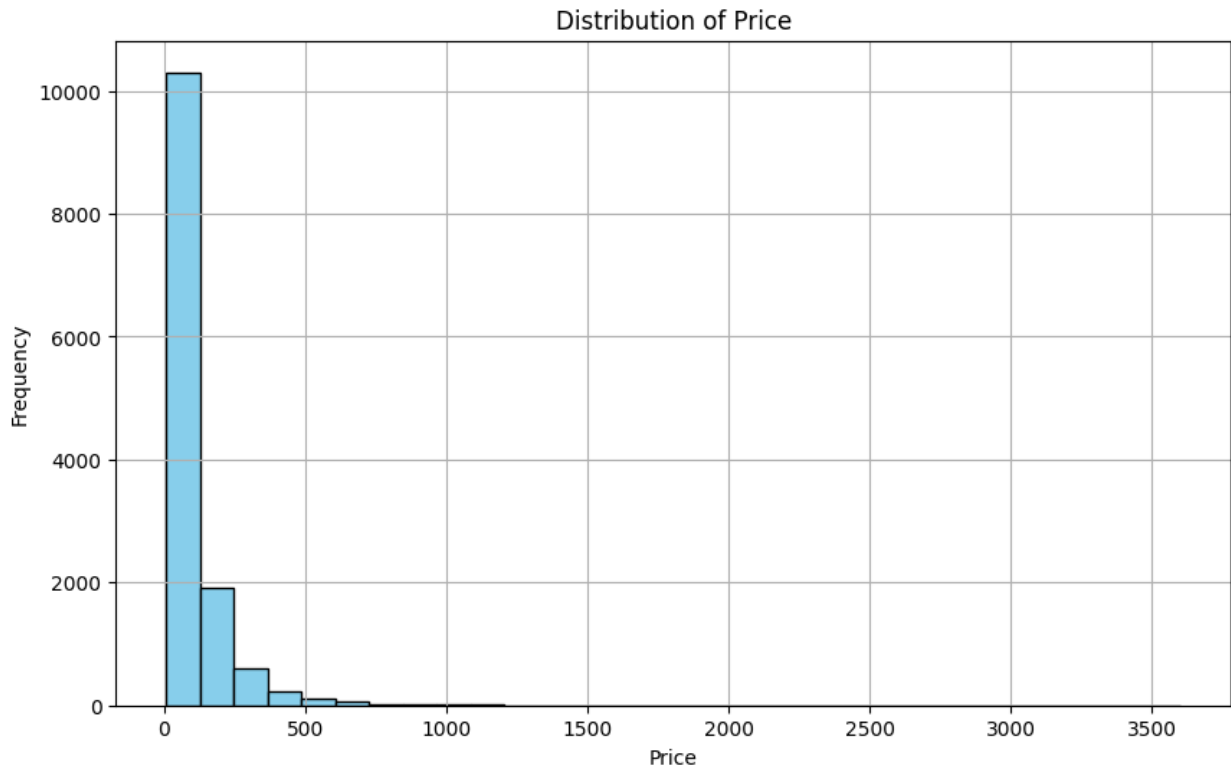
4. DATA VIZUALIZATION

```python
plt.figure(figsize=(10, 6))
plt.hist(df['price'], bins=30, color='skyblue', edgecolor='black')
plt.title('Distribution of Price')
plt.xlabel('Price')
plt.ylabel('Frequency')
plt.grid(True)
plt.show()
```


Distribution of Price

```python
plt.figure(figsize=(10, 6))
sns.boxplot(x='area_type', y='price', data=df)
plt.title('Price Distribution by Area Type')
plt.xlabel('Area Type')
plt.ylabel('Price')
plt.xticks(rotation=45)
plt.grid(True)
plt.show()
```

Price Distribution by Area Type
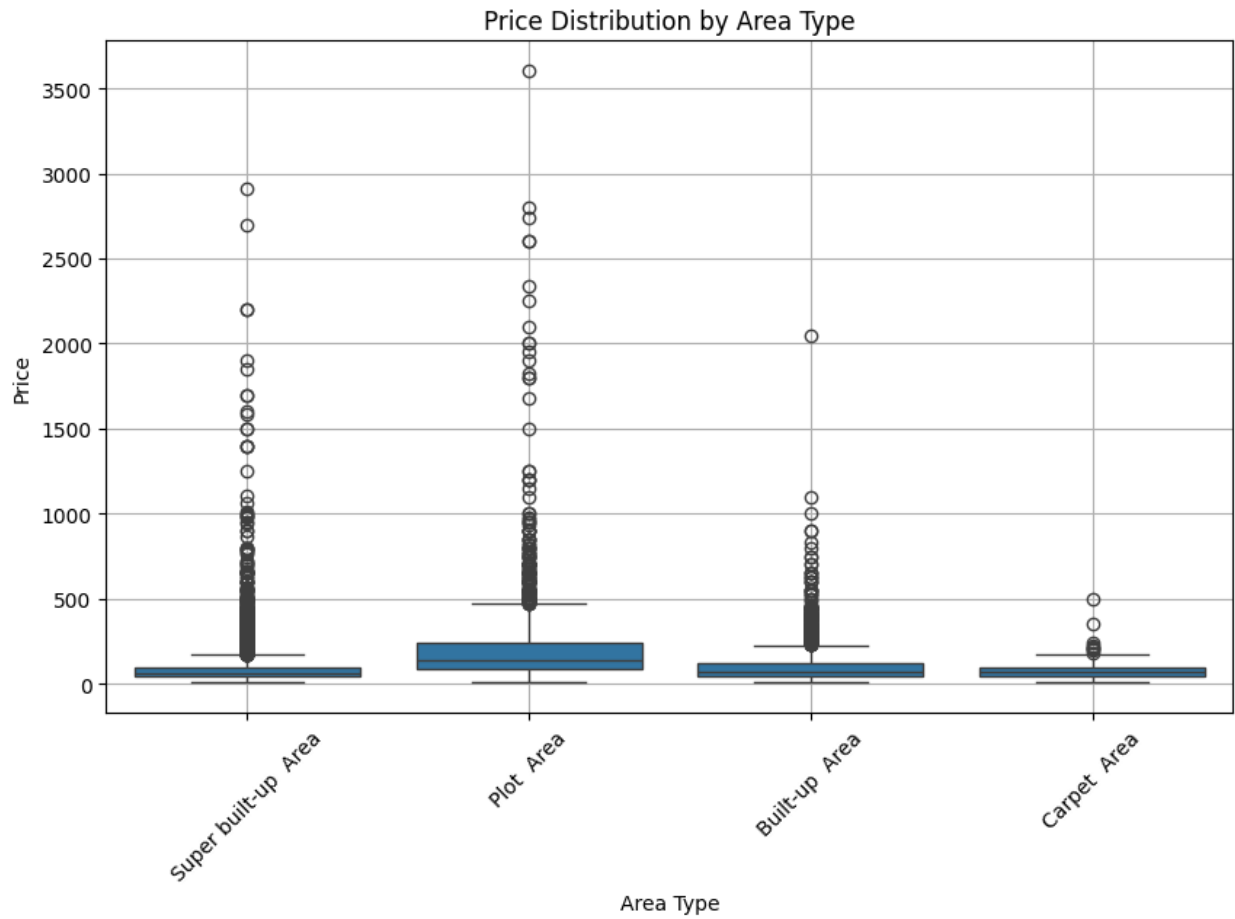

```
sns.pairplot(df[['total_sqft', 'bath', 'balcony', 'price']])
plt.show()
```
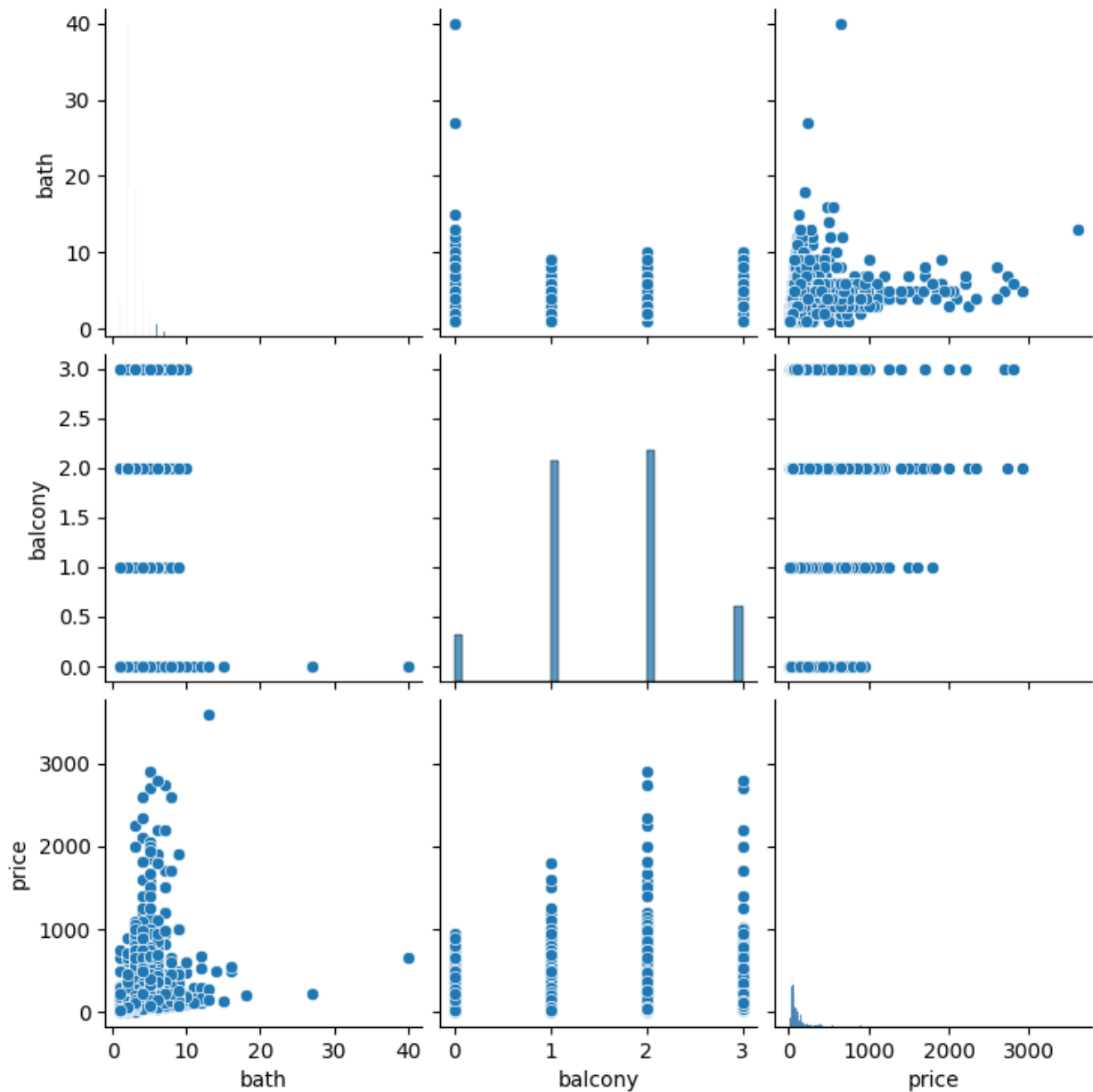
```
plt.figure(figsize=(10, 6))
sns.heatmap(df[['total_sqft', 'bath', 'balcony', 'price']].corr(),
annot=True, cmap='coolwarm', fmt=".2f")
plt.title('Correlation Heatmap')
plt.show()

<ipython-input-223-a506359708a4>:2: FutureWarning: The default value
of numeric_only in DataFrame.corr is deprecated. In a future version,
it will default to False. Select only valid columns or specify the
value of numeric_only to silence this warning.
  sns.heatmap(df[['total_sqft', 'bath', 'balcony', 'price']].corr(),
annot=True, cmap='coolwarm', fmt=".2f")
```

