DATA ANALYTICS USING PYTHON

DURATION: 12 MONTHS

IT Tools & Network Basics
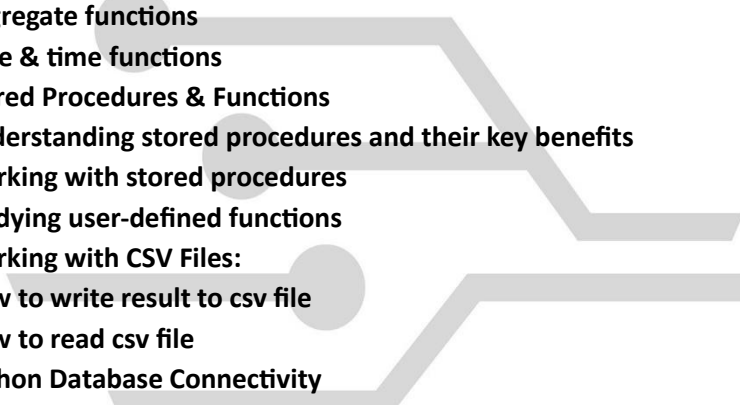
- **Introduction to computers**
- **Introduction to Operating System**
- **Word Processing using Ms-Word**
- **Spreadsheet Using Ms-Excel**
- **Presentations Using Ms-PowerPoint**
- **Introduction to Internet, WWW and Web**
- **Email, Social Networking and e-Governance Services**
- **Digital Financial Tools and Applications**
- **Overview on Futuristic IT Technology and Cyber Security**

Python

- **Introduction To Python**
- **Writing and Executing First Python Program**
- **Python Language Fundamentals**
- **Python Conditional Statements**
- **Looping Statements**
- **Standard Data Types**
- **String Handling**
- **Python List**
- **Python Tuple**
- **Python Set**
- **Python Dictionary**
- **Python Functions**
- **Modules & Packages**
- **File I/O**
- **Regular Expressions (Regex)**
- **Object Oriented Programming**
- **Exception Handling**
- **GUI Programming**
- **Multi-Threading Programming**

SQL using My SQL

- **Introduction to RDBMS**
- **What is Relational Database Package**
- **Difference between SQL & Database**

- Installing MySQL Server database
- SQL Basic
- DDL: Create, Alter, Drop, etc.
- DML: Insert, Update, Delete, etc.
- DQL: Select
- Autoincrement field
- SQL Comments
- SQL Aliases
- Savepoint & rollback
- SQL Constraints
- Not NULL, Unique key Primary key, Check Default, Foreign key
- SQL Operators Arithmetic operators
- Logical operators' Conditional operators
- Like, between, in operators
- SQL Clauses Order by, Where Limit/top, Group by, having
- SQL Joins - Inner Join, Left Join, Right Join, Full Join
- SQL View - creating view, updating view, fetching data from view
- String functions
- Aggregate functions
- Date & time functions
- Stored Procedures & Functions
- Understanding stored procedures and their key benefits
- Working with stored procedures
- Studying user-defined functions
- Working with CSV Files:
- How to write result to csv file
- How to read csv file
- Python Database Connectivity
- Database Drivers and connectors
- Creating connection object
- Understanding cursor object
- Executing SQL statements using cursor
- Executing SQL statements using cursor
- Storing and retrieving Date and Time

MongoDB

- Introduction To MongoDB
- Understanding NoSQL DB
- NoSQL vs. SQL DB
- NoSQL vs. SQL DB
- Downloading & Installation
- Introduction of MongoDB shell and Compass
- Understanding database, collection & document
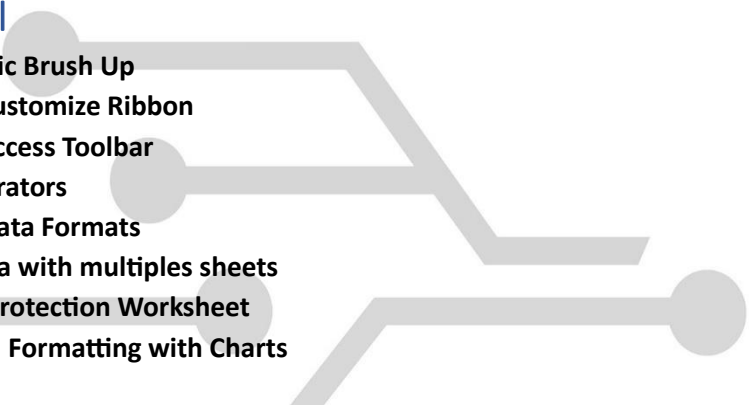- Crud Operations
- Crud Operations

- **Delete Document**
- **Update Document**
- **Query Document**
- **Operators In MongoDB**
- **Query and Projection operators**
- **Update operator**
- **Aggregation Pipeline operators**
- **Methods In MongoDB**
- **limit and sort**
- **bulk methods**
- **other methods**
- **Indexing And Relationships**
- **Types of Indexes**
- **Creating an Indexes**
- **Dropping an Indexes**
- **Defining Relationships between Documents**
- **Python Connectivity With MongoDB**
- **Introduction to pymongo**
- **Installing pymongo module**
- **MongoClient**
- **Getting database and collection**
- **CRUD operations**
- **Range Queries**

Statistics & Analytics

- **Numpy Package**
- **Difference between list and numpy array**
- **Vector and matrix operations**
- **Array indexing and slicing**
- **Pandas Package**
- **Introduction to pandas**
- **Labeled and structured data**
- **Series and dataframe objects**
- **How to load datasets**
- **From excel**
- **From csv**
- **From html table**
- **Accessing data from Data Frame**
- **At & iat**
- **Loc   & iloc**
- **Head() & tail()**
- **Exploratory Data Analysis (EDA)**
- **describe()**
- **groupby()**
- **crosstab()**

