Meet your Mentors

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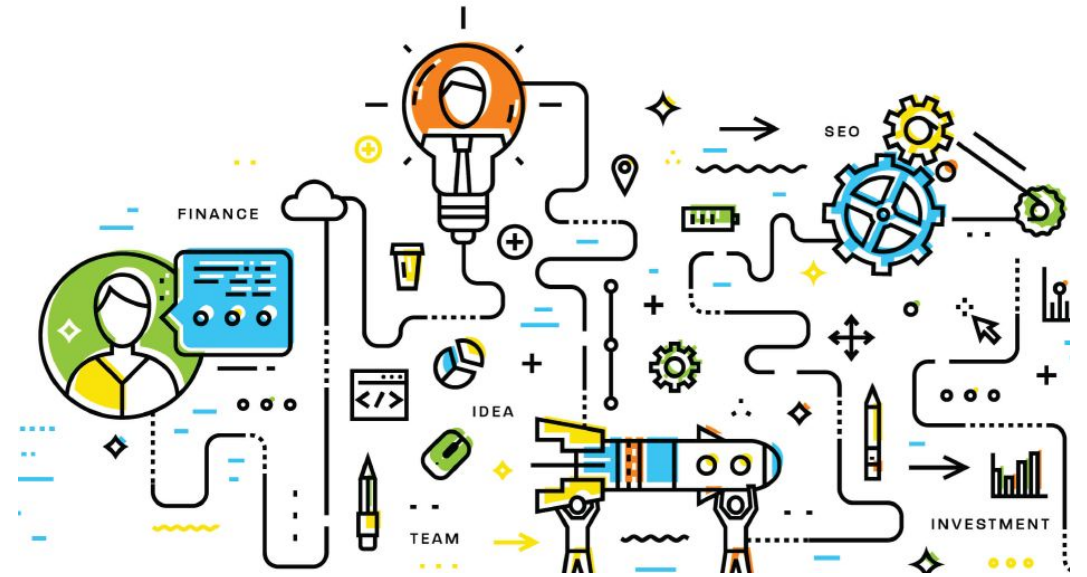@DataisGood

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What is a Project Portfolio?

Collection of your completed projects
that showcase your applied Data Science
capabilities.

*It highlights not only your theoretical
knowledge but applied knowledge as well.*

Projects for Project Portfolio

- The Project must be Challenging.
- A Project on Time Series Forecasting is a Must.
- One Project on NLP or Deep Learning
- Specific Projects for Data Cleaning and Data Visualizations.

Agricultural Production Optimization Engine

Problem Statement: Build a Predictive Model so as to suggest the most suitable Crops to grow based on the available Climatic and Soil conditions.

Goal: Achieve Precision Farming by Optimizing the Agricultural Production.

Agricultural Production Optimization Engine

This Project is Intended on Precision Farming.

➔ We have to Optimize Productivity
➔ By Understanding requirements of Climatic and Soil Conditions for Crops.
➔ Helps us to Cope up with Weather Unpredictability.

Dataset

The Dataset Consists of 22 Unique Crops such as Maize, Wheat, Mango, Watermelon, Mango etc.

➔ The Dataset Consists of Climatic Conditions required to Grow the Crops.
   ◆ Temperature, Humidity, Rainfall.

➔ The Dataset also Consists of Soil Conditions required to Grow the Crops
   ◆ N: The Ratio of Nitrogen Content in Soil.
   ◆ P: The Ratio of Phosphorus Content in Soil.
   ◆ K: The Ratio of Potassium Content in Soil.
   ◆ pH: pH of the Soil.

Python or Tableau?

➔   We are Going to Use Python.
➔   Python is very easy to Learn.
➔   Python is very Powerful.
➔   Huge Community Support.

