**✅ 1. Data Manipulation and Analysis**

import pandas as pd

* **Pandas** is used for working with **tabular data** (like Excel or CSV files).
* pd is a common alias.
* Helps with: reading .csv files, filtering data, handling missing values, etc.

import numpy as np

* **NumPy** is used for **numerical operations**, especially with arrays.
* Useful for math functions, statistics, and matrix operations.
* Example: np.mean(), np.array(), np.sqrt()

**✅ 2. Visualization (Charts and Graphs)**

import matplotlib.pyplot as plt

* **Matplotlib** is the most basic plotting library in Python.
* plt lets you draw bar charts, line graphs, histograms, etc.
* Example: plt.plot(), plt.hist(), plt.show()

import seaborn as sns

* **Seaborn** builds on top of Matplotlib and makes nicer, **prettier visualizations**.
* Easier to use for heatmaps, boxplots, correlation maps, etc.
* Example: sns.heatmap(), sns.countplot(), sns.boxplot()

**✅ 3. Machine Learning Tools (from Scikit-Learn)**

from sklearn.model\_selection import train\_test\_split

* Splits your dataset into **training** and **testing** sets.
* Example: 80% of data to train, 20% to test the model.

from sklearn.preprocessing import StandardScaler

* Standardizes features by **removing the mean** and **scaling to unit variance**.
* Makes the model learn better and faster.
* Example: scales features like age, weight, blood pressure.

from sklearn.ensemble import RandomForestClassifier

* Imports the **Random Forest** machine learning model.
* A strong model made up of many decision trees — great for classification problems like this one.

from sklearn.metrics import classification\_report, confusion\_matrix, roc\_auc\_score

* These are used to **evaluate** the model.
  + classification\_report: shows precision, recall, F1-score
  + confusion\_matrix: shows how many were predicted correctly/incorrectly
  + roc\_auc\_score: measures how well the model distinguishes classes (0 vs 1)