Correlation Heatmap
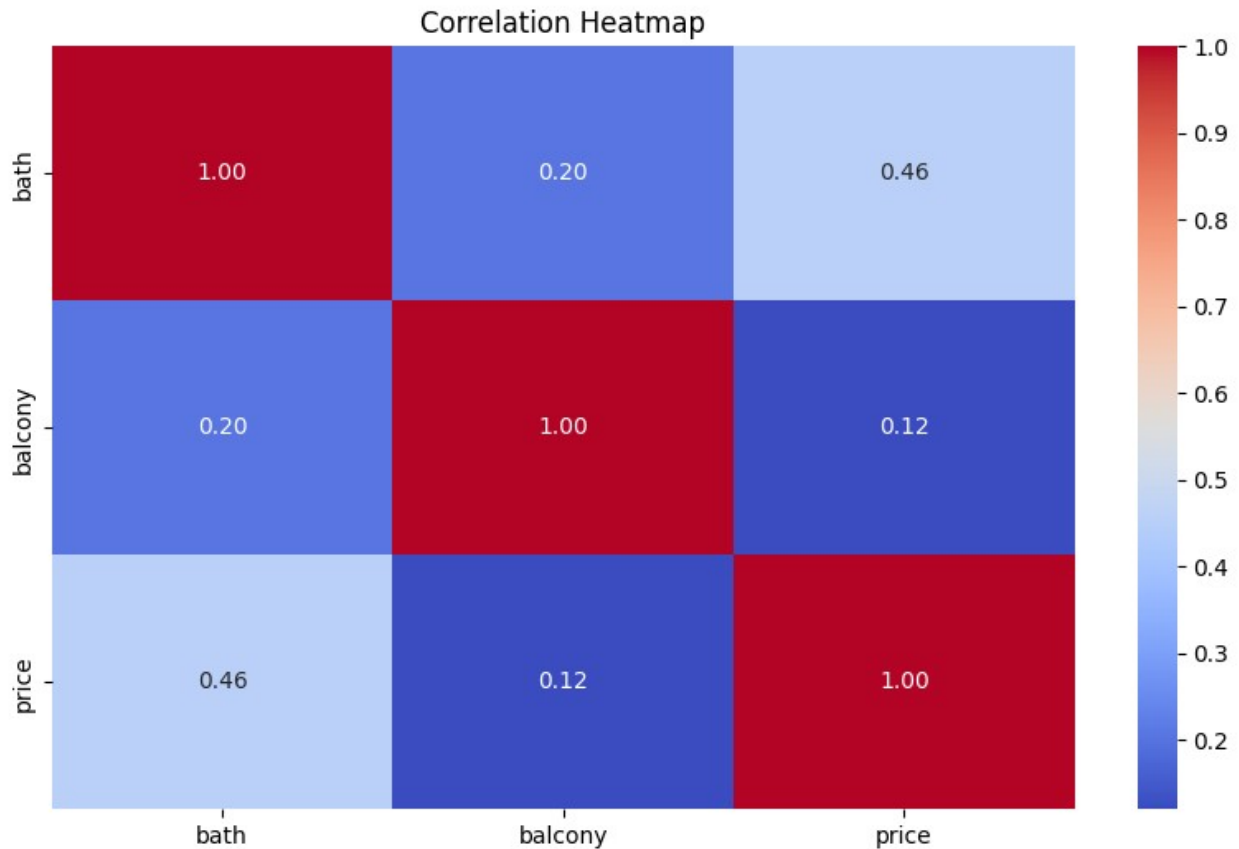
5. DATA PREPEOCESSING

```python
Q1 = df['price'].quantile(0.25)
Q3 = df['price'].quantile(0.75)
IQR = Q3 - Q1
lower_bound = Q1 - 1.5 * IQR
upper_bound = Q3 + 1.5 * IQR
df = df[(df['price'] > lower_bound) & (df['price'] < upper_bound)]

plt.figure(figsize=(10, 6))
plt.hist(df['price'], bins=30, color='skyblue', edgecolor='black')
plt.title('Distribution of Price (After Removing Outliers)')
plt.xlabel('Price')
plt.ylabel('Frequency')
plt.grid(True)
plt.show()
```

Distribution of Price (After Removing Outliers)
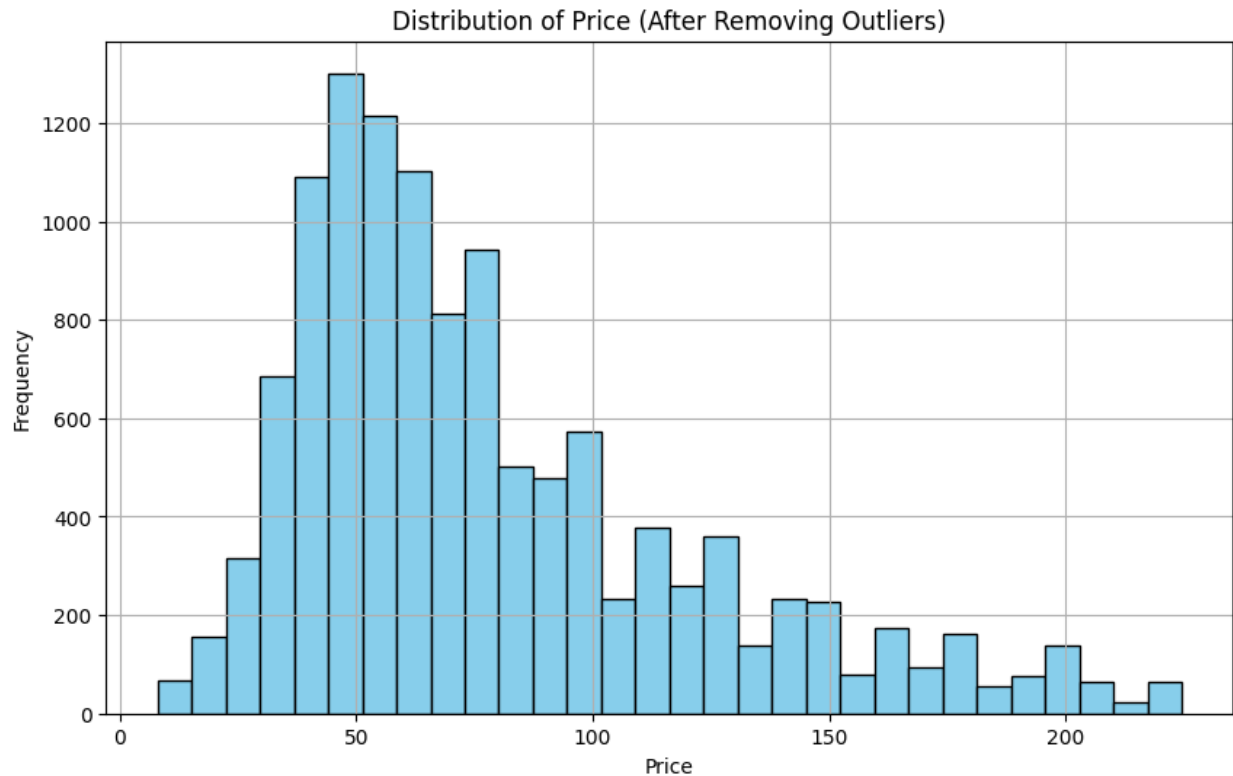

```
df.info()

<class 'pandas.core.frame.DataFrame'>
Int64Index: 11997 entries, 0 to 13313
Data columns (total 10 columns):
 #   Column           Non-Null Count  Dtype
---  ------           --------------  -----
 0   area_type        11997 non-null  object
 1   location         11997 non-null  object
 2   society          7230 non-null   object
 3   size             11983 non-null  object
 4   total_sqft       11997 non-null  object
 5   sqft             11997 non-null  float64
 6   bath             11941 non-null  float64
 7   balcony          11616 non-null  float64
 8   possession date  11997 non-null  object
 9   price            11997 non-null  float64
dtypes: float64(4), object(6)
memory usage: 1.0+ MB

plt.figure(figsize=(12, 6))
plt.subplot(1, 3, 1)
sns.boxplot(y='total_sqft', data=df)
plt.title('Total Sqft')

plt.subplot(1, 3, 2)
```
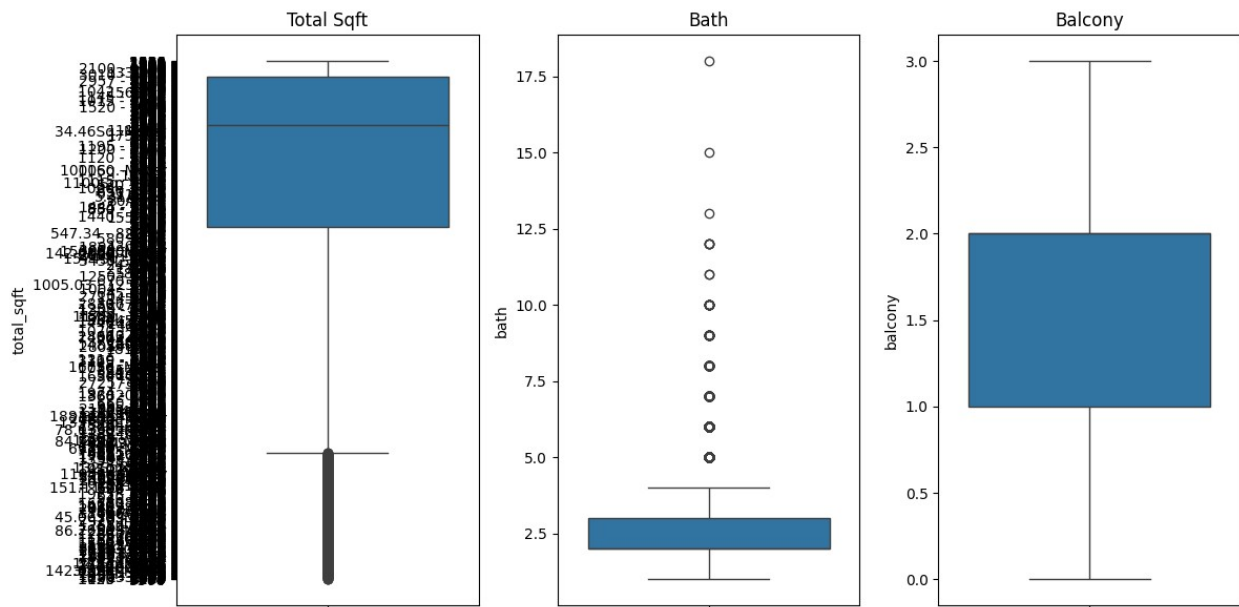
```python
sns.boxplot(y='bath', data=df)
plt.title('Bath')

plt.subplot(1, 3, 3)
sns.boxplot(y='balcony', data=df)
plt.title('Balcony')

plt.tight_layout()
plt.show()
```



```python
Q1_bath = df['bath'].quantile(0.25)
Q3_bath = df['bath'].quantile(0.75)
IQR_bath = Q3_bath - Q1_bath
lower_bound_bath = Q1_bath - 1.5 * IQR_bath
upper_bound_bath = Q3_bath + 1.5 * IQR_bath
df = df[(df['bath'] > lower_bound_bath) & (df['bath'] <
upper_bound_bath)]

Q1_balcony = df['balcony'].quantile(0.25)
Q3_balcony = df['balcony'].quantile(0.75)
IQR_balcony = Q3_balcony - Q1_balcony
lower_bound_balcony = Q1_balcony - 1.5 * IQR_balcony
upper_bound_balcony = Q3_balcony + 1.5 * IQR_balcony
df = df[(df['balcony'] > lower_bound_balcony) & (df['balcony'] <
upper_bound_balcony)]

df.describe()
```

{"summary":"{\n \"name\": \"df\",\n \"rows\": 8,\n \"fields\": [\n
{\n   \"column\": \"sqft\",\n   \"properties\": {\n
\"dtype\": \"number\",\n   \"std\": 460494.9428993399,\n