We are Going to use the 3.6.8 Version of Python
Here is the Link to Download Python:
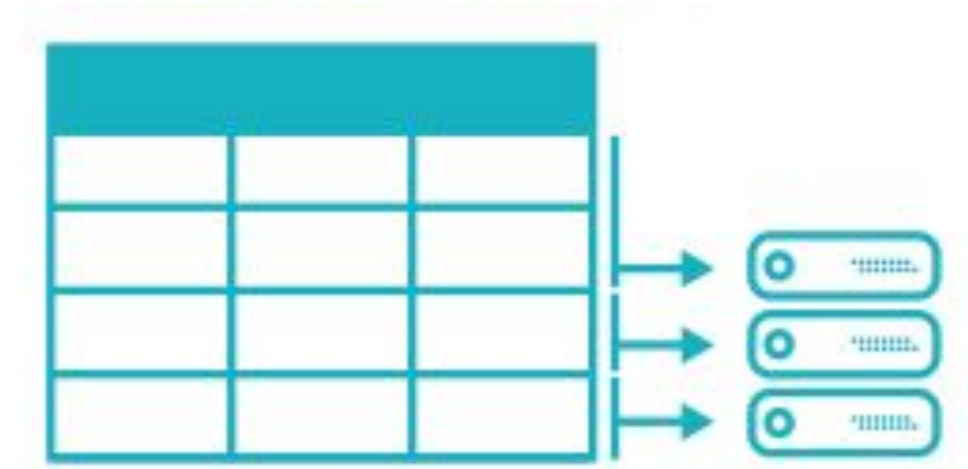https://www.python.org/downloads/release/python-368/

Libraries Required for this Project

- **Numpy:** Used for Mathematical Operations.
- **Pandas:** Used for DataFrame Operations.
- **Seaborn and Matplotlib:** Used for Data Visualizations.
- **Ipywidgets:** Used for Interactive Analysis.
- **Sklearn:** Used for Machine Learning Algorithms

What is a Data Frame?

- **DataFrame** is a data structure with columns of different data types.
- **Shape of a Dataset** is an attribute or property of a Dataset that tells you it's columns and rows.
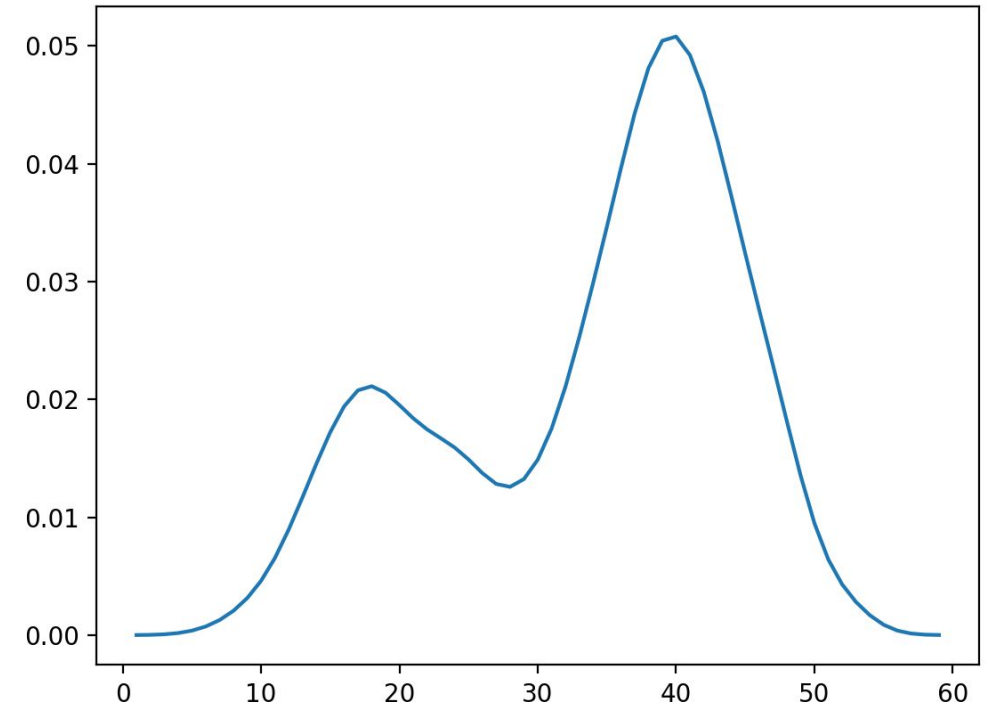
Value_Counts

- **Value_Counts** function returns the counts of unique values.

