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**Day 1 : 12-02-2024**

## **IDE - Integrated Development Environment**

## **Google colab**

**MODULE -1**

**Numpy** :- Python library for Numerical computing it supports Arrays,Matrices,Scientific computing,Data Analysis,Machine learning

**Major Applications of Numpy:**

1) Data Analysis

2) Scientific computing

**Basic operations on Arrays:**

1. Zeros
2. Ones
3. arange

**Array Manipulation using Numpy:**

1. Reshape
2. Slicing
3. Stack
4. Vstack
5. split

**Mathematical Operations on arrays:**

1. Addition of arrays
2. Subtraction of arrays
3. Multiplication of arrays
4. Division of arrays

**Element wise operations on array:**

1. Broadcasting array
2. Transpose of array

**Linear Algebra with Numpy:**

1. Dot product of matrices
2. Eigen values and Eigen vectors
3. Dot sum

**Statistical operations:**

1. Mean
2. Median
3. Variance
4. Standard deviation

**Creating a txt file:**

1. Creating text file
2. Loading data
3. Saving data

**Matplotlib** :- Python library that enables to create a wide variety of plots, charts, and visualizations.

**Major Applications of Matplotlib:**

1. Data Analysis
2. Scientific computing
3. Machine learning

**Day 2:- 13-02-2024**

**Pandas** :- Pandas is built on top of two core Python libraries—matplotlib for data visualization and NumPy for mathematical operations.

**Major Applications of Pandas:-**

1. Data exploration
2. Data science
3. Time series analysis

**Functions on Pandas library:-**

1. .Series
2. .read\_csv
3. .read\_excel
4. .mean()
5. .max()
6. .min()
7. .loc
8. .fillna()
9. .drop\_duplicates()
10. .head()
11. .tail()
12. .shape
13. .groupby()

**Matplotlib :-** Matplotlib is a comprehensive library for creating static, animated, and interactive visualizations in Python. It is widely used for data visualization and plotting in various fields such as data science, machine learning, scientific computing, and engineering.

**Features of Matplotlib:-**

1. High-Quality Plots
2. Wide Range of Compatibility
3. Flexible and Extensible
4. Multiple Interfaces
5. Integration with NumPy and pandas
6. Support for Jupyter Notebooks
7. Community Support and Documentation

**Functions on Matplotlib library:-**

1. .linspace()
2. .plot()
3. .title()
4. .legend()
5. .subplot()
6. .pie()