lab 3

End to End Machine Learning project

(1) load the housing data
which contains about 20641 rows & 10 attributes

(2) Get the Data
Set up a workspace and download the dataset
inspect the structure (info(), describe())
Split into training and test sets

(3) Explore and visualize the Data
Use scatter plots, histograms, and correlation matrices
identify relationships and trends
Experiement new feature combinations

(4) prepare the Data for ML
Handle missing values
Encode categorical variables
Apply feature scaling
Use transformation pipelines for efficiency.

(5) Select and Train a Model
Start with simple models (LinearRegression, DecisionTrees)
Evaluate performance on the training set
Use cross-validation for better evaluation

(6) Fine-Tune the Model
Optimize hyperparameters using Grid Search or RandomizedS
Use ensemble methods for better accuracy

(7) Final Evaluation and Deployment
Test on the unseen test set
Deploy the model and monitor performance
Update as needed for real-world usage

(8) Launch, Monitor and Maintain your System
Deploy model into production environment
monitor real life performance