\"min\": 45.0,\n   \"max\": 1306800.0,\n
\"num_unique_values\": 8,\n   \"samples\": [\n
1577.301080814423,\n   1226.0,\n   11149.0\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"bath\",\n   \"properties\": {\n
\"dtype\": \"number\",\n   \"std\": 3941.0086758243924,\n
\"min\": 0.6947266372837417,\n   \"max\": 11149.0,\n
\"num_unique_values\": 7,\n   \"samples\": [\n   11149.0,\
n   2.3171584895506325,\n   3.0\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"balcony\",\n   \"properties\":
{\n   \"dtype\": \"number\",\n   \"std\":
3941.2444542573858,\n   \"min\": 0.0,\n   \"max\": 11149.0,\
n   \"num_unique_values\": 7,\n   \"samples\": [\n
11149.0,\n   1.5542201094268544,\n   2.0\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   },\n   {\n   \"column\": \"price\",\n   \"properties\": {\
n   \"dtype\": \"number\",\n   \"std\": 3914.468660289528,\n
\"min\": 8.0,\n   \"max\": 11149.0,\n
\"num_unique_values\": 8,\n   \"samples\": [\n
75.1325441743654,\n   65.0,\n   11149.0\n   ],\n
\"semantic_type\": \"\",\n   \"description\": \"\"\n   }\
n   }\n]\n}","type":"dataframe"}

```python
plt.figure(figsize=(12, 6))
plt.subplot(1, 3, 1)
sns.boxplot(y='total_sqft', data=df)
plt.title('Total Sqft (Without Outliers)')

plt.subplot(1, 3, 2)
sns.boxplot(y='bath', data=df)
plt.title('Bath (Without Outliers)')

plt.subplot(1, 3, 3)
sns.boxplot(y='balcony', data=df)
plt.title('Balcony (Without Outliers)')

plt.tight_layout()
plt.show()
```
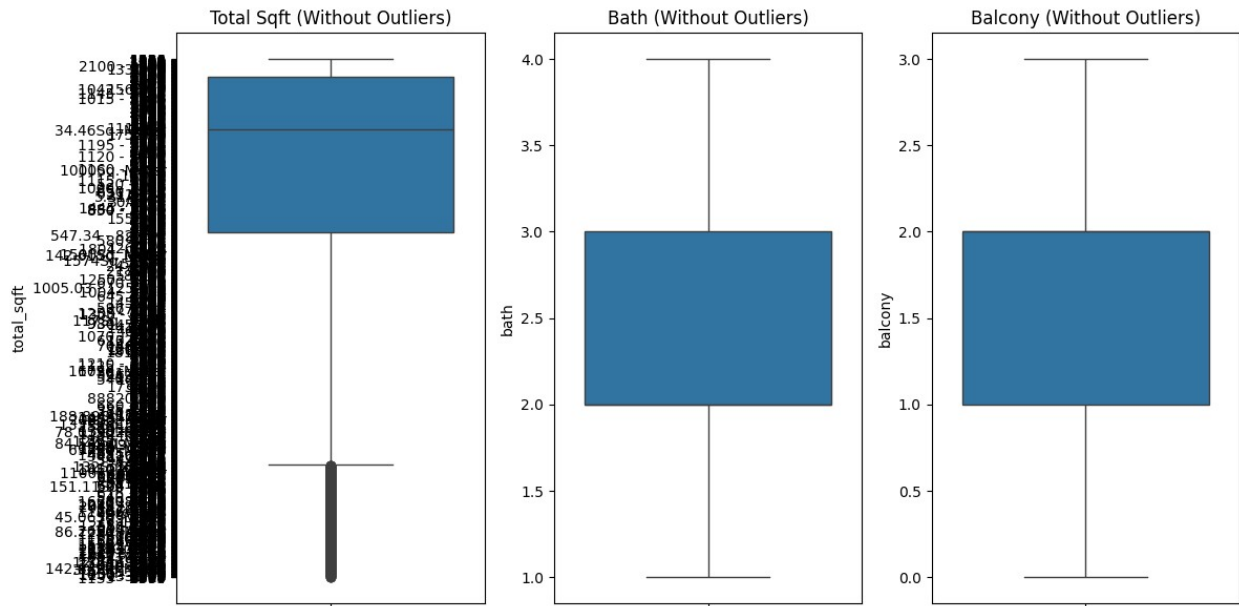
Total Sqft (Without Outliers)   Bath (Without Outliers)   Balcony (Without Outliers)

5. FEATURES SELECTION

```python
def convert_to_sqft(x):
    try:
        if isinstance(x, float):
            return x
        elif 'Sq. Meter' in x:
            return float(x.split(' ')[0]) * 10.7639
        elif 'Acres' in x:
            return float(x.split(' ')[0]) * 43560
        else:
            return float(x)
    except (ValueError, AttributeError):
        return None

df['total_sqft'] = df['total_sqft'].apply(convert_to_sqft)
df.dropna(subset=['total_sqft'], inplace=True)

# Q1. The model should have at least 5 features

selected_features = ['total_sqft', 'bath', 'balcony', 'size',
'location', 'price']
df_selected = df[selected_features]

df_selected = df[selected_features].copy()
df_selected.dropna(inplace=True)

X = df_selected.drop('price', axis=1)
y = df_selected['price']

X = pd.get_dummies(X, columns=['location'], drop_first=True)
```

```python
X_train, X_test, y_train, y_test = train_test_split(X, y,
test_size=0.2, random_state=42)

def clean_size(x):
    pattern = r'\d+'
    matches = re.findall(pattern, x)
    if matches:
        return int(matches[0])
    else:
        return None

df_selected['size'] = df_selected['size'].apply(clean_size)

df_selected.dropna(inplace=True)

X = df_selected.drop('price', axis=1)
y = df_selected['price']

X = pd.get_dummies(X, columns=['location'], drop_first=True)

X_train, X_test, y_train, y_test = train_test_split(X, y,
test_size=0.2, random_state=42)

model = LinearRegression()
model.fit(X_train, y_train)
```

```
LinearRegression()
```

```python
y_pred = model.predict(X_test)

rmse = mean_squared_error(y_test, y_pred, squared=False)
print("Root Mean Squared Error (RMSE):", rmse)
```

```
Root Mean Squared Error (RMSE): 342132112.0955049
```

```python
print("\nModel Coefficients:-")
coefficients = pd.DataFrame({'Feature': X.columns, 'Coefficient':
model.coef_})
print(coefficients)
```

```
Model Coefficients:-
                          Feature    Coefficient
0                       total_sqft   1.120901e-02
1                             bath   2.114990e+01
2                          balcony  -1.052482e+00
3                             size   8.726168e+00
4              location_ Banaswadi   1.597426e+01
...                           ...            ...
1133           location_sankeswari   1.445750e+01
1134     location_sapthagiri Layout   0.000000e+00
1135   location_singapura paradise   8.881784e-16
```

```
1136            location_tc.palya  5.491146e+00
1137          location_whitefiled -1.968809e+01

[1138 rows x 2 columns]
```

```python
# Model equation
coefficients_str = " + ".join(["{:.6f} * {}".format(coef, feat) for
coef, feat in zip(model.coef_, X.columns)])
model_equation = "Predicted price = {:.6f} +
{}".format(model.intercept_, coefficients_str)

# Value of β0 (intercept)
intercept_value = model.intercept_

# Features significance
significant_features = coefficients[coefficients['Coefficient'].abs()
> 1]

# Print outputs
print("Model Equation:")
print(model_equation)
print("\nValue of β0 (Intercept):", intercept_value)
print("\nSignificant Features:")
print(significant_features)
```

```
Model Equation:
Predicted price = -16.764196 + 0.011209 * total_sqft + 21.149897 *
bath + -1.052482 * balcony + 8.726168 * size + 15.974263 * location_
Banaswadi + 30.423899 * location_ Basavangudi + 6.453489 * location_
Bhoganhalli + 52.984811 * location_ Devarabeesana Halli + 0.386736 *
location_ Devarachikkanahalli + 5.661900 * location_ Electronic City +
6.217925 * location_ Mysore Highway + 9.949361 * location_
Rachenahalli + 7.948624 * location_ Thanisandra + 29.789896 *
location_ Whitefield + 52.615915 * location_ ittamadu + 167.757841 *
location_12th cross srinivas nagar banshankari 3rd stage + -3.018626 *
location_1st Block BEL Layout + 14.063179 * location_1st Block HBR
Layout + 28.452655 * location_1st Block HRBR Layout + 9.876955 *
location_1st Block Jayanagar + 27.431373 * location_1st Block
Koramangala + 57.894081 * location_1st Phase JP Nagar + 0.261746 *
location_1st Stage Domlur + 4.512547 * location_1st Stage Indira Nagar
+ 4.082206 * location_2nd Block Bel Layout + 9.421482 * location_2nd
Block Hrbr Layout + 88.944124 * location_2nd Block Jayanagar +
31.438081 * location_2nd Phase JP Nagar + -13.793163 * location_2nd
Phase Judicial Layout + 31.312169 * location_2nd Stage Arekere Mico
Layout + 45.077976 * location_2nd Stage Nagarbhavi + 119.739821 *
location_2nd phase jp nagar, jp nagar + 51.413271 * location_3rd Block
Banashankari + 5.772612 * location_3rd Block HBR Layout + 64.340033 *
location_3rd Block Hrbr Layout + 1759377617.559776 * location_3rd
Block Jayanagar + 80.680114 * location_3rd Block Koramangala +
8.228034 * location_3rd Phase Iti Layout + 12.019983 * location_3rd
```

Phase JP Nagar + -12.660112 * location_3rd Stage Raja Rajeshwari Nagar + 11509934910.217295 * location_4 Bedroom Farm House in Bagalur + 69.348177 * location_4th Block Jayanagar + 68.636781 * location_4th Block Koramangala + -17.471608 * location_4th Phase JP Nagar + 75.594234 * location_4th T block Jayanagar + 46.258882 * location_5th Block Hbr Layout + 18.736794 * location_5th Block Jayanagar + 6.746974 * location_5th Phase JP Nagar + -8.174946 * location_5th Stage BEML Layout + -3681559588.186566 * location_6th Block Rajaji Nagar + 32.709975 * location_6th Phase JP Nagar + 55.541869 * location_6th block Koramangala + 81.109462 * location_7th Block Jayanagar + 17.220872 * location_7th Phase JP Nagar + 56.785046 * location_8th Block Jayanagar + -2.163504 * location_8th Phase JP Nagar + 36.589597 * location_8th block Koramangala + 9829807059.947683 * location_9th Block Jayanagar + -0.480797 * location_9th Phase JP Nagar + 10.245741 * location_A Narayanapura + 0.919933 * location_AECS Layout + 4.080104 * location_AGS Layout + 3.383543 * location_AMS Layout + -11.119039 * location_Aavalahalli + -14.554351 * location_Abbaiah Reddy Layout + -14.590839 * location_Abbigere + 151.434753 * location_Abshot Layout + -2963830042.710997 * location_Adarsh Nagar + -32.514230 * location_Addischetan Layout + 14.283780 * location_Adityanagar + 9.600296 * location_Adugodi + 27.665894 * location_Agara Village + 56.368759 * location_Agrahara Dasarahalli + 4.232431 * location_Air View Colony + 6.088641 * location_Aishwarya Crystal Layout + -4.976798 * location_Akash Nagar + 8.761595 * location_Akshaya Nagar + 9.615630 * location_Akshaya Vana + 0.829450 * location_Akshayanagara East + 18.310278 * location_Akshayanagara West + 2.455827 * location_Akshya Nagar + -11.234345 * location_Alfa Garden Layout + -26.214724 * location_Allalasandra + -9.443831 * location_Alur + 2.133546 * location_Amam Enclave Layout + -44705088.587048 * location_Amarjyothi Colony + 27.832064 * location_Ambalipura + 89.317824 * location_Ambedkar Colony + 22.531047 * location_Ambedkar Nagar + 13.011405 * location_Amblipura + -2.484614 * location_Amco Colony + 5.753090 * location_Amruthahalli + 1.801082 * location_Amruthnagar + 5.990588 * location_Anand Nagar + 13.558866 * location_Anand nagar + -12.663174 * location_Anandapura + -17.335846 * location_Anantapura + -4.416162 * location_Anantapuram + -21.202570 * location_Ananth Nagar + -7.426034 * location_Ananthanagar Phase 1,Electronic City , phase 2 + -9.657851 * location_Ananthapura, T C palaya Main Road + -7.654482 * location_Anathanagar + 20.920723 * location_Andrahalli + -8.387377 * location_Anekal + 125.912548 * location_Anjana Nagar + -9.728194 * location_Anjanapura + 18.984282 * location_Anjappa Layout + -8.873352 * location_Ankappa Layout + 861.075737 * location_Annaiah Reddy Layout + -8.534791 * location_Annapoorneshwari Layout, JP nagar 7th phase + -594.974081 * location_Annapurneshwari Nagar + 8.034717 * location_Annasandrapalya + -43.715369 * location_Anugrah Layout + -70.602928 * location_Anwar Layout + 13.477261 * location_Ardendale + -3.197290 * location_Arehalli + 22.015003 * location_Arekempanahalli + 13.842456 * location_Arekere + 21.417272 * location_Arishinakunte + -1.301271 * location_Ashirvad Colony + 10.182400 * location_Ashok Nagar

