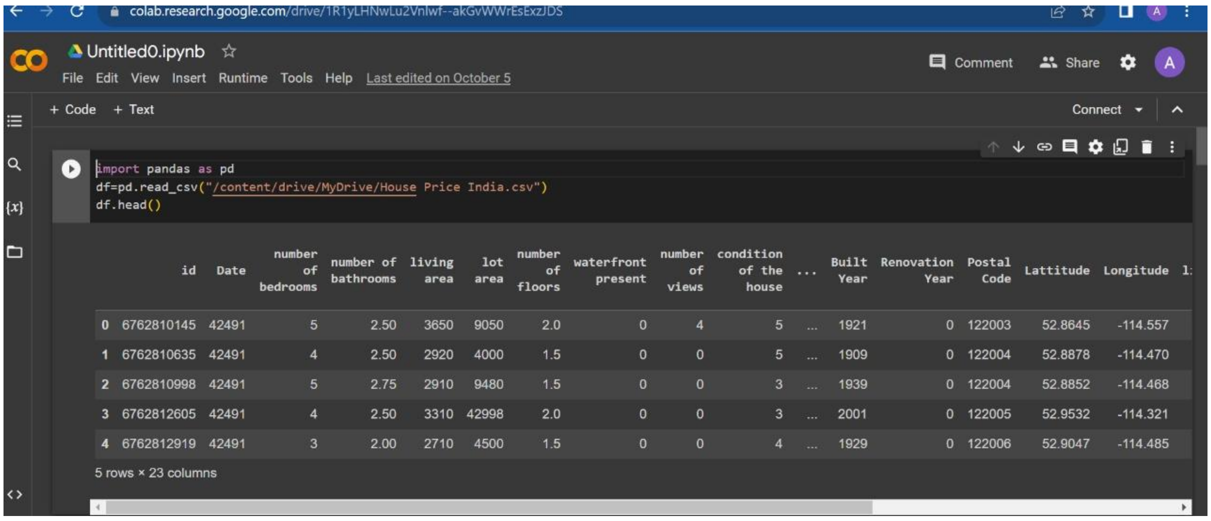
DA ASSIGNMENT – 3

NAME : UMA

REGISTER NO : 723920104020

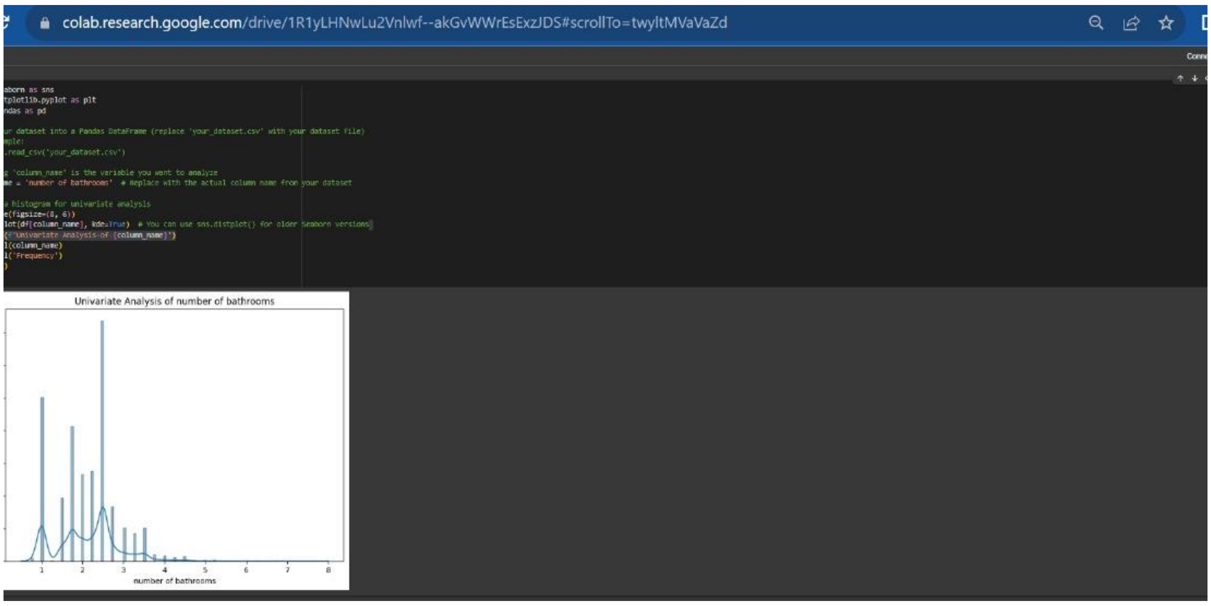
Load the dataset :


colab.research.google.com/drive/1R1yLHNwLu2Vnlwf--akGvWWrEsExzJDS
Untitled0.ipynb
File Edit View Insert Runtime Tools Help Last edited on October 5
Comment Share
+ Code + Text
Connect

```
import pandas as pd
df=pd.read_csv("/content/drive/MyDrive/House Price India.csv")
df.head()
```

