Task 1: Linear Regression

Goal: Predict house prices based on various features.

- **Dataset**: Use the "California Housing Prices" dataset (or a similar dataset with features like number of bedrooms, bathrooms, square footage, etc.).
- **Instructions**:
    - Load the dataset and explore it using **Pandas**.
    - Visualize the correlation between the features and the target variable (house prices) using **Seaborn heatmaps**.
    - Split the data into training and testing sets.
    - Build a **Linear Regression model** to predict house prices.

Task 2: Logistic Regression

Goal: Classify whether a patient has diabetes based on health parameters.

- **Dataset**: Use the **Pima Indians Diabetes dataset** (available in libraries like `sklearn`).
- **Instructions**:
    - Load and preprocess the dataset, handling any missing values.
    - Perform **Exploratory Data Analysis (EDA)** to understand feature distributions and correlations.
    - Split the data into training and testing sets.
    - Train a **Logistic Regression model** to classify patients as diabetic or non-diabetic.

Task 3: Decision Tree

Goal: Predict whether a student will pass or fail based on study habits and attendance.

- **Dataset**: Use a dataset containing student information (you can create a simple dataset with features like hours studied, attendance percentage, and past grades).
- **Instructions**:
  - Load and preprocess the dataset.
  - Visualize feature importance using bar plots.
  - Build a **Decision Tree classifier** to predict if a student will pass or fail.
  - Evaluate the model using metrics such as **accuracy.**

Task 4: Random Forest

Goal: Classify whether a customer will buy a product based on their browsing history and demographic information.

- **Dataset**: Use a **Customer Purchase Behavior dataset** (or create your own dataset with features like age, gender, browsing time, product categories visited, etc.).
- **Instructions**:
  - Load and preprocess the data, including feature scaling if necessary.
  - Split the dataset into training and testing sets.
  - Train a **Random Forest classifier** to predict customer purchases.
  - Tune hyperparameters (like the number of trees, max depth) to improve the model's performance.