+ 4.463461 * location_Ashwath Nagar + -4.161733 *
location_Ashwathnagar + 19.322567 * location_Ashwini layout + -
16.335846 * location_Asthagrama Layout + 1.493518 * location_Atmananda
Colony + -9.453747 * location_Attibele + 22.457827 *
location_Attiguppe + 59.324425 * location_Attur Layout + 0.452461 *
location_Austin Town + 25.327319 * location_Avalahalli + -11.663751 *
location_Ayappa Nagar + 6.723549 * location_B Channasandra + -0.675679
* location_B Narayanapura + 67.169463 * location_B Y Raveshwara Nagar
+ -2.755334 * location_BAGUR + -28.056871 * location_BAGUR ROAD + -
11.601854 * location_BCC Layout + 8.101428 * location_BCMC Layout +
7.567895 * location_BDS Layout + 47.649937 * location_BEL Layout +
101.131638 * location_BEL Road + 6.574372 * location_BEML Layout + -
8.174761 * location_BEML Layout 5th stage + 30.062149 * location_BHEL
Layout + -11.678884 * location_BSM Extension + 65.327317 *
location_BTM 1st Stage + 23.004582 * location_BTM 2nd Stage +
38.156005 * location_BTM 4th Stage + 9.200764 * location_BTM Layout +
-3.844305 * location_Baba Nagar + -10.147298 * location_Babusapalaya +
24.252405 * location_Badavala Nagar + -0.000000 * location_Badrappa
Layout + 31.759290 * location_Bagalakunte + 0.390603 *
location_Bagalur + 7.953113 * location_Bagalur Main Road + 20.891051 *
location_Bahubali Nagar + 15.740719 * location_Balagere + -20.718341 *
location_Balaji Gardens Layout + 44.877458 * location_Banagiri Nagar +
62.123255 * location_Banagirinagar + 59.328019 * location_Banasawadi,
+ 12.284960 * location_Banashankari + 16.098661 *
location_Banashankari 2 nd Stage + -7.592594 * location_Banashankari
2nd Stage + 10.256198 * location_Banashankari 3rd stage,
Vivekanandanagar + 24.206983 * location_Banashankari 6th Stage + -
0.000000 * location_Banashankari 6th Stage ,Subramanyapura + 0.000000
* location_Banashankari 6th stage , 2nd block + -0.000000 *
location_Banashankari Stage I + 57.501091 * location_Banashankari
Stage II + 13.659141 * location_Banashankari Stage III + -22.250349 *
location_Banashankari Stage V + 18.105590 * location_Banashankari
Stage VI + 23.767048 * location_Banashankari stage 2 + 33.440338 *
location_Banashankari3rd stage bigbazar + 2.786209 *
location_Banaswadi + 78.992493 * location_Banaswadi, + 10.138302 *
location_Bande Nallasandra + -6.547807 * location_Bandepalya + -
1.625265 * location_Banjara Layout + -24.046484 * location_Bank Avenue
+ 33.929007 * location_Bank Of Baroda Colony + 6.136200 *
location_Bannerghatta + 6.050004 * location_Bannerghatta Road +
33.912089 * location_Bapuji Nagar + -0.604121 * location_Basapura +
2.442106 * location_Basava Nagar + -24.056663 * location_Basavanagara
+ -7.587016 * location_Basavanapura + 61.880315 * location_Basavangudi
+ 2.367118 * location_Basavanna Nagar + 43.327312 *
location_Basaveshwara Nagar + -11.020929 * location_Basaveshwara Nagar
Yelahanka + -24.534792 * location_Basnashankari,6th stage, + 0.000000
* location_Basvasamithi Layout Vidyaranyapura + -2.946630 *
location_Battarahalli + -10.189323 * location_Begur + -10.714064 *
location_Begur Road + -5.131913 * location_Behind Don Bosco Church + -
10.891982 * location_Belathur + 3.407450 * location_Belatur + 7.910059

* location_Bellandur + 0.000000 * location_Bellandur, + -9.319523 * location_Bellari Road + 8.687164 * location_Bendiganahalli + 50.772594 * location_Bennigana Halli + 49.425639 * location_Benson Town + -3.049281 * location_Bethel Nagar + -0.260199 * location_Bettahalsoor + 5.252165 * location_Bhagyalakshmi Avenue + 71.279046 * location_Bharat Nagar + 8.684320 * location_Bharathi Nagar + 64.107112 * location_Bharathnagar + -1.029189 * location_Bhattarahalli + 12.487379 * location_Bhoganhalli + 41.264781 * location_Bhoopsandra + -6.393999 * location_Bhuvaneshwari Nagar + 27.173371 * location_Bhuvaneswari Nagar + 51.180550 * location_Bidadi + -10.766584 * location_Bidere Agarahara, Behind Safal market + 0.112449 * location_Bidrahalli + -12.626655 * location_Bikasipura + -8.072838 * location_Bilal Nagar + 2.837693 * location_Billamaranahalli + 17.185937 * location_Billapura + 23.405594 * location_Billekahalli + 57.991056 * location_Binny Pete + -18.391117 * location_Bisuvanahalli + -16.629223 * location_Bommanahalli + -20.291060 * location_Bommasandra + -24.579335 * location_Bommasandra Industrial Area + 33.911122 * location_Bommenahalli + 182.243585 * location_Brigade Road + 64.907818 * location_Brindavan Layout + 44.499723 * location_Brindavan Nagar + 5.455323 * location_Brooke Bond First Cross + 18.573599 * location_Brookefield + 3.548541 * location_Budigere + 0.000000 * location_Bull Temple Road + -25.574836 * location_Byagadadhenahalli + 18.689373 * location_Byatarayanapura + -2.118253 * location_Byrasandra + 0.000000 * location_Byrasandra Extension + -8.263882 * location_Byrathi Village + 12.429737 * location_CHIKKATIRUPATHI + 74.739801 * location_CQAL LAYOUT C BLOCK + 11.943130 * location_CQAL Layout + 16.319040 * location_CV Raman Nagar + 47.079657 * location_Cambridge road + 77.422593 * location_Cambridge Layout + -7.797728 * location_Canara Bank Colony + 11.740011 * location_Canara Bank Layout + 9.598455 * location_Carmelaram + 1.114741 * location_Celebrity Paradise Layout + 41.319475 * location_Challaghatta + 0.000000 * location_Chambenahalli + 47.039849 * location_Chamrajpet + 29.627484 * location_Chamundi Nagar + -18.188154 * location_Chandapura + 57.022687 * location_Chandra Layout + -15.606611 * location_Channasandra + -8.459813 * location_Channasandra Layout + 6.315788 * location_Chelekare + -7.080437 * location_Chellikere + 8.775103 * location_Chennammana Kere + 9.310301 * location_Chennammanakere Achukattu + -6.136429 * location_Chennappa Layout + 5.439975 * location_Chikbasavanapura + -0.000000 * location_Chikka Banaswadi + 0.772539 * location_Chikka Tirupathi + 13.482374 * location_Chikkaballapur + -18.040806 * location_Chikkabanavar + 0.000000 * location_Chikkabettahalli + -22.693524 * location_Chikkadunnasandra + 27.353748 * location_Chikkajala + 2.485781 * location_Chikkakannalli + -2.078701 * location_Chikkalasandra + -0.676912 * location_Chikkanahalli + 26.508066 * location_Chikkasandra + -9.112408 * location_Chikkathoguru + -5.381133 * location_Chinnapanahalli + -4.227406 * location_Chokkahalli + 7.147240 * location_Chokkanahalli + -18.465329 * location_Chokkasandra + 36.184497 * location_Cholanayakanahalli + -

0.138391 * location_Choodasandra + 15.330041 * location_Chowdeshwari Layout + -40.768011 * location_Chuchangatta Colony + -0.000000 * location_Ckikkakammana Halli + -1.447936 * location_Classic Paradise Layout + 66.926112 * location_Cleveland Town + 11.465207 * location_Coconut Garden + -6.711141 * location_Coconut Grove Layout + 32.916093 * location_Coffee Board Layout + 53.874735 * location_Cooke Town + 60.738542 * location_Cottonpet + 49.449318 * location_Cox Town + 96.846504 * location_Craig Park Layout + 3.721168 * location_Crimson Layout + -39.022255 * location_D Group Employees Layout + -14.173152 * location_DUO Layout + -25.449278 * location_Daadys Gaarden Layout + 121.710613 * location_Dairy Circle + -4.136498 * location_Dasanapura + -6.249961 * location_Dasappa Layout + 15.598979 * location_Dasarahalli + 82.283761 * location_Deepanjali Nagar + 71.724495 * location_Defence Colony + 44.739802 * location_Defence Layout + 11.070011 * location_Dena Bank Colony + 7.113122 * location_Devanahalli + 22.593895 * location_Devanahalli Int. Airport + 5.123685 * location_Devanahalli Road + -64.885453 * location_Devara Jeevanahalli + -0.000000 * location_Devarabeesana Halli + 25.035441 * location_Devarabisanahalli + 5.040503 * location_Devarachikkanahalli + -0.000000 * location_Devasandra Extension + -9.705841 * location_Devasthanagalu + -2.841622 * location_Devi Nagar + 6.135296 * location_Dinnur + -3.634039 * location_Divya Unnathi Layout + 1.579277 * location_Doctor Layout Rayasandra + -3.774261 * location_Doctors Layout + 1.273693 * location_Dodda Banaswadi + -11.002955 * location_Dodda Kempaiah Layout + 3.954213 * location_Dodda Nekkundi + 15.742302 * location_Dodda Nekkundi Extension + 32.666380 * location_Doddaballapur + -19.937214 * location_Doddabanahalli + -14.344428 * location_Doddabele + -15.142907 * location_Doddabidrakallu + 4.724466 * location_Doddabommasandra + -22.487669 * location_Doddagubbi + -11.330150 * location_Doddakallasandra + -2.721186 * location_Doddakammanahalli + -0.260058 * location_Doddakannelli + 6.291745 * location_Doddanakundi Industrial Area 2 + 22.124563 * location_Doddanekundi + -16.003122 * location_Doddathoguru + 18.398495 * location_Dodsworth Layout + 35.918280 * location_Dollars Colony + 0.878097 * location_Dollars Layout + -45.167433 * location_Dominic Layout + 44.254330 * location_Domlur + 107.926052 * location_Domlur Layout + -20.739163 * location_Dommasandra + 69.285078 * location_Doopanahalli + 15.047944 * location_Dooravani Nagar + 23.638747 * location_Double Road + -1.930277 * location_Dr Shivarama Karantha Nagar + -17.626132 * location_Duddanahalli + -6.676393 * location_Duvasapalya + -0.000000 * location_Dwaraka Nagar + 12.595077 * location_Dwarka Nagar + 8.481452 * location_ECC Road, Whitefield, + 48.055824 * location_EPIP AREA, WHITEFIELD + 32.248949 * location_EPIP Zone + 19.832744 * location_Ejipura + -5.559583 * location_Electronic City + -37.570264 * location_Electronic City Phase 1, + -17.361736 * location_Electronic City Phase II + -25.979324 * location_Electronic city Phase 1, + -15.828033 * location_Electronic city phase 1, + -2.382038 * location_Electronics City Phase 1 + 11.511598 * location_Esther

