Python and Data Science

Python Introduction

What is Python?

Difference between Programming and Scripting

History of Python

Scope of Python

What can I do with Python?

Who uses Python Today?

Why do people use Python?

Environment Setup

Download and Installation

Python IDLE

Working Environments

Install Anaconda Navigator

Anaconda Navigator Components

Working with Jupyter Notebook

Life cycle of Python

What is Compiler or Interpreter?

Difference between Compiler and Interpreter

Variables

What is Variables?

Syntax for Variable Creation

What is Token / Identifier?

Data Type
- **Integer**
- **Float**
- **String**
- **Boolean**
- **Complex**

Python Operators

Arithmetic Operator

Comparison Operator

Logical Operator

Unary / Assignment Operator

Ternary Operator

Bitwise Operator

Identity Operators

Membership Operators

Python Control Structures

What is control Structures

IF Statement

IF ELSE Statement

ELIF Statement

Break Statement

Continue Statements

Pass Statement

Python Looping Control

For Loop

While Loop

Python Array

What is Array?

Why Array?

How to create Array in Python

What is List

What is Tuple

What is Sets

What is Dictionaries

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Python Lists

- → **How to create a List**
- → **Accessing Elements in List**
- → **List of Integers**
- → **List Index**
- → **List Slicing**
- → **Size of List**
- → **Basic List Operations**
- → **Multi Dimentional List**
- → **List Methods**

Python Tuples

- → **How to create Tuples**
- → **Accessing Elements in List**
- → **Unpack Tuple elements**
- → **Update Tuple elements**
- → **Delete Tuple elements**
- → **Tuple Methods**

Python Sets

- → **How to create Sets**
- → **Accessing elements in Sets**
- → **Join Sets**
- → **Update Set elements**
- → **Delete Set elements**
- → **Modifying Sets Elements**
- → **Sets Methods**

Python Dictionary

- → **How to create Dictionary**
- → **Accessing Elements**
- → **Dictionary Built in Functions**
- → **Adding and Deleting Dictionary Elements**
- → **Dictionary Methods**

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Python Function

- → **What is Function?**
- → **How to create Function**
- → **Syntax**
- → **Calling a Function**
- → **Return Statements**
- → **Calculator Create in Function**
- → **Sign Up and Login form Creation**
- → **Creating chatboard in function**

Python Module and Packages

- → **Framework vs Packages**
- → **Creating Modules**
- → **Import Statement**
- → **From Import Statement**
- → **From Import * Statement**
- → **Locating Modules**

Python Iterator and Generator

- → **Map**
- → **Lambda**
- → **Filter**
- → **List Comprehension**

Python Grabbing Pages

- → **Web Crawling using Beautiful Soup**
- → **Glob Modules**
- → **String**
- → **Random**
- → **Date Modules**
- → **Regular Expression**

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Data Science Introduction

- **What is Data Science / Machine Learning?**
- **Why Data Science?**
- **What is Big Data?**
- **Top Big Data Applications**
- **Problems of Big Data**
- **Solutions of Big Data**
- **How Data Science Works?**
- **Types of Machine Learning**
  - **Supervised Learning**
  - **Unsupervised Learning**
  - **Reinforcement Learning**

Data Science Numpy

- **Introduction to Numpy**
- **Numpy Installation**
- **Numpy NdArray**
- **Numpy Data Types**
- **Array Attributes**
- **Array Creation Routines**
- **Array From Existing Data**
- **Array From Numerical Ranges**
- **Indexing and Slicing**
- **Advanced Indexing**
- **Mathematical Functions**
- **Arithmetic Operations**
- **Statistical Functions**
- **Sort**
- **Search**
- **Counting**

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Data Science Pandas

→ **Introduction to Pandas**

→ **Pandas Installation**

→ **Pandas Data Structures**

→ **Pandas Series**

→ **Pandas Data Frames**

→ **Pandas Basic Functionality**

→ **Pandas Reindexing**

→ **Pandas Iteration**

→ **Pandas Sorting**

→ **Pandas Working with Text Data**

→ **Pandas Options and Customization**

→ **Pandas Indexing and Selecting Data**

→ **Pandas Statistical Functions**

→ **Pandas Window Functions**

→ **Pandas Aggregations**

→ **Pandas Missing Data**

→ **Pandas Group By**

→ **Pandas Merging and Joining**

→ **Pandas Concatenation**

→ **Pandas Date Functionality**

→ **Pandas Visualization**

Data Science MatplotLib

→ **Introduction to Matplot Lib**

→ **Install Matplotlib**

→ **Pyplot API**

→ **Simple Plot , Pylab Module**

→ **Object Oriented Interface**

→ **Setting Ticks and Lables**

→ **Twin Axes**

→ **Bar Plot**

→ **Histogram**

→ **Pie Chart**

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Data Science MatplotLib

Scatter Plot

Contour Plot

Quiver Plot

Box Plot

Violin Plot

3D Contour Plot

Data Science Seaborn

Introduction to Seaborn

Install Seaborn

Using Seaborn with Matplotlib

Customizing Seaborn plots

Changing Figure Aesthetic

Removal of Spines

Changing the Figure size

Scaling the Plots

Setting the style temporarily

Color Palette

- **Diverging Color Palette**
- **Sequential Color Palette**
- **Setting the default Color Palette**

Multiple Plots with Seaborn

- **Using Matplotlib**
- **Using Seaborn**

Creating Different types of plots

- **Relational Plots**
- **Categorial Plots**
- **Distribution Plots**
- **Regression Plots**

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Data Science TableAU

- → **Introduction to TableAU**
- → **Environment Setup**
- → **TableAU Navigation**
- → **TableAU Design Flow**
- → **TableAU Data Sources**
- → **TableAU Extracting Data**
- → **TableAU Fields Operations**
- → **Table AU Data Joining and Blending**
- → **Table AU Bar Chart**
- → **TableAU Line Chart**
- → **TableAU Pie Chart**
- → **TableAU Scatter Plot**
- → **TableAU Box plot**

Data Science and Analytics

- → **Introduction to Data Analytics**
- → **How to Prepare Data**
- → **Read Data From CSV**
- → **Read Data From JSON**
- → **Read Data From XLSX**
- → **Read Data From Database**
- → **Read Data From XML**
- → **Processing Data Using Pandas**
- → **Data Cleaning and Preparation**
- → **Remove Duplication values and Make Models**
- → **Fit the Model**
- → **Chi Square**
- → **Bionomial**
- →**Correlation**
- → **Mean , Median , Mode**
- → **Linear Regression (Single Linear Regression , Multi Linear Regression)**
- → **Support Vector Machine (SVM Classifier)**

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Google Power BI

- → **Introduction to Power BI**
- → **Installation Steps for Power BI**
- → **Power BI Architecture**
- → **Power BI Supported Data Sources**
- → **Comparison with other BI tools**
- → **Data Modelling**
- → **Dashboard Options**
- → **Visualization Options**
- → **Excel Integration**

Data Science Scipy

- → **Introduction to Scipy**
- → **Scipy Constants**
- → **Scipy Optimizers**
- → **Scipy Sparse Data**
- → **Scipy Graph Data**
- → **Scipy Spatial Data**
- → **Scipy Matlab Arrays**
- → **Scipy Interpolation**
- → **Scipy Signification Tests**