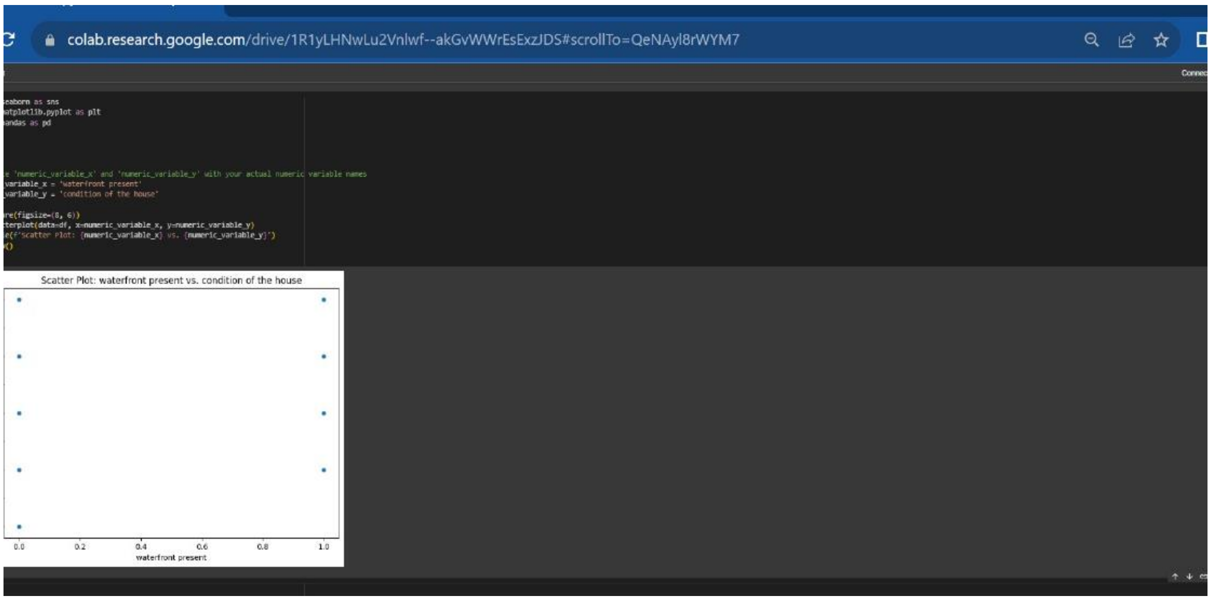
```
                     number  number of  living   lot  number  waterfront  number  condition      Built  Renovation  Postal                        
        id    Date       of  bathrooms    area  area      of     present      of     of the  ...  Year        Year    Code  Lattitude  Longitude  1:
                   bedrooms                             floors                 views      house                                                   
0  6762810145  42491      5       2.50    3650   9050    2.0           0       4          5  ...  1921           0  122003    52.8645   -114.557
1  6762810635  42491      4       2.50    2920   4000    1.5           0       0          5  ...  1909           0  122004    52.8878   -114.470
2  6762810998  42491      5       2.75    2910   9480    1.5           0       0          3  ...  1939           0  122004    52.8852   -114.468
3  6762812605  42491      4       2.50    3310  42998    2.0           0       0          3  ...  2001           0  122005    52.9532   -114.321
4  6762812919  42491      3       2.00    2710   4500    1.5           0       0          4  ...  1929           0  122006    52.9047   -114.485
5 rows × 23 columns
```

Univariate Analysis :


colab.research.google.com/drive/1R1yLHNwLu2Vnlwf--akGvWWrEsExzJDS#scrollTo=twyltMVaVaZd
Univariate Analysis of number of bathrooms
1
2
3
4
5
6
7
8
number of bathrooms

```
aborn as sns
tplotlib.pyplot as plt
ndas as pd

ur dataset into a Pandas DataFrame (replace 'your_dataset.csv' with your dataset file)
mple:
.read_csv('your_dataset.csv')

g 'column_name' is the variable you want to analyze
me = 'number of bathrooms'  # Replace with the actual column name from your dataset

e histogram for univariate analysis
e(figsize=(8, 6))
lot(df[column_name], kde=True)  # You can use sns.distplot() for older Seaborn versions
(f'Univariate Analysis of {column_name}')
l(column_name)
l('Frequency')
)
```