Enclave Layout + 46.452686 * location_Ferrar Nagar + 20.993079 * location_Fraser town + 68.792644 * location_Frazer Town + 1.482435 * location_Friends Colony + 0.000000 * location_GB Palya + 3.485958 * location_GD Layout + -5.610543 * location_GM Palaya + 44.801199 * location_Gandhi Bazar + -42.171587 * location_Gandhi Nagar + 28.007581 * location_Ganesha Block + 8.658611 * location_Ganga Nagar + 3.132293 * location_Ganga Nagar Extension + -0.000000 * location_Ganganahalli + -8.150105 * location_Gangondanahalli + 7.244239 * location_Garden Layout + -5.218277 * location_Garebhavipalya + -3.917888 * location_Garudachar Palya + 4.485404 * location_Gattahalli + -0.000000 * location_Gattigere + 0.000000 * location_Gaundanapalya + 0.000000 * location_Gaurava Nagar + 0.000000 * location_Gayathri Nagar + -8.396283 * location_Geddalahalli + -0.000000 * location_Geleyara Balaga Layout + -19.795920 * location_Gidada Konnenahalli + 56.121719 * location_Giri Nagar + 54.387662 * location_Gkvk Layout + -19.942785 * location_Glass Factory Layout + 22.527789 * location_Gokaula Extension + 31.709716 * location_Gokula Extension + -8.875351 * location_Gollahalli + 0.000000 * location_Gollarahatti + -21.200916 * location_Gollarapalya Hosahalli + -20.348307 * location_Gopal Reddy Layout + 100.383439 * location_Gopalapura + 12.518451 * location_Gopalkrishna Nagar + 34.868087 * location_Goraguntepalya + -2.606600 * location_Gottigere + -3.974950 * location_Govindapura + -0.000000 * location_Govindaraja Nagar Ward + -7.506047 * location_Govindpura + -1.769992 * location_Govindraja Nagar + 3.277011 * location_Gowdanapalya + 48.262228 * location_Green Domain Layout + -20.932966 * location_Green Garden Layout + 24.853271 * location_Green Glen Layout + -10.702639 * location_Green View Layout + -0.000000 * location_Green Woods Layout + 5.203195 * location_Gubbalala + 17.564066 * location_Guddadahalli + -3.283208 * location_Gulakamale + -17.478327 * location_Gulimangala + 56.943129 * location_Guni Agrahara + -7.553980 * location_Gunjur + -20.503547 * location_Gunjur Palya + 46.712762 * location_HAL 2nd Stage + -5.335845 * location_HAL 3rd Stage + -24.531840 * location_HAL Layout + 27.125978 * location_HBR Layout + -4.761256 * location_HMT Layout + -23.999566 * location_HOSUR MAIN ROAD + 0.000000 * location_HOSUR RMAIN ROAD + 30.537806 * location_HRBR Layout + 5.470608 * location_HSR Layout + 60.259985 * location_HSR Layout 7th sector, + 80.792439 * location_Hadosiddapura + -5.718657 * location_Hagadur + 0.000000 * location_Hal old airport road + 76.152918 * location_Halanayakanahalli + -49.751815 * location_Hallehalli + 0.000000 * location_Handenahalli + -16.267582 * location_Hanumagiri + 14.018182 * location_Hanuman Nagar + -4.850024 * location_Hanumanth Nagar + 79.825670 * location_Hanumantha Nagar + 5.584828 * location_Haralur Road + 60.314375 * location_Haralur Road, + -7.580046 * location_Harappanahalli + 23.806795 * location_Harlur + -3.512791 * location_Harohalli + -1.063676 * location_Harsha Layout + 27.109849 * location_Hebbal + 48.453606 * location_Hebbal Kempapura + 29.243761 * location_Hegde Nagar + 13.729776 * location_Hegganahalli + -0.000000 * location_Hennagara + 3.469692 * location_Hennur + 2.525749 * location_Hennur Bande + -0.000000 * location_Hennur Busstop +

43.123724 * location_Hennur Gardens + 16.690038 * location_Hennur Road + 15.349577 * location_Herohalli + -14.954496 * location_Hessarghatta + 119.096822 * location_High grounds + 28.731302 * location_Himagiri Meadows + 12.790175 * location_Hiremath Layout + -2.328423 * location_Hommadevanahalli + -7.071495 * location_Hongasandra + 11.918255 * location_Hoodi + 4.412545 * location_Hoodi Circle, + 0.429736 * location_Hoodi Layout + -8.979579 * location_Horamavu Agara + -8.467355 * location_Horamavu Banaswadi + -1.811078 * location_Hormavu + 3.211191 * location_Hosa Road + -16.169138 * location_Hosahalli + 47.785689 * location_Hosahalli Extension + 19.622829 * location_Hosakerehalli + 12.061873 * location_Hosakerehalli Layout + 70.156000 * location_Hosapalya + -18.274650 * location_Hoskote + -18.110439 * location_Hoskote near + 15.635043 * location_Hosur Road + -0.340641 * location_Howthinarayanappa Garden + -15.418956 * location_Hoysalanagar + 12.698689 * location_Hulimavu + -24.843554 * location_Huskur + 16.912069 * location_ISRO Layout + 21.937581 * location_ITI Layout + -21.893871 * location_ITPL + 49.187688 * location_Iblur Village + -21.637870 * location_Iggalur + -15.038471 * location_Ilyas Nagar + 5.226200 * location_Immadihalli + 67.733012 * location_Indira Nagar + 108.739574 * location_Indira Nagar 3rd Stage + 40.656352 * location_Indira Nagar Stage 2 + 6.253132 * location_Ittamadu + -21.797851 * location_J C Nagar + 54.219300 * location_J.P.nagar 6th Phase.Sarakki Nagar + -14.097102 * location_JCR Layout + 14.011710 * location_JP Nagar + 19.171967 * location_JP Nagar 7th Phase, + -9.527044 * location_JP Nagar 8th Phase, + -15.917744 * location_JP nagar 9th Phase, + 21.972741 * location_Jagadish Nagar + 4.156341 * location_Jagajyothi layout + 1.511453 * location_Jai Bheema Nagar + 13.308835 * location_Jakkasandra + 10.286673 * location_Jakkasandra Extension + 20.076179 * location_Jakkur + 18.061703 * location_Jakkur Plantation + 0.000000 * location_JakkurYelahanka + 2.036496 * location_Jakkuru Layout + -0.000000 * location_Jaladarsini Layout + 26.221600 * location_Jalahalli + -6.212222 * location_Jalahalli East + 1.432702 * location_Jalahalli West + -13.161987 * location_Janatha Colony + -41.301233 * location_Jaraganahalli Jp Nagar Post + -0.000000 * location_Javarandoddi + 10.964779 * location_Jay an agar 4 T Block + 86.801022 * location_Jaya Mahal layout + 71.453091 * location_Jayamahal + 75.038860 * location_Jayanagar + -0.000000 * location_Jayanagar, + -9.752911 * location_Jayanti Nagar + 56.459387 * location_Jeevan bima nagar + 0.000000 * location_Jeevanhalli + -7.390380 * location_Jigani + 34.565562 * location_Jinkethimmanahalli + 8.727918 * location_Jnana Ganga Nagar + 6.125199 * location_Jnanabharathi Layout + 38.014396 * location_Jogupalya + 30.817355 * location_Judicial Layout + -19.306134 * location_Judicial Layout, Kanakapura Road, + -25.663078 * location_Jyothi Nagar + -7.610667 * location_K R C kothanur + 45.748384 * location_KAMAKIYA + -7.162593 * location_KEB Colony + 8.678027 * location_KG Halli + 3.200557 * location_KHB Colony Extension + 7.552064 * location_KPC Layout + 27.587629 * location_KR Garden + 7.175630 * location_KR

Layout + -3.983163 * location_KR Puram + -4.167444 * location_KSRTC Layout + -27.678590 * location_KUDLU MAIN ROAD + -17.424431 * location_Kachanayakanahalli + 2.669237 * location_Kacharakanahalli + -29.024892 * location_Kada Agrahara + -19.802269 * location_Kadabagere + 17.397802 * location_Kadarenahalli + 10.128950 * location_Kadubeesanahalli + 9.125160 * location_Kadugodi + -21.421783 * location_Kadugondanahalli + -7.446806 * location_Kaggadasapura + 6.560493 * location_Kaggalipura + 1.462833 * location_Kaikondrahalli + 10.267509 * location_Kalena Agrahara + 91.160704 * location_Kalhalli + -3.104056 * location_Kalkere + -3.441121 * location_Kalkere Channasandra + 1.630531 * location_Kallumantapa + 10.719421 * location_Kalyan nagar + 18.968432 * location_Kamakshipalya + 48.116270 * location_Kamakya Layout + 20.726942 * location_Kamala Nagar + -10.583594 * location_Kambipura + -7.146681 * location_Kamdhenu Nagar + 13.044208 * location_Kammagondahalli + 32.665571 * location_Kammanahalli + -18.299004 * location_Kammasandra + 25.123210 * location_Kanaka Nagar + 1.018776 * location_Kanakadasa Layout + -9.334269 * location_Kanakapur main road + -0.475917 * location_Kanakapura + -19.606455 * location_Kanakapura Rod + -16.243402 * location_Kanakapura Main Road + 0.000000 * location_Kanakapura Road + 3.125477 * location_Kanakapura Road, + -14.033529 * location_Kanakapura main Road + 2.019942 * location_Kanakpura Road + 11.956381 * location_Kannamangala + -9.109509 * location_Kannur + 0.119670 * location_Kariyammana Agrahara + 62.413283 * location_Karuna Nagar + 12.941239 * location_Kasavanhalli + -8.279885 * location_Kashi Nagar + 20.972047 * location_Kasturi Nagar + 9.547305 * location_Kathriguppe + 41.972565 * location_Kathriguppe IV Phase + 14.460228 * location_Kattigenahalli + -2.305066 * location_Kaval Byrasandra + 20.515275 * location_Kaverappa Layout + 42.975625 * location_Kaveri Nagar + 15.934546 * location_Kavika Layout + -0.000000 * location_Keerthi Layout + -8.354895 * location_Kempapura + 7.145496 * location_Kempegowda Nagar + -20.290764 * location_Kenchanehalli R R Nagar + 5.795164 * location_Kenchenahalli + -18.654442 * location_Kenchenhalli + -7.673488 * location_Kengeri + 0.753141 * location_Kengeri Hobli + -6.865422 * location_Kengeri Satellite Town + 73.535172 * location_Kengeri Satellite Town (BDA SITE) + -16.935971 * location_Kengeri Satellite Town KHB Apartment + 0.000000 * location_Kengeri Satellite Town Stage II + -25.747022 * location_Kereguddadahalli + 61.755600 * location_Keshava Nagar + -33.211407 * location_Kirloskar Layout + -5.888484 * location_Kirloskar layout, Basaveshwarnagar + -21.357853 * location_Kithaganur + 0.000000 * location_Kodanda Reddy Layout + -26.548821 * location_Kodathi + 13.686596 * location_Kodbisanhalli + 0.172618 * location_Kodichikkanahalli + 9.049218 * location_Kodigehaali + 20.374397 * location_Kodigehalli + 66.222883 * location_Kodihalli + -15.312861 * location_Kodipalya + 6.768359 * location_Kogilu + 31.398898 * location_Konanakunte + 41.870763 * location_Konanakunte Cross + -11.319222 * location_Konappana Agrahara + -3.146681 *