- **Boolean slicing / query()**
- **Data Manipulation & Cleaning**
- **Map(), apply()**
- **Combining data frames**
- **Adding/removing rows & columns**
- **Sorting data**
- **Handling missing values**
- **Handling duplicacy**
- **Handling data error**
- **Handling Date and Time**
- **Data Visualization using matplotlib and seaborn packages**
- **Scatter plot, lineplot, bar plot**
- **Histogram, pie chart**
- **Jointplot, pairplot, heatmap**
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Advance Excel

- **Intro & Basic Brush Up**
- **MS Excel Customize Ribbon**
- **MS Excel Access Toolbar**
- **Use of Operators**
- **Data and Data Formats**
- **Linking Data with multiples sheets**
- **Password Protection Worksheet**
- **Conditional Formatting with Charts**
- **Dashboard**
- **Control multiples switches and board**
- **Creation, Management Pivot Tables**
- **Creation, Management Pivot Charts**
- **VBA Macros & WhatIf Analysis**
- **MIS Reporting**
- **Data Analysis**
- **Arrays Functions**
- **V-Look Up & H-Look Up**
- **Nested If Formulas**
- **Date & Time Function**
- **Test & Combine Function Formulas**
- **Printer Properties & Page Setup**

VBA (VISUAL BASICS APPLICATION) & MACROS

- **Create a Macro**
- **MsgBox**

- **Workbook and Worksheet Object**
- **Range Object**
- **Variables**
- **It Then Statement**
- **Loop**
- **Macro Errors**
- **Strings Manipulation**
- **Date and Time**
- **Events**
- **Array**
- **Function and Sub**
- **Application Object**
- **ActiveX Controls**
- **Use Forms**

Power Bi

INTRODUCTION TO POWER BI
- **Introduction to Business Intelligence (BI)**
- **Various BI tools Introduction to Power BI**
- **Why Power BI Power BI Components**
- **Introduction of Power BI Desktop**
- **Installation of Power BI Desktop**

DATA VISUALIZATION
- **Understanding Power View and Power Map**
- **Data visualization techniques**
- **Page layout & Formatting**
- **Power BI Desktop visualization**
- **Formatting and customizing visuals**
- **Column chart, Pie chart, Donut chart**
- **Scatter chart, Funnel chart**
- **Include & exclude**
- **Geographical data visualization using Maps**
- **Drill down**
- **Drill through**
- **Page navigations**
- **Bookmarks**
- **Selection pane to show/hide visuals**
- **Comparing volume and value-based analytics**
- **Combinations charts (dual axis charts)**
- **Filter pane**
- **Slicers**
- **Use of Hierarchies in drill down analysis**

- **Sync slicers**
- **Tooltips & custom tooltips**
- **Tables & matrix**
- **Conditional formatting on visuals**

POWER BI SERVICE, PUBLISING & SHARING

- **Introduction to Power BI Service**
- **Introduction of workspaces**
- **Dashboard**
- **Creating & Configuring Dashboards**
- **Dashboard theme**
- **Reports vs Dashboards**
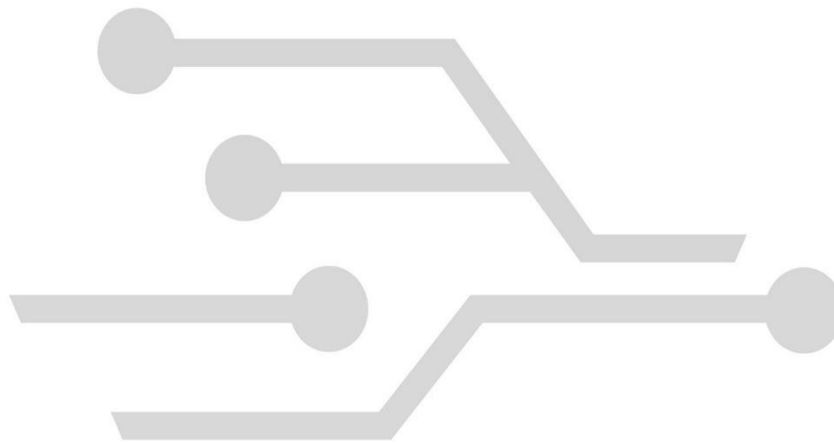- **Sharing reports & dashboards**

DATA TRANSFORMATION – SHAPING & COMBINING DATA

- **Shaping data using Power Query Editor**
- **Formatting data**
- **Transformation of data**
- **Understanding of Data types**
- **Naming conventions & best practices to consider**
- **Working with Parameters**
- **Merge Query**
- **Append Query**
- **Group by of data (aggregation of data)**
- **Duplicate & Reference tables**
- **Fill**
- **Pivot & Un-pivot of data**
- **Custom columns**
- **Conditional columns**
- **Replace data from the tables**
- **Split columns values**
- **Move columns & sorting of data**
- **Detect data type, count rows & reverse rows**
- **Promote rows as column headers**
- **Hierarchies in Power BI**

DATA MODELING & DAX

- **Introduction of relationships**
- **Creating relationships**
- **Cardinality**
- **Cross filter direction**
- **Use of inactive relationships**
- **Introduction of DAX**

- **Why DAX is used**
- **DAX syntax**
- **DAX functions**
- **Context in DAX**
- **Calculated columns using DAX**
- **Measures using DAX**
- **Calculated tables using DAX**
- **Learning about table, information, logical, text, iterator,**
- **Time intelligence functions (YTD, QTD, MTD)**
- **Cumulative values, calculated tables, and ranking and rank over groups**
- **Date and time functions**