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Python Programming

Session 1 : Introduction to Python

FREE SESSION

- Installing Python and Setting up IDEs: Learn how to install Python and set up popular IDEs like PyCharm, Jupyter Notebook, and VS Code for an optimal coding environment.
- Variables, Constants, and Basic Data Types: Explore examples of defining variables (x = 10) and constants, understanding data types like integers, floats, strings, and booleans.
- Operators: Practice arithmetic, logical, and comparison operators (a + b, a > b).

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Session 2: Control Flow and Basic Data Structures

- Control Flow: Understand conditional statements (if-else) and loops (for and while) to control program flow.
- Basic Data Structures: Introduction to lists, tuples, sets, and dictionaries and learn list comprehensions.

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Session 3: Python Functions and Exception Handling

- Python Functions: Learn to write reusable Python functions and explore lambda functions
  - Example: Create a function that checks if a number is prime.
  - Example: Use a lambda function to sort a list of dictionaries by a specific key.
- Exception Handling: Learn to handle errors gracefully using try-except blocks.

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Session 4: Data Analysis Using Pandas

- Understanding data frames
- Introduction to Pandas: Understand the basics of Series and DataFrames. Learn how to import and manipulate datasets using Pandas.
  - Example: Load a CSV file of sales data and filter rows where sales exceed a specific value.
- Data Reshaping

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Session 5: Advance Analytics and Time Series Analytics

- Perform group-by operations, pivot tables, and aggregations.
  - Example: Analyze a dataset to calculate monthly sales averages by region.
- Multi-dimensional analysis
- Multi Indexing
- Aggregating the Time Series for a Rolling Window Using a Metric
- Lagging in Time Series
  - Using the percent change function to calculate the above outputs directly
- Resampling the Time Series for a Specific Frequency

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Session 6: Data Visualization with Python

- Introduction to Visualization with Matplotlib and Seaborn: Create static visualizations such as line charts, bar plots, and scatter plots. Learn to customize plots for better storytelling.
  - Example: Visualize the trend of sales data over a year with a line chart.
- Overview of Plotly: Explore interactive plotting capabilities to build dynamic charts.
  - Example: Create an interactive scatter plot to display customer segmentation.

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Session 7 : Basics of Dash for Interactive Visualizations

- Build web-based dashboards with Dash to present data interactively.
  - Example: Develop a sales dashboard with filters for regions and timeframes.

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