location_Konena Agrahara + -31.879875 * location_Koppa + 62.316713 * location_Koramangala + -15.090382 * location_Kothannur + 2.583980 * location_Kothanur + -17.275484 * location_Kothnoor Dinne + 41.200758 * location_Kothnur Narayanapura + 15.784245 * location_Krishna Nagar + 0.000000 * location_Krishna Reddy Layout + -2.981399 * location_Kudlu + 1.397990 * location_Kudlu Gate + -22.953768 * location_Kudlu Village, + 7.233416 * location_Kullappa Colony + 114.877869 * location_Kumara Park + -2.490464 * location_Kumarapalli + 1.208094 * location_Kumaraswami Layout + -38.852938 * location_Kumbalgodu + -7.794692 * location_Kumbena Agrahara + 25.279202 * location_Kundalahalli + 15.692739 * location_Kundalahalli Colony + -11.708111 * location_Kurubarahalli + 43.432739 * location_Kuvempu Layout + 19.172887 * location_Kuvempu Nagar + 5.883131 * location_Kyalasanahalli + 3.419494 * location_LB Shastri Nagar + 59.611516 * location_LIC Colony + 43.700182 * location_Laggere + -13.424866 * location_Lake City + 8.045043 * location_Lakshmi Layout + 30.119670 * location_Lakshmiamma Garden + 31.808553 * location_Lakshminarayana Pura + -48.599122 * location_Lakshminarayanapura, Electronic City Phase 2 + 26.587502 * location_Lakshmipura + 108.492317 * location_Lal Bahadur Shastri Nagar + 72.734208 * location_Langford Town + -20.628457 * location_Lavakusha Nagar + 99.411007 * location_Lavelle Road + 49.806271 * location_Laxmi Sagar Layout + 47.767154 * location_Laxminarayana Layout + 22.889546 * location_Lingadheeranahalli + -6.343599 * location_Lingarajapuram + -1.255307 * location_Lottegolla Halli + 142.998429 * location_M.G Road + -0.877647 * location_MCECHS layout + 24.837853 * location_MEI layout, Bagalgunte + -15.258804 * location_MLA Layout + -39.453565 * location_MM Layout + 34.712398 * location_MRCR Layout + -16.479840 * location_MS Pallya + 0.000000 * location_Madanayakahalli + -18.146681 * location_Madavara + -4.819766 * location_Madiwala + 4.147222 * location_Magadi Road + 1.732170 * location_Mahadevpura + 11.362900 * location_Mahaganapathy Nagar + 31.084124 * location_Mahalakshmi Layout + 7.149264 * location_Mahalakshmi Puram + 7.905956 * location_Maheswari Nagar + -9.475472 * location_Mailasandra + -14.597114 * location_Maithri Layout + -1.338844 * location_Makali + -15.954148 * location_Malimakanapura + 0.000000 * location_Mallappa Layout + 6.963634 * location_Mallasandra + -7.559734 * location_Mallathahalli + 3.460859 * location_Malleshpalya + 52.703609 * location_Malleshwaram + -48.403105 * location_Malur Hosur Road + -9.614834 * location_Manayata Tech Park + -22.260528 * location_Mangammanapalya + 0.000000 * location_Mango Garden Layout + 74.450311 * location_Manjunath Nagar + 37.077303 * location_Manjunatha Layout + -7.625905 * location_Manonarayanapalya + 2.898180 * location_Manorayana Palya + -4.324637 * location_Maragondana Halli, kr puram, old madras road + -9.225698 * location_Maragondanahalli + -22.146682 * location_Marasandra + 14.537386 * location_Marathahalli + 39.826639 * location_Marenahalli + 4.005564 * location_Margondanahalli + -5.708016 * location_Mariyannapalya + 1.892060 * location_Marsur + -0.000000 * location_Maruthi Extension + -44.215374 * location_Maruthi

HBCS Layout + -10.205125 * location_Maruthi Layout + -6.667012 * location_Maruthi Nagar + 28.223746 * location_Maruthi Sevanagar + 0.408190 * location_Maruthi nagar kogilu + -58.490235 * location_Masjid e Alkareem + 53.953488 * location_Mathikere + 78.202257 * location_Mathikere Extension + 121.346865 * location_Mathikere SBM colony + -10.329090 * location_Medahalli + -32.746011 * location_Medaralli + -30.760627 * location_Medi Agrahara + 113.687164 * location_Michael Palaya + -6.644387 * location_Mico Layout + 26.237751 * location_Moodalapalya + -5.207288 * location_Motappa Layout + 25.160025 * location_Mudalpalaya + -2.829410 * location_Muneshwara Nagar + 108.187492 * location_Munivenkatppa Layout + -6.365806 * location_Munnekollal + 6.522662 * location_Murugeshpalya + 50.920724 * location_Muthyala Nagar + 9.822356 * location_Mylasandra + 1.772825 * location_Mysore Road + 14.112968 * location_N R Layout + -3.917808 * location_NGR Layout + -13.858894 * location_NR Colony + 6.410094 * location_NRI Layout + 0.000000 * location_NS Palya + -1.835846 * location_NTI Layout + 13.088750 * location_Nagadevanahalli + 15.603418 * location_Naganathapura + -5.953416 * location_Nagappa Reddy Layout + 11.048150 * location_Nagaraja Garden + 23.432477 * location_Nagarbhavi + 0.000000 * location_Nagarbhavi BDA Complex + -0.000000 * location_Nagarbhavi Garden Villas Layout + 10.067041 * location_Nagasandra + 18.461348 * location_Nagashetty Halli + 8.983544 * location_Nagavara + 29.438249 * location_Nagavarapalya + -19.715715 * location_Nagawara Junction + -24.284583 * location_Nagondanahalli + -7.145309 * location_Naidu Layout + 1.882025 * location_Nallurhalli + 63.502704 * location_Nandi Hills + 24.503930 * location_Nandini Layout + 0.876116 * location_Nanjappa Garden + 16.826362 * location_Nanjappa Layout + -7.800301 * location_Nanjappa Layout Vidyaranyapura + 0.899584 * location_Narayana Nagar 1st Block + 11.529039 * location_Narayanappa Garden + 20.178515 * location_Narayanapura + -0.000000 * location_Navodaya Nagar + 3.168032 * location_Nayandanahalli + 18.264026 * location_Ncpr Industrial Layout + 12.493682 * location_Near International Airport + 112.946132 * location_Near ullas theater + 0.040346 * location_Neeladri Nagar + 2.966070 * location_Neelamangala + 0.000000 * location_Neelasandra + 11.346975 * location_Nehru Nagar + -92.825642 * location_Nelamangala + -7.320220 * location_New Gurappana Palya + 6.820600 * location_New Thippasandra + -5.248751 * location_Ngef Layout + -18.671321 * location_Nirman Layout + -9.425376 * location_Nobo Nagar + -4.561945 * location_Nyanappana Halli + -45.768012 * location_OLd Gurappanapalya + 28.132217 * location_OMBR Layout + 0.000000 * location_Off Bannergatta Road + -9.011469 * location_Off Bannergatta road + 19.888021 * location_Off Sarjapur Road, + -1.747664 * location_Okalipura + 45.234773 * location_Old Airport Road + 13.566386 * location_Old Madras Road + 12.223731 * location_Old Mangammanapalya Road + -8.900103 * location_Omkar Nagar + 14.468663 * location_Outer Ring Road East + -7.724185 * location_P Krishnappa Layout + 2.147577 * location_P&T Colony + -11.808230 * location_P&T Layout + -4.025781 *

location_PC Palaya + 12.097898 * location_PNS Layout + 27.031331 * location_Padmanabhanagar + 6.863472 * location_Pai Layout + 65.665159 * location_Pai layout , Mahadevapura + 37.663211 * location_Palace Guttahalli + 76.699330 * location_Palace Road + 9.697541 * location_Pampa Extension + 14.296213 * location_Panathur + -0.000000 * location_Panathur Road, + 5.546907 * location_Panduranga Nagar + 54.075275 * location_Papareddipalya + -6.084198 * location_Parappana Agrahara + -38.406507 * location_Park View Layout + 6.611516 * location_Patelappa Layout + -9.480682 * location_Pattanagere + -0.049485 * location_Pattandur Agrahara + 7.090247 * location_Peenya + -26.518028 * location_Phase 1 Kammasandra + -6.951937 * location_Pillanna Gardens + -9.585354 * location_Poorna Pragna Layout + -5.491629 * location_Poornapragna Housing Society Layout + -3.562022 * location_Popular Colony + 155.937465 * location_Postal Colony + -10.347264 * location_Pragathi Nagar + 5.147758 * location_Prakash Nagar + 5.215794 * location_Prakruthi Nagar + -30.399173 * location_Prasanth Extension + 74.868088 * location_Prasanti Nagar + -0.000000 * location_Prashanth Nagar + 21.087737 * location_Prestige Sunrise + 29.810276 * location_Prithvi Layout + 61.188040 * location_Pulkeshi Nagar + -10.342500 * location_Punappa Layout + -10.245268 * location_Puttanahalli + 80.389317 * location_Queens Road + 13.994219 * location_R.T. Nagar + 21.028787 * location_RBI Layout + 0.000000 * location_RK Layout 2nd Stage + 32.956756 * location_RMC YARD + 79.931918 * location_RMV + 160.611516 * location_RMV 2nd Stage + 13.104177 * location_RMV Extension + 29.424712 * location_RMV Extension Stage 2 + 13.198221 * location_RPC layout + 26.172986 * location_RR Layout + 14.670606 * location_RR Nagar + -0.000000 * location_RTO ullalu + 1.152449 * location_RWF West Colony + 3.735003 * location_Rachenahalli + -0.596697 * location_Raghavendra Layout + -2.421769 * location_Raghavendra Nagar + -11.101917 * location_Raghuvanahalli + 11.550636 * location_Rahmath Nagar + 0.000000 * location_Rainbow Drive + -20.290763 * location_Raja Rajashweri Nagar + -6.358469 * location_Raja Rajeshwari Nagar + -1.706138 * location_Raja Rajeshwari Nagar 5th Stage + -6.984996 * location_Raja Rajeshwari Nagara + -68.406507 * location_Rajagopala Nagar + 62.066420 * location_Rajaji Nagar + 58.592563 * location_Rajankunte + -16.846926 * location_Rajanna Layout + -4.199319 * location_Rajapura + -12.830286 * location_Rajarajesheari nagar + -20.290764 * location_Rajarajeshwari Nagara + -14.232385 * location_Rajarajeshwari nagar + -8.174770 * location_Rajarajeshwarinagar + 5.612086 * location_Rajasree Layout + 10.664206 * location_Rajiv Gandhi Nagar + 19.184553 * location_Rajiv Nagar + 9.491576 * location_Ramagondanahalli + 78.511306 * location_Ramakrishnappa Layout + 3.528284 * location_Ramamurthy Nagar + -24.662813 * location_Ramamurthy Nagar Extension + 2.169466 * location_Ramanagara Channapatna + -0.305713 * location_Ramanashree Enclave + -8.990150 * location_Ramanjaneyanagar + 0.000000 * location_Ramaswamy Palya - Kammanahalli Main Road + -17.527005 * location_Ramchandrapuram + 63.373299 * location_Ramesh Nagar + 6.825232 * location_Rammana Layout + -10.288951 * location_Rayasandra