- Resulting object will be in descending order so that the first element is the most frequently-occurring element.
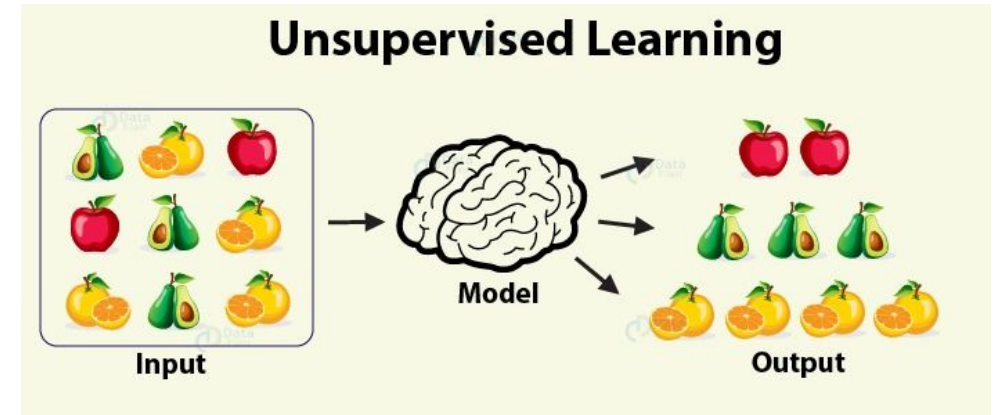
- It exclude NA values by default.

What is Distribution & why is it important?

- **Data distribution** is the foundation of all stats and probability.
- It shows all the possible values in a given field and their occurrences.
- It helps us to Visualize the anomalies or Outliers Present in the Data.

Unsupervised Learning

- **Unsupervised Learning** is a machine learning technique in which the users do not need to supervise the model.

- It allows the model to work on its own to discover patterns and information that was previously undetected.
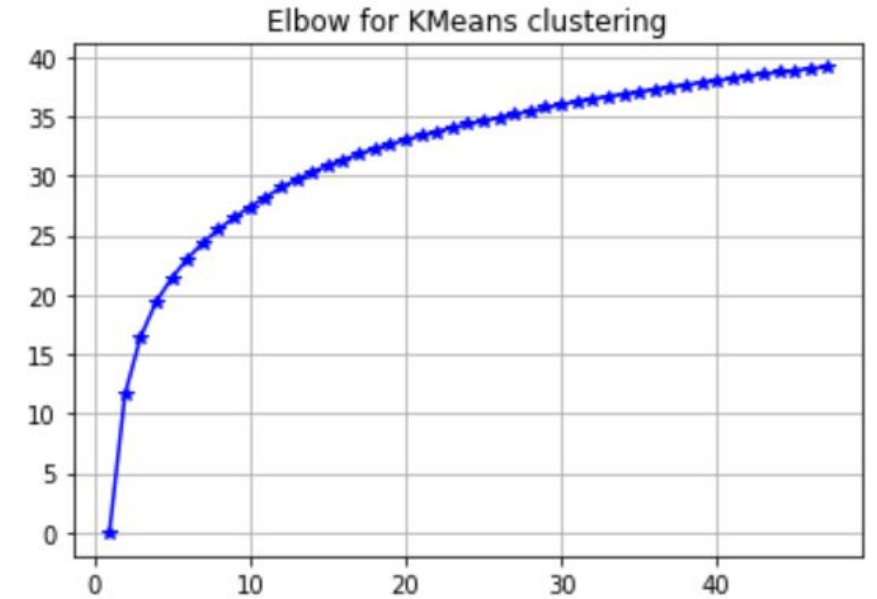

Unsupervised Learning — Input → Model → Output

Sklearn

- **Sklearn** is a free machine learning library for Python.
- It features various classification, regression and clustering algorithms and much more.

Elbow Method

- **Elbow method** is a heuristic used in determining the number of clusters in a data set.
- The method consists of plotting the number of clusters, and picking the elbow of the curve as the number of clusters to use.

Elbow for KMeans clustering

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