1. Iris Flower Classification

Description: Classify iris flowers into three species (setosa, versicolor, virginica) based on features like petal and sepal length/width using classification algorithms.

Steps:

- Load the Iris dataset (available in sklearn.datasets).
- Explore and visualize the data using Pandas and Matplotlib/Seaborn.
- Split the dataset into training and testing sets.
- Train a model using a classifier (e.g., Logistic Regression or KNN).
- Evaluate model accuracy using confusion matrix and classification report.

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2. House Price Prediction (Linear Regression)

Description: Predict the price of a house based on features like area, number of bedrooms, location, etc.

Steps:

- Collect or use a dataset (like the Boston housing dataset or custom CSV).
- Clean and preprocess the data (handle missing values, encode categories).
- Use exploratory data analysis to understand correlations.
- Train a Linear Regression model.
- Evaluate performance using metrics like Mean Squared Error (MSE) or R^2 score.

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3. Titanic Survival Prediction

Description: Predict whether a passenger survived the Titanic disaster based on features like age, class, gender, etc.

Steps:

- Load the Titanic dataset (available on Kaggle or Seaborn).
- Perform data cleaning and feature engineering.
- Convert categorical variables using One-Hot Encoding.
- Train a Logistic Regression model.
- Evaluate using accuracy, precision, recall, and confusion matrix.

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4. Handwritten Digit Recognition

Description: Classify digits (0–9) from images of handwritten digits using ML.

Steps:

- Load the digits dataset from sklearn.datasets or use MNIST.
- Normalize image pixel values.
- Train a classifier (like RandomForest or SVM).
- Test with a separate test set.
- Display predictions with actual digit images using matplotlib.

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5. Movie Recommendation System (Content-Based)

Description: Recommend movies to users based on movie descriptions or genres using cosine similarity.

Steps:

- Load a movie dataset with titles and descriptions (e.g., TMDB dataset).
- Preprocess text (cleaning, vectorization using TF-IDF).
- Compute cosine similarity matrix.
- Define a function to recommend similar movies based on input title.
- Display top 5 recommendations.