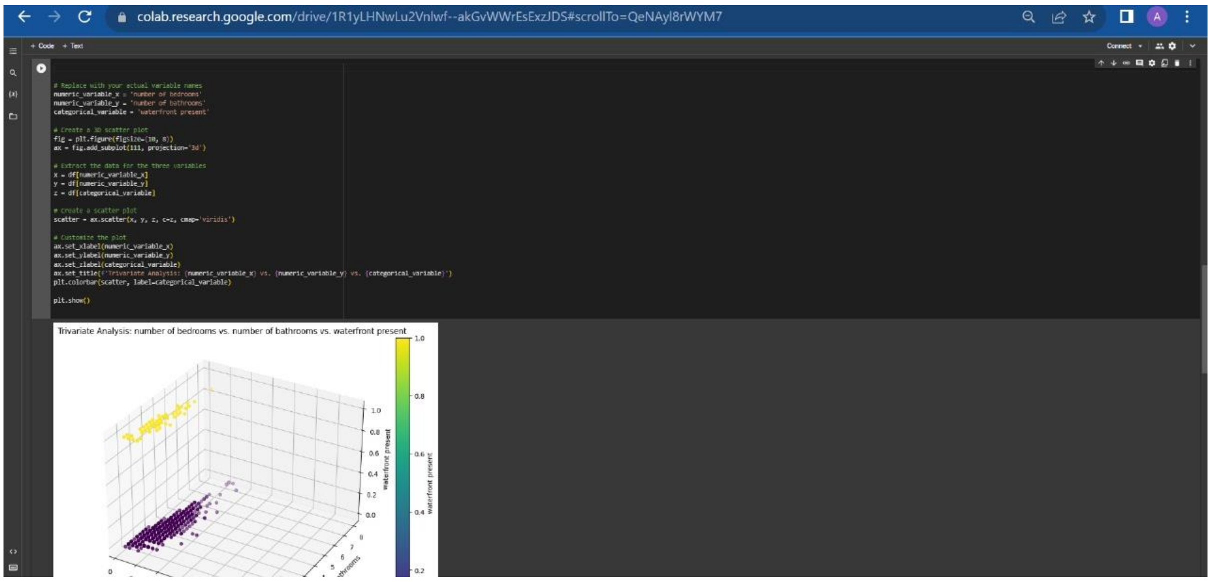
Bi - Variate Analysis :



```
eaborn as sns
atplotlib.pyplot as plt
andas as pd


e 'numeric_variable_x' and 'numeric_variable_y' with your actual numeric variable names
variable_x = 'waterfront present'
variable_y = 'condition of the house'

re(figsize=(8, 6))
terplot(data=df, x=numeric_variable_x, y=numeric_variable_y)
e(f'Scatter Plot: {numeric_variable_x} vs. {numeric_variable_y}')
()
```

colab.research.google.com/drive/1R1yLHNwLu2Vnlwf--akGvWWrEsExzJDS#scrollTo=QeNAyl8rWYM7
Scatter Plot: waterfront present vs. condition of the house
0.0
0.2
0.4
0.6
0.8
1.0
waterfront present

