Aditya Mall task 1

December 19, 2025

```python
[25]: #basics
      import pandas as pd
      from sklearn.datasets import fetch_california_housing
      from sklearn.model_selection import train_test_split
      from sklearn.linear_model import LinearRegression
      from sklearn.metrics import mean_absolute_error,mean_squared_error, r2_score
      import matplotlib.pyplot as plt
      import numpy as np
```

```python
[2]: data=fetch_california_housing(as_frame=True)
     df=pd.concat([data.data, data.target.rename('MedHouseVal')],axis=1)
     df.head()
```

```
[2]:    MedInc  HouseAge  AveRooms  AveBedrms  Population  AveOccup  Latitude  \
     0  8.3252      41.0  6.984127   1.023810       322.0  2.555556     37.88
     1  8.3014      21.0  6.238137   0.971880      2401.0  2.109842     37.86
     2  7.2574      52.0  8.288136   1.073446       496.0  2.802260     37.85
     3  5.6431      52.0  5.817352   1.073059       558.0  2.547945     37.85
     4  3.8462      52.0  6.281853   1.081081       565.0  2.181467     37.85

        Longitude  MedHouseVal
     0    -122.23        4.526
     1    -122.22        3.585
     2    -122.24        3.521
     3    -122.25        3.413
     4    -122.25        3.422
```

```python
[26]: #train/test
      X=df.drop(columns='MedHouseVal')
      Y=df['MedHouseVal']
      X_train, X_test, Y_train, Y_test= train_test_split(X,Y, test_size=0.
       ↪2,random_state=42)
```

```python
[27]: #model
      model=LinearRegression()
      model.fit(X_train, Y_train)
      Y_pred = model.predict(X_test)
```

```
[28]: #metrics
      mae = mean_absolute_error(Y_test, Y_pred)
      mse = mean_squared_error(Y_test, Y_pred)
      rmse = np.sqrt(mse)
      r2 = r2_score(Y_test, Y_pred)
      print(f"MAE:{mae:.3f} RMSE:{rmse:.3f} R2:{r2:.3f}")
```

MAE:0.533 RMSE:0.746 R2:0.576

```
[24]: plt.scatter(Y_test,Y_pred, alpha=0.4)
      plt.xlabel("Actual")
      plt.ylabel("Predicated")
      plt.title("Actual vs Predicated")
      plt.plot([min(Y_test), max(Y_test)], [min(y_test), max(y_test)], color='red')
      plt.show()
```