+ -2.382189 * location_Reliaable Tranquil Layout + -6.245026 * location_Reliable Woods Layout + 19.894500 * location_Remco Bhel Layout + 47.231294 * location_Richards Town + 65.017677 * location_Richmond Town + -7.502242 * location_Roopena Agrahara + 0.000000 * location_Rukmaiah Layout + 27.748123 * location_Rustam Bagh Layout + 0.000000 * location_S R Layout + -144.543068 * location_SARJAPUR BAGALUR ROAD + 6.377099 * location_SHANTHINAGAR + 55.238229 * location_SK Garden + 45.612060 * location_SMV layout + -19.220490 * location_SRINIVASAPURA + 4.455599 * location_Sabari Nagar + 100.031564 * location_Sadanand Nagar + 5.938977 * location_Sadaramangala + 20.664154 * location_Sadduguntepalya + 14.250186 * location_Sadhguru Layout + 23.396008 * location_Sahakara Nagar + 88.574846 * location_Sahyadri Layout + -7.166626 * location_Sai Gardens + -11.117721 * location_Samethanahalli + 51.713826 * location_Sampangi Rama Nagar + 34.375118 * location_Sampige Layout + -3.994925 * location_Sampigehalli + 35.145281 * location_Sanjay nagar + 8.644779 * location_Sanne Amanikere + 0.000000 * location_Saptagiri Layout + 18.756527 * location_Sarakki Nagar + -10.594881 * location_Sarjapur + 11.931593 * location_Sarjapur Road + 14.973942 * location_Sarjapur Road, + -18.614286 * location_Sarjapura - Attibele Road + -3.528675 * location_Sarvabhouma Nagar + 50.436551 * location_Sarvobhogam Nagar + 41.182708 * location_Sathanur + 21.995166 * location_Sathya Layout + -10.921118 * location_Satyasaibaba Layout + 64.659124 * location_Sector 1 HSR Layout + 22.528763 * location_Sector 2 HSR Layout + 67.190171 * location_Sector 7 HSR Layout + -8.241233 * location_Seegehalli + -9.465330 * location_Seethappa Layout + 2.004981 * location_Seetharampalya + 76.291936 * location_Seshadripuram + -17.495170 * location_Shakthi Nagar + -5.207890 * location_Shampura + 63.454813 * location_Shankarapuram + 116.076637 * location_Shanthala Nagar + -0.209557 * location_Shanthi Layout + -0.000000 * location_Shanthi Pura + 54.418051 * location_Shanti Nagar + 15.669290 * location_Shantiniketan Layout + 2.228658 * location_Shauhardha Layout + 22.598385 * location_Shettigere + 0.000000 * location_Shettihalli + 12.019474 * location_Shetty Halli + -13.509189 * location_Shikaripalya + -4.726004 * location_Shingapura + 6.544539 * location_Shirdi Sai Layout + -1.312835 * location_Shirdi Sai Nagar + 25.965002 * location_Shivaji Nagar + 38.388864 * location_Shivanagar + -14.188123 * location_Shree Ananth Nagar Layout + 5.672163 * location_Siddapura + -5.392851 * location_Sidedahalli + -13.259345 * location_Silk Board + -8.439128 * location_Silver Springs Layout + -6.124547 * location_Singanayakanahalli + -9.644274 * location_Singapura Village + 1.315683 * location_Singasandra + 30.078047 * location_Singena Agrahara + 23.142164 * location_Sneha Colony + 44.239373 * location_Somanna Garden + 2.292234 * location_Somasundara Palya + 35.947580 * location_Someshwara Layout + -19.442107 * location_Sompura + -2.081824 * location_Sonam Layout + -4.625004 * location_Sonnenahalli + 5.984458 * location_Soppahalli + 23.973142 * location_Soundarya Layout + -34.925946 * location_Sree

Narayana Nagar + 12.156002 * location_Sri Balaji Krupa Layout + 113.687165 * location_Sri Kanteshwara Nagar + -17.094044 * location_Sri Sai Layout + -16.283196 * location_Sri Venkateshpura Layout + 0.000000 * location_Srigandada Kaval + 34.774629 * location_Srinagar + 3.773178 * location_Srinivasa Nagar + 5.996764 * location_Srirampura + 40.958139 * location_Srirampuram + -21.690936 * location_St Thomas Town + -0.000000 * location_St. John's Road + -15.699088 * location_Stage-4 Bommanahalli + -3.426947 * location_Subash Nagar + 0.000000 * location_Subbannaiah Palya + -5.131911 * location_Subhash Nagar + 128.518476 * location_Subramanya Nagar + 2.003549 * location_Subramanyapura + -20.654048 * location_Suddaguntepalya + -14.143675 * location_Sugama Layout + 5.662500 * location_Sultan Palaya + 30.156000 * location_Sulthangunta + 0.000000 * location_Sundar Ram Shetty Nagar + 57.974219 * location_Sundara Nagar + 7.232073 * location_Sunder Ram Shetty Nagar + -1.210859 * location_Sunkadakatte + -14.275787 * location_Sunkan palya + 19.580308 * location_Surabhi Layout + 0.000000 * location_Suragajakkanahalli + -24.421665 * location_Suraksha Nagar + -13.751187 * location_Suryanagar + -18.207560 * location_Syndicate Bank Colony + -6.388257 * location_T C Palya main Road + 25.266308 * location_T Dasarahalli + 61.814845 * location_T G extension + -14.923147 * location_T K Reddy Layout + 18.662905 * location_T R Mill Road + 16.475152 * location_T c palya + 16.445925 * location_T.C PALYA + -0.367136 * location_TC Palaya + 24.944380 * location_TR Mill Road, Chamarajpet + 26.441465 * location_Tala Cauvery Layout + 18.490309 * location_Talaghattapura + 27.292891 * location_Tasker Town + -9.669572 * location_Tata Nagar + -35.529088 * location_Tavarekere + -10.994188 * location_Teachers Colony + -3.603956 * location_Tejaswini Nagar + 19.762207 * location_Telecom Layout + 8.689761 * location_Thanisandra + 52.528243 * location_Thanisandra Main Road, + 39.400541 * location_Thigalarapalya + 34.998333 * location_Thippasandra + 0.000000 * location_Thirumalashettyhally + -20.502976 * location_Thirumenahalli + 11.573094 * location_Thirupalya + 20.546630 * location_Thubarahalli + -21.203179 * location_Thurahalli + 32.856677 * location_Thyagaraja Nagar + 25.611745 * location_Thyagraj Nagar + 14.509883 * location_Tigalarpalya + 5.033741 * location_Tilak Nagar + 6.106609 * location_Tindlu + -1.441119 * location_Tippenahalli + -8.172129 * location_Tirumanahalli + 13.075902 * location_Tumkur Road + -15.588981 * location_Tunganagara + 0.000000 * location_Uday Nagar + -0.959345 * location_Udaya Nagar + -0.000000 * location_Udayagiri + -7.214750 * location_Udayapur Village + 51.260902 * location_Ullal Road + 25.558879 * location_Ullal Uppanagar + 54.908147 * location_Ulsoor + -5.850406 * location_Upadhyaya Layout + 31.299104 * location_Upkar Layout + -7.964352 * location_Uttarahalli + 45.776245 * location_Uvce Layout + 4.375347 * location_V.V Puram + -3.417509 * location_VGP Layout + 49.588773 * location_VHBCS Layout + 6.220210 * location_Vadarpalya + -2.750618 * location_Vaderahalli + 4.174101 * location_Vajarahalli + -8.951546 * location_Varanasi + -8.740614 * location_Varsova Layout + 1.805480 * location_Varthur + -6.997653 *

location_Varthur Road + -0.000000 * location_Varthur Road, + -17.281414 * location_Vasantapura main road + 68.081920 * location_Vasanth nagar + 6.812872 * location_Vasantha Vallabha Nagar + -13.786769 * location_Vasanthapura + -25.939025 * location_Vasanthpura + -16.243404 * location_Vasatha Vallbha Nagar + -17.675538 * location_Veer Sandra + 30.217724 * location_Veerabhadra Nagar + -21.076919 * location_Veerannapalya + -0.948933 * location_Veersandra + 24.208638 * location_Venkatadri Layout + -18.778971 * location_Venkatapura + -24.943302 * location_Venkateshpuram + 0.156002 * location_Venkateswara Nagar + 6.282309 * location_Venugopal Reddy Layout + -15.734106 * location_Vibhutipura Extension + 55.320623 * location_Vibuthipura + 60.573818 * location_Victoria Layout + -21.214944 * location_Vidhyanagar Cross + 0.000000 * location_Vidyapeeta + 1.961540 * location_Vidyaranyapura + -7.752122 * location_Vignana Nagar + -3.298673 * location_Vijaya Bank Colony + 31.962137 * location_Vijaya Bank Layout + -6.267582 * location_Vijayabank bank layout + 22.251521 * location_Vijayanagar + 10.021131 * location_Vijinapura + -0.000000 * location_Vikram Nagar + -18.878978 * location_Vimanapura + 11.061051 * location_Vinayak Nagar + 2.242820 * location_Vinayaka Nagar + -6.123789 * location_Virat Nagar + -43.228332 * location_Virgonagar + 0.000000 * location_Virudhu Nagar + -2.974956 * location_Virupakshapura + -15.078034 * location_Vishveshwarya Layout + 1.862862 * location_Vishwanatha Nagenahalli + -9.861467 * location_Vishwapriya Layout + 8.663040 * location_Vishwapriya Nagar + 8.837694 * location_Viswajit Layout + -3.680858 * location_Vittal Nagar + 8.605750 * location_Vittasandra + 31.021486 * location_Vivek Nagar + -12.990597 * location_Volagerekallahalli + 20.732418 * location_Vyalikaval + 8.439813 * location_Weavers Colony + -0.000000 * location_West of Chord Road + -0.000000 * location_Wheelers Road + 8.445740 * location_Whietfield, + 7.887184 * location_Whitefield + -0.000000 * location_Whitefield ECC Road + -5.912783 * location_Whitefield, + 31.580426 * location_Williams Town + 43.072382 * location_Wilson Garden + -15.685587 * location_Yarandahalli + 26.469771 * location_Yelachenahalli + 5.503195 * location_Yelahanka + 6.361903 * location_Yelahanka New Town + 25.507682 * location_Yelahanka,MVIT college + -12.157248 * location_Yelenahalli + 14.428721 * location_Yemlur + 26.364882 * location_Yemlur, Old Airport Road, + 23.917868 * location_Yeshwanthpur + 63.254219 * location_Yeshwanthpur Industrial Suburb + -8.154921 * location_Zuzuvadi + 6.709571 * location_adigondanhalli + 3.815451 * location_akshaya nagar t c palya + 0.000000 * location_anjananager magdi road + 5.147341 * location_banashankari stage iii sa + 0.000000 * location_basaveshwarnagar + -20.353869 * location_bsk 6th stage 2ad block near sri conversation hall + 100.032975 * location_cooketown + 0.908760 * location_elachenahalli + 116.825235 * location_frazertown + 3.112517 * location_kadubisnahalli + 14.637133 * location_kamanahalli main road + -17.166248 * location_kanakapura main road + -0.000000 * location_kanakapura road + -2.794213 * location_kg halli jalhalli west

```
+ -4.931000 * location_manyata + -0.848726 * location_manyata park +
1.171970 * location_manyata tech park + -28.730195 * location_mvj
engineering college + 0.524411 * location_near Ramanashree California
resort + 114.681485 * location_pavitra paradise + 74.921586 *
location_poornaprajna layout + 19.888338 * location_ravindra nagar,
T.dasarahalli peenya + 3.422355 * location_rr nagar + 14.457500 *
location_sankeswari + 0.000000 * location_sapthagiri Layout + 0.000000
* location_singapura paradise + 5.491146 * location_tc.palya + -
19.688092 * location_whitefiled

Value of β0 (Intercept): -16.764195651398154

Significant Features:
                                            Feature   Coefficient
1                                              bath     21.149897
2                                           balcony     -1.052482
3                                              size      8.726168
4                                 location_ Banaswadi    15.974263
5                                 location_ Basavangudi   30.423899
...                                               ...           ...
1131   location_ravindra nagar, T.dasarahalli peenya    19.888338
1132                                location_rr nagar     3.422355
1133                              location_sankeswari    14.457500
1136                                location_tc.palya     5.491146
1137                              location_whitefiled   -19.688092

[1018 rows x 2 columns]
```

1. What is the value of β0 and how do you interpret it?

1. The value of β0 also known as the intercept term, is approximately -16.094309.
2. This value represents the predicted price of the property when all the other predictor variables (features) are set to zero.
3. In other words, it is the baseline price of the property. However, it's important to note that in real-world scenarios, setting all features to zero may not always be meaningful or feasible, especially for features like 'total_sqft', 'bath', etc.