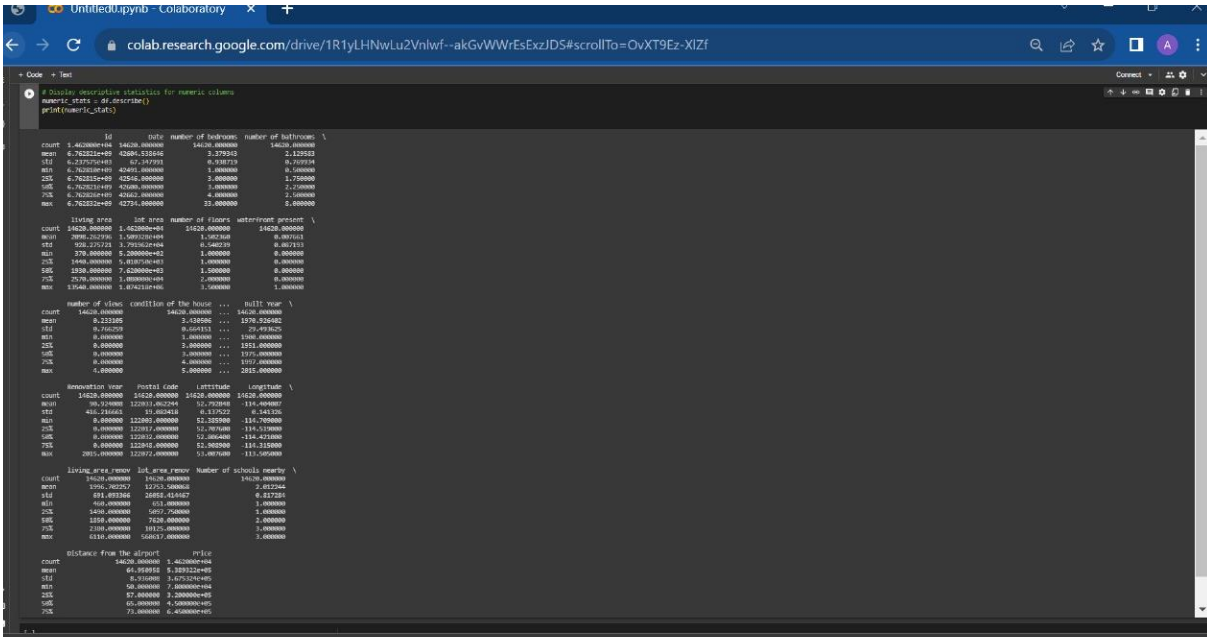
Multi-Variate Analysis :



```
# Replace with your actual variable names
numeric_variable_x = 'number of bedrooms'
numeric_variable_y = 'number of bathrooms'
categorical_variable = 'waterfront present'

# Create a 3D scatter plot
fig = plt.figure(figsize=(10, 8))
ax = fig.add_subplot(111, projection='3d')

# Extract the data for the three variables
x = df[numeric_variable_x]
y = df[numeric_variable_y]
z = df[categorical_variable]

# Create a scatter plot
scatter = ax.scatter(x, y, z, c=z, cmap='viridis')

# Customize the plot
ax.set_xlabel(numeric_variable_x)
ax.set_ylabel(numeric_variable_y)
ax.set_zlabel(categorical_variable)
ax.set_title(f'Trivariate Analysis: {numeric_variable_x} vs. {numeric_variable_y} vs. {categorical_variable}')
plt.colorbar(scatter, label=categorical_variable)

plt.show()
```

colab.research.google.com/drive/1R1yLHNwLu2Vnlwf--akGvWWrEsExzJDS#scrollTo=QeNAyl8rWYM7
+ Code
+ Text
Connect
Trivariate Analysis: number of bedrooms vs. number of bathrooms vs. waterfront present
1.0
0.8
0.6
0.4
0.2
0.0
waterfront present
0.2
bathrooms

