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Module 1: Python Fundamentals for Analytics

1. Introduction to Python
   - What is Python & why Python for Data Analytics
   - Python vs Excel vs SQL
   - Installing Python, Anaconda & Jupyter Notebook
   - Writing first Python program
2. Python Basics
   - Variables & data types
   - Type casting
   - Keywords & comments
   - Input / Output
   - f-strings & formatting
3. Operators
   - Arithmetic, relational & logical operators
   - Assignment operators

🟡 Module 2: Control Flow & Data Structures

4. Conditional Statements
   - if, if-else, elif
   - Nested conditions
5. Looping Concepts
   - for & while loops
   - break, continue, pass
   - Looping with data
6. Data Structures (Core for Analytics)
   - List (indexing, slicing, methods)
   - Tuple
   - Set
   - Dictionary
   - List & dictionary comprehensions

🟠 Module 3: Functions & Modular Programming

7. Functions
   - User-defined functions
   - Arguments & return values
   - Lambda functions
8. Modules & Packages
   - Built-in modules
   - Importing external libraries

🔵 Module 4: NumPy for Numerical Analysis

9. NumPy Basics
   - NumPy arrays
   - Array creation & reshaping
   - Indexing & slicing
   - Mathematical operations
   - Aggregation functions

🟣 Module 5: Pandas for Data Analysis

10. Pandas Introduction
    - Series & DataFrames
    - Importing data (CSV, Excel)
    - Data inspection
11. Data Cleaning & Preprocessing
    - Handling missing values

- Removing duplicates
- Data type conversion
- String operations

12. Data Manipulation

- Filtering & sorting
- Group By operations
- Merge, join & concatenate
- Pivot tables & crosstab

🔴 **Module 6: Data Visualization**

13. Visualization Libraries

- Matplotlib
- Seaborn

14. Charts & Graphs

- Line chart
- Bar chart
- Histogram
- Box plot
- Heatmap

🟤 **Module 7: Date, Time & Text Analysis**

15. Date & Time Handling

- datetime module
- Time series basics

16. Text & Regex

- String manipulation
- Regular expressions (regex)

⚫ **Module 8: Database & SQL Integration**

17. Python with Databases

- Connecting Python with SQL
- Reading & writing data to database
- SQL queries using Python

⭐ **Module 9: Automation & Reporting**

18. Excel Automation

- Reading & writing Excel using Pandas
- openpyxl basics
- Automating MIS reports

19. File & Email Automation

- Automating files & folders
- Email automation

🟢 **Module 10: Projects & Case Studies**

20. Real-Time Data Analytics Projects

- Sales data analysis
- HR analytics project
- Finance analytics project
- Dashboard-ready datasets (Power BI / Tableau)

21. Interview Preparation

- Python interview questions for Data Analysts
- Real-world scenario-based questions
- Resume & project discussion

Module 1:

- Statistics
- Descriptive Statistics
- Common charts used
- Skewness
- Inferential Statistics
- Variance, standard deviations
- Covariance, Coefficient, Correlation
- Probability
- Normal Distributions
- Central Limit Theorem
- inferential statistics
- Confidence intervals
- Hypothesis Testing

Module 2:

- Matplotlib
- Introduction of Matplotlib
- Basic matplotlib plots
- Line Plots,Bar Plots,Pie Plots,
- Scatter plots,Histogram Plots
- Saving plots to file
- Plotting functions in matplotlib

Module 3 :

- Exploratory Data Analysis
- Univariate Analysis
- Segmented Analysis
- Bivariate Analysis
- Derived Columns

