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Malaysia Ministry of Finance (MOF)
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Course Name   : DATA ANALYTICS USING PYTHON
Duration   : 3 Days
Skill Level   : Intermediate

COURSE DESCRIPTION:
In this course on Data Analytics using Python, our instructor will cover the fundamentals of Data Analytics using Python as a programming language. Over the past few decades, Python has established itself as a leading tool for scientific computing, including the analysis and visualization of large datasets. Despite not being specifically designed for data analysis or scientific computing, Python's popularity in these areas has been fueled by its vibrant third-party package ecosystem.

Some of the key packages used in data science with Python include NumPy for array-based data manipulation, Pandas for handling labeled and heterogeneous data, SciPy for common scientific computing tasks, Matplotlib for creating high-quality visualizations, IPython for interactive code execution and sharing, and Scikit-Learn for machine learning. These and many other tools make Python a versatile and powerful choice for data analysis.

WHAT WILL YOU LEARN?
By the end of the course, you should have a solid understanding of the Python language and its applications in data analytics. You should be able to import, clean, analyze, and visualize data using Python and be able to use machine learning algorithms to make data-driven decisions.

PREREQUISITE:
Basic Knowledge of Python programming is expected.

METHODOLOGY:
This program will be conducted with interactive lectures, PowerPoint presentations, discussions, and practical exercises. This course can be conducted as instructor-led (ILT) or virtual instructor-led training (VILT).

JOB SCOPE:
Upon completion of this course, candidates may pursue the following career paths:

- Data Analyst
- Business Intelligence Analyst
- Data Scientist
- Machine Learning Engineer
- Data Engineer
- Research Analyst
- Financial Analyst
- Marketing Analyst

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MODULE 1: INTRODUCTION
- Welcome
- What is Data Analytics?
- Typical Process of Data Analytics
- Types of Data Analytics
- Data Analysis vs Data Analytics
- Python as a Data Analytics Tool
- Popular Python Data Analytics Libraries
- Comparison – Other Data Analytics Tools vs Python

MODULE 2: INTRODUCTION TO NUMPY
- The Basic of NumPy Arrays
- Computation on NumPy Arrays: Universal
- Functions
- Aggregations: Min, Max, and Everything in
- Between
- Computation on Arrays: Broadcasting
- Comparisons, Masks, and Boolean Logic
- Fancy Indexing
- Sorting Arrays
- Structured Data: NumPy's Structured Arrays

DAY 2

MODULE 3: DATA MANIPULATION WITH PANDAS
- Introducing Pandas Objects
- Data Indexing and Selection
- Operating on Data in Pandas
- Handling Missing Data
- Hierarchical Indexing
- Combining Datasets: Concat and Append
- Combining Datasets: Merge and Join
- Aggregation and Grouping
- Pivot Tables
- Vectorized String Operations
- Working with Time Series

MODULE 4: VISUALIZATION WITH MATPLOTLIB
- Simple Line Plots
- Simple Scatter Plots
- Visualizing Errors
- Density and Contour Plots
- Histograms, Binnings, and Density
- Customizing Plot Legends
- Customizing Colorbars
- Multiple Subplots
- Text and Annotation
- Customizing Ticks
- Customizing Matplotlib: Configurations and Stylesheets
- Three-Dimensional Plotting in Matplotlib
- Geographic Data with Basemap

CONCLUSION
- QA
- Useful References and Books
- Feedback