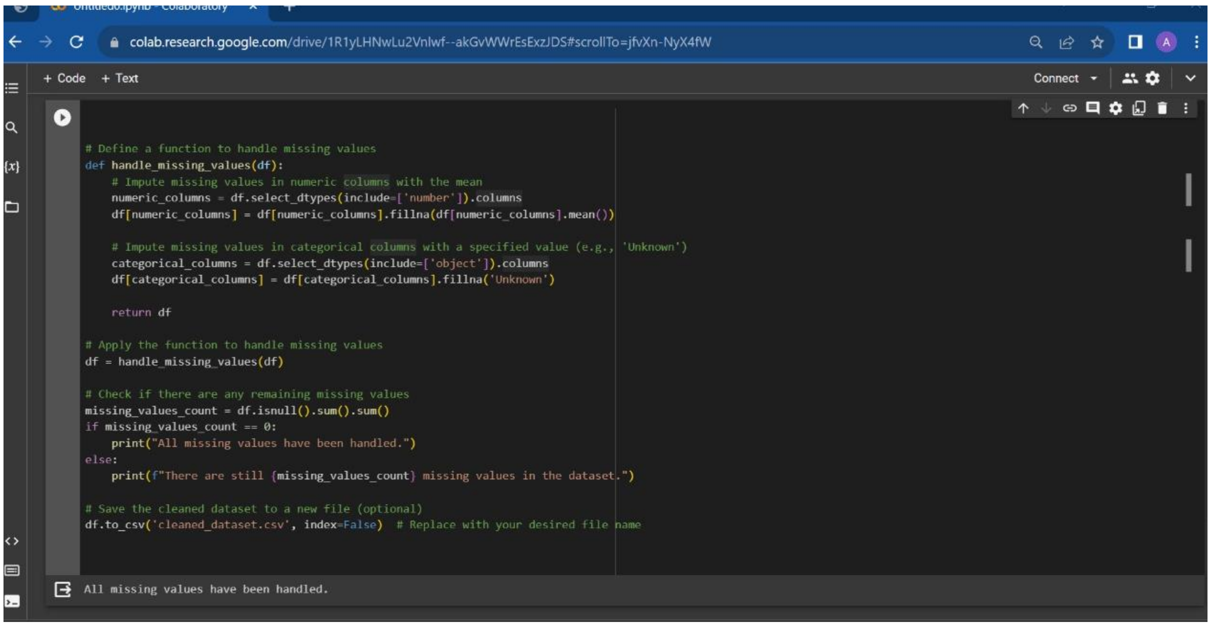
Descriptive statistics on the dataset :



```python
# Display descriptive statistics for numeric columns
numeric_stats = df.describe()
print(numeric_stats)
```

```
                 Id          Date  number of bedrooms  number of bathrooms  \
count  1.462000e+04  14620.000000        14620.000000         14620.000000
mean   6.762821e+09  42604.538646            3.379343             2.129583
std    6.237575e+03     67.347991            0.938719             0.769934
min    6.762810e+09  42491.000000            1.000000             0.500000
25%    6.762815e+09  42546.000000            3.000000             1.750000
50%    6.762821e+09  42600.000000            3.000000             2.250000
75%    6.762826e+09  42662.000000            4.000000             2.500000
max    6.762832e+09  42734.000000           33.000000             8.000000

        living area      lot area  number of floors  waterfront present  \
count  14620.000000  1.462000e+04      14620.000000        14620.000000
mean    2098.262996  1.509328e+04          1.502360            0.007661
std      928.275721  3.791962e+04          0.540239            0.087193
min      370.000000  5.200000e+02          1.000000            0.000000
25%     1440.000000  5.010750e+03          1.000000            0.000000
50%     1930.000000  7.620000e+03          1.500000            0.000000
75%     2570.000000  1.000000e+04          2.000000            0.000000
max    13540.000000  1.074218e+06          3.500000            1.000000

       number of views  condition of the house  ...    Built Year  \
count     14620.000000            14620.000000  ...  14620.000000
mean          0.233105                3.430506  ...   1970.926482
std           0.766259                0.664151  ...     29.493625
min           0.000000                1.000000  ...   1900.000000
25%           0.000000                3.000000  ...   1951.000000
50%           0.000000                3.000000  ...   1975.000000
75%           0.000000                4.000000  ...   1997.000000
max           4.000000                5.000000  ...   2015.000000

       Renovation Year    Postal Code     Lattitude     Longitude  \
count     14620.000000   14620.000000  14620.000000  14620.000000
mean         90.924008  122033.062244     52.792848   -114.404007
std         416.216661      19.082418      0.137522      0.141326
min           0.000000  122003.000000     52.385900   -114.709000
25%           0.000000  122017.000000     52.707600   -114.519000
50%           0.000000  122032.000000     52.806400   -114.421000
75%           0.000000  122048.000000     52.908900   -114.315000
max        2015.000000  122072.000000     53.007600   -113.505000

       living_area_renov  lot_area_renov  Number of schools nearby  \
count       14620.000000    14620.000000              14620.000000
mean         1996.702257    12753.500068                  2.012244
std           691.093366    26058.414467                  0.817284
min           460.000000      651.000000                  1.000000
25%          1490.000000     5097.750000                  1.000000
50%          1850.000000     7620.000000                  2.000000
75%          2300.000000    10125.000000                  3.000000
max          6110.000000   560617.000000                  3.000000

       Distance from the airport         Price
count               14620.000000  1.462000e+04
mean                   64.950058  5.389322e+05
std                     8.936008  3.675324e+05
min                    50.000000  7.800000e+04
25%                    57.000000  3.200000e+05
50%                    65.000000  4.500000e+05
75%                    73.000000  6.450000e+05
```

Handle the Missing values :



```python
# Define a function to handle missing values
def handle_missing_values(df):
    # Impute missing values in numeric columns with the mean
    numeric_columns = df.select_dtypes(include=['number']).columns
    df[numeric_columns] = df[numeric_columns].fillna(df[numeric_columns].mean())

    # Impute missing values in categorical columns with a specified value (e.g., 'Unknown')
    categorical_columns = df.select_dtypes(include=['object']).columns
    df[categorical_columns] = df[categorical_columns].fillna('Unknown')

    return df

# Apply the function to handle missing values
df = handle_missing_values(df)

# Check if there are any remaining missing values
missing_values_count = df.isnull().sum().sum()
if missing_values_count == 0:
    print("All missing values have been handled.")
else:
    print(f"There are still {missing_values_count} missing values in the dataset.")

# Save the cleaned dataset to a new file (optional)
df.to_csv('cleaned_dataset.csv', index=False)  # Replace with your desired file name
```

```
All missing values have been handled.
```