2. Which features are significant? Why?

1. Significant features are those whose coefficients have a notable impact on the predicted price of the property.
2. Based on the provided coefficients, features such as 'bath', 'size', and various 'location' dummy variables appear to be significant.
3. These features have coefficients with substantial magnitudes (e.g., absolute values greater than 1), indicating their significance in predicting the price of the property.
4. The significance of these features could be attributed to various factors such as the number of bathrooms ('bath') and bedrooms ('size'), as well as the desirability or perceived value associated with specific locations.

```python
y_pred = model.predict(X_test)

error = y_test - y_pred
squared_error = error ** 2

results_df = pd.DataFrame({
    'Actual Price': y_test,
    'Predicted Price': y_pred,
    'Error': error,
    'Squared Error': squared_error
})

print(results_df)

       Actual Price  Predicted Price       Error   Squared Error
133          210.00       116.190877   93.809123     8800.151649
12133         84.00        97.528893  -13.528893      183.030944
5033          62.00        76.585304  -14.585304      212.731104
8621          55.47        49.040170    6.429830       41.342709
6396          87.00        72.785927   14.214073      202.039860
...              ...             ...         ...             ...
2478         105.00       127.983892  -22.983892      528.259285
2699          21.00        19.654606    1.345394        1.810084
8357          90.00       143.692727  -53.692727     2882.908959
12765         30.46        51.748817  -21.288817      453.213738
7295          45.00        63.772821  -18.772821      352.418795

[2201 rows x 4 columns]
```

6. EV MATRICS CALCULATION USING ACTUAL VS PREDICTED

```python
mse = mean_squared_error(y_test, y_pred)

rmse = np.sqrt(mse)

mae = mean_absolute_error(y_test, y_pred)

print("Mean Squared Error (MSE):-", mse)
print("Root Mean Squared Error (RMSE):-", rmse)
print("Mean Absolute Error (MAE):-", mae)

Mean Squared Error (MSE):- 1.1705438212693114e+17
Root Mean Squared Error (RMSE):- 342132112.0955049
Mean Absolute Error (MAE):- 14354085.04462714
```

7. VIZUALIZE THE PREDICTED VS ACTUAL MODEL

```python
plt.figure(figsize=(10, 6))
plt.scatter(y_test, y_pred, color='blue', alpha=0.5)
plt.plot([min(y_test), max(y_test)], [min(y_test), max(y_test)],
color='red')
```

```
plt.title('Actual Prices vs. Predicted Prices')
plt.xlabel('Actual Prices')
plt.ylabel('Predicted Prices')
plt.grid(True)
plt.show()
```
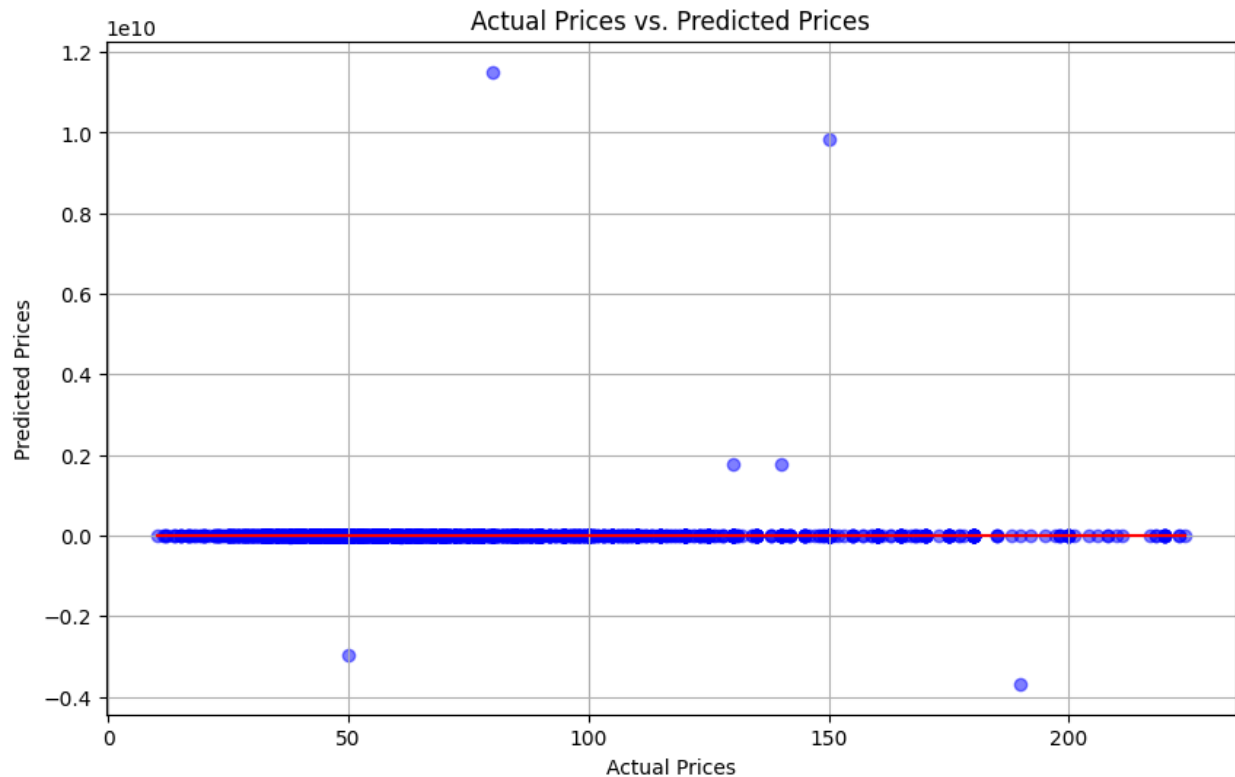


```
plt.figure(figsize=(10, 6))
plt.hist(error, bins=30, color='green', alpha=0.7)
plt.title('Histogram of Errors')
plt.xlabel('Error')
plt.ylabel('Frequency')
plt.grid(True)
plt.show()
```

Histogram of Errors
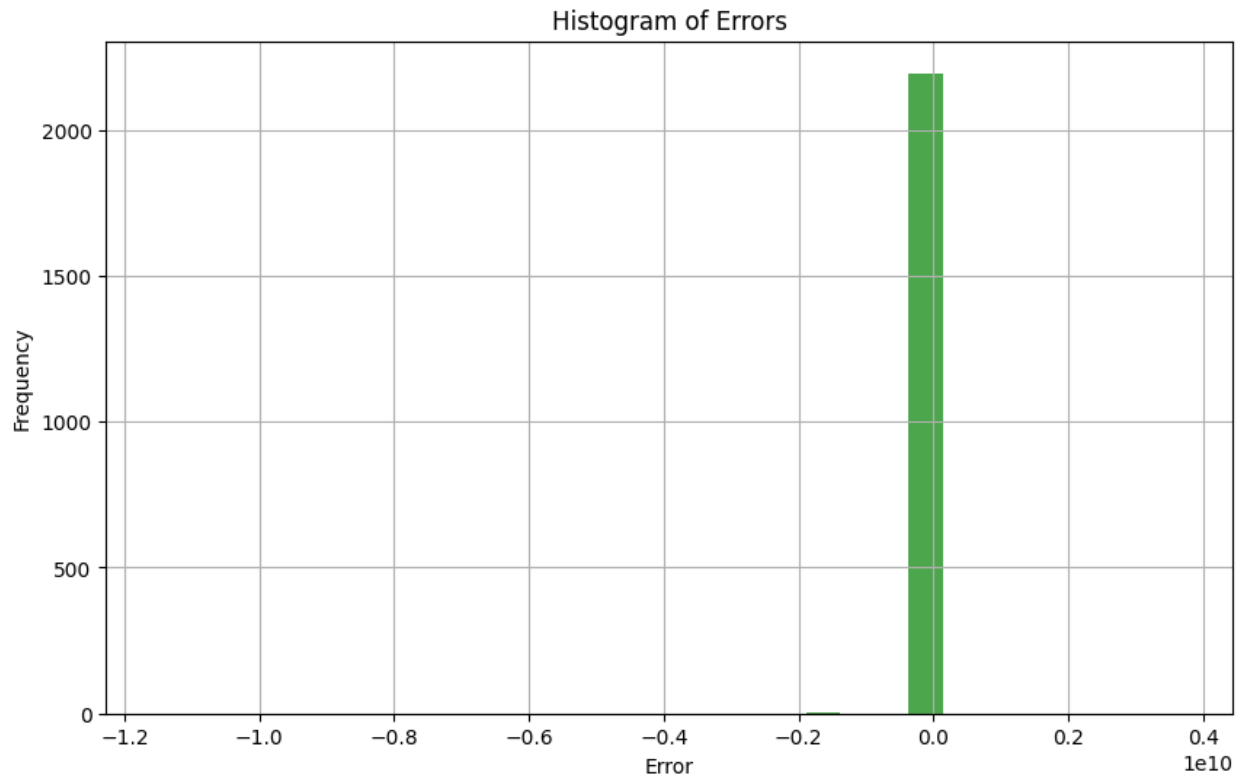

```python
# Q5 ANSWER
final_output_df = df_selected.copy()

output_df = pd.DataFrame({
    'Actual Price': y_test,
    'Predicted Price': y_pred,
    'Error': y_test - y_pred,
    'Squared Error': (y_test - y_pred) ** 2
})

final_output_df = pd.concat([df_selected, output_df], axis=1)

print(final_output_df)
```

```
       total_sqft  bath  balcony  size              location
price  \
0          1056.0   2.0      1.0     2  Electronic City Phase II
39.07
2          1440.0   2.0      3.0     3              Uttarahalli
62.00
3          1521.0   3.0      1.0     3        Lingadheeranahalli
95.00
4          1200.0   2.0      1.0     2                  Kothanur
51.00
5          1170.0   2.0      1.0     2                Whitefield
38.00
```

```
...              ...    ...    ...    ...                      ...       .
..
13306        1262.0    2.0    2.0    2                   Bellandur
47.00
13307        1345.0    2.0    1.0    3                 Uttarahalli
57.00
13308        1715.0    3.0    3.0    3          Green Glen Layout
112.00
13311        1141.0    2.0    1.0    2      Raja Rajeshwari Nagar
60.00
13313         550.0    1.0    1.0    1                Doddathoguru
17.00

         Actual Price   Predicted Price      Error   Squared Error
0               39.07         36.410431    2.659569        7.073306
2                 NaN               NaN         NaN             NaN
3                 NaN               NaN         NaN             NaN
4               51.00         57.970244   -6.970244       48.584306
5                 NaN               NaN         NaN             NaN
...               ...               ...         ...             ...
13306             NaN               NaN         NaN             NaN
13307             NaN               NaN         NaN             NaN
13308             NaN               NaN         NaN             NaN
13311           60.00         48.366464   11.633536      135.339150
13313             NaN               NaN         NaN             NaN

[11001 rows x 10 columns]
```

```python
final_output_df.dropna(subset=['Actual Price', 'Predicted Price',
'Error', 'Squared Error'], inplace=True)
print(final_output_df)
```

```
        total_sqft  bath  balcony  size                     location
price  \
0            1056.0   2.0     1.0     2    Electronic City Phase II
39.07
4            1200.0   2.0     1.0     2                     Kothanur
51.00
13           1100.0   2.0     2.0     2                    Gottigere
40.00
15           1175.0   2.0     2.0     2                  Mysore Road
73.50
20            600.0   1.0     1.0     1                      Kengeri
15.00
...             ...   ...     ...   ...                          ...       .
..
13296        1075.0   2.0     2.0     2         Annaiah Reddy Layout
48.00
13298        1187.0   2.0     2.0     2      Raja Rajeshwari Nagar
40.14
```

```
13302        1527.0   3.0       1.0      3            Bannerghatta Road
142.00
13304        1050.0   2.0       2.0      2                 Rachenahalli
52.71
13311        1141.0   2.0       1.0      2         Raja Rajeshwari Nagar
60.00

       Actual Price  Predicted Price       Error  Squared Error
0             39.07        36.410431    2.659569       7.073306
4             51.00        57.970244   -6.970244      48.584306
13            40.00        50.606282  -10.606282     112.493220
15            73.50        55.826383   17.673617     312.356736
20            15.00        11.111306    3.888694      15.121939
...             ...              ...         ...            ...
13296         48.00       914.008394 -866.008394  749970.538413
13298         40.14        47.829597   -7.689597      59.129907
13302        142.00        94.977680   47.022320    2211.098539
13304         52.71        56.387435   -3.677435      13.523526
13311         60.00        48.366464   11.633536     135.339150

[2201 rows x 10 columns]

html_output = final_output_df.to_html(index=False)
display(HTML(html_output))

<IPython.core.display.HTML object>

# What is the RMSE value of the model on the test dataset?

squared_errors = final_output_df['Error'] ** 2
mean_squared_error = squared_errors.mean()
rmse = np.sqrt(mean_squared_error)

print("Root Mean Squared Error:-", rmse)

Root Mean Squared Error:- 342132112.09550494

final_output_df.to_csv('final_output.csv', index=False)
```