Data Analytics

Statistics

- Data Types, Measure Of central tendency, Measures of Dispersion
- Graphical Techniques, Skewness & Kurtosis, Box Plot
- Descriptive Stats
- • Random Variable, Probability, Probability Distribution, Normal Distribution, SND, Expected Value
- Sampling Funnel, Sampling Variation, Central Limit Theorem, Confidence interval
- Introduction to Hypothesis Testing
- Hypothesis Testing (2 proportion test, 2 t sample t test)
- Anova and Chisquare
- Data Cleaning
- Imputation Techniques
- Scatter Diagram
- Correlation Analysis

Power BI

- Power BI Introduction
- Power BI Components
- Getting Data using Power BI
- Power BI Transformations
- Creating Data Models
- Power BI Charts
- Power BI Filters
- Power BI Visualizations
- Exploring Data in Power BI
- Power BI and Excel
- Power BI Publishing and sharing
- Power BI Integration with Data Sources

• Data Analysis Expressions (DAX)

- ➢ Math & Stats
- ➢ SUMX & Calculate Function
- ➢ Related Function
- ➢ All Function

- Aggregate Functions
- Date Functions
- Logical Functions
- String Functions
- Filter Functions
- Trigonometric Functions
- Time Intelligence Functions

• Reports – Objects & Charts, Formatting Charts

- Report Interactions
- Bookmarks o Managing Roles
- Custom Visuals
- Desktop vs Phone Layout
- Artificial Intelligence Visuals – Key Influencers

Tableau

• What is Data Visualization

- Advantages & Disadvantages of visualizations
- Why Data visualization Important
- Understanding data
- Different data visualizations

• Tableau –Data Visualization Tool
• Introduction to Tableau

- What is Tableau?
- Overview Of Tableau Tool (Servers , data , visualizations)
- Tableau Architecture
- Advantages & Disadvantages

• Different Products of Tableau

- Tableau Desktop
- Tableau Public
- Tableau Prep
- Tableau Online
- Tableau Server
- Tableau Analytics

- **Extensions in Tableau**
- **Features of Tableau Desktop**
- **Tableau-Joins and Data Pane**
- **Tableau Data Pane**
- **Pivot Table and Split Tables in Tableau**
- **In built Charts in Tableau**

➢ Basic Charts
➢ Text Tables
➢ Highlight Tables
➢ Bar charts
➢ Stacked Bar
➢ Line Graphs
➢ Dual axis
➢ Pie chart etc.

- **Maps in Tableau**
- **Data Interpretation**
- **Creating Calculated Fields**

➢ Attribute functions
➢ Quick table calculations
➢ Creation of calculated fields
➢ Aggregate and disaggregate functions etc.

- **Logical Functions**
- **Case-If Function**

➢ Understanding Case Statements
➢ Applications of case statements

- **ZN Function**
- **Ad-Hoc Calculations**
- **Understanding different string functions etc.**
- **Pre-Defined Analytics**
  - ➢ Expressions , Functions, Groups, Filters, etc

  - **Dashboards Hands-On in Tableau**
  - ➢ Understanding concept of Dashboards
  - ➢ Building Interactive dashboards
  - ➢ Dashboard actions, etc.

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- **Animated Visualization**

- **Tools for Sharing Information**
- **Publishing our Workbooks in Tableau Server**

Microsoft Excel

- Getting Started with Excel
- Workbook Protection & Security
- Data Formats, Data Formatting & Alignment
- Hands on Practice on Short Keys
- Conditional Formatting
- Advanced Conditional Formatting techniques
- Graphs & Charts
- Advanced Charts – Waterfall/ Bridge Graphs
- Data Tools- Filtering, Sorting, Remove Duplicates, Data Validation, Grouping
- Absolute and Relative Referencing Concepts
- Case Studies on Absolute and Relative Referencing
- Specialized Functions/Formulas
- Lookup Functions
- Vlookup & its Limitations, Hlookup, Index Match, Hyperlink, Indirect, Offset,
- Transpose
- Vlookup Case Studies:
- Vlookup General Problems, Vlookup with Match Function, Vlookup using (*)
- problems, Vlookup using Running Countif, Nested Vlookup

- **Text Formulas –**
  - ➢ Char, Concatenate, Exact, Find, Left, Right, Proper, Search, Mid, Upper
- **Logical Formulas –**
  - ➢ o And, If, IfError, Not, OR, True
- **Date Time Formulas -**
  - ➢ o Day, Date, Hour, Minute, Second, Time, Month, Year, Today, Weekday, Now
- **Mathematical Formulas –**
  - ➢ o Sum, Sumif, Sumifs, Count, Countif, Mod, Product, Sumproduct, Roundup, Array
- **Formulas**
- **Pivot Reports/ Dashboard**
  - ➢ Pivot Table & Pivot Charts
  - ➢ Waterfall Mode

SQL

- **Databases**
- **Introduction to DBMS**
- **Popular DBMS Software**
- **Concepts of RDBMS**

➢ Tables
➢ Tuples
➢ Attributes

- **Normalization**

➢ First Normal Form
➢ Second Normal Form
➢ Third Normal Form

- **NoSQL Databases**

➢ Types of NOSQL

- **Comparison**
- **Types of SQL Commands**
- **Data Definition Language**

➢ Create, Drop, Truncate, Alter and Rename Objects

- **Data Query Language**

➢ Select Statements

- **Data Manipulation Language**
- **DCL and TCL**

➢ Grant, Revoke and transaction statements

- **SQL Data Types**

➢ o Numeric, Date and TIme, LOB Types

- **DML Commands**
  - ➢ Insert, Update and Delete Statements

- **DDL Commands**
  - ➢ o Create and Drop Databases

- **Types of Constraints**

➢ Relational Integrity Constraints
➢ Key Constraints
➢ Domain Constraints

- ➢ Referential Integrity
- ➢ Primary and Foreign Keys
- ➢ Application of Indexes
- ➢ Checking Constraints

- **Alter Tables**
- **SQL Transactions**

- ➢ Examples

• ACID Properties
• TCL Statements

- ➢ Start, Commit and Rollback Statements

- **Auto Commit**
- **SavePoints**

- ➢ Identifier
- ➢ Rollback and Release

- **Database Objects**
- **Tables**

- ➢ Creating, Altering and dropping tables

- **Sequences**

- ➢ Auto Increments
- ➢ Re-Sequencing

- **Views**

- ➢ Advantages
- ➢ Creating and Dropping Views

- **Indexes**

- ➢ Types of Indexes
- ➢ B-Tree and Hash Indexes
- ➢ Creating and dropping Indexes

- **Stored Objects**

- ➢ Types of Stored Objects

- **Stored Procedures**

- ➢ Create, call and drop stored procedures
- ➢ Using Variables o Handling Exceptions
- ➢ Named Errors and Resignals

• Programming

- ➢ If-then-Else and Case Statements
- ➢ Loops
- ➢ Repeat and Leave Statements
- ➢ Cursors

- **Operators and Functions**
- **Joining Tables**
- ➢ o Inner Join, Left Join, Right join

- **Advantages of Procedures**
- **Database Triggers Accessing Database From R and Python**
- **Triggers**
- ➢ Database Triggers
- ➢ Data Definition Language (DDL) Triggers
- ➢ Data Manipulation Language (DML) Triggers
- ➢ CLR Triggers
- ➢ Logon Triggers
- ➢ Triggers v/s Stored Procedures

- **Accessing Database from R**

- ➢ Install R Packages
- ➢ Configuration Information

- **Python Database Access**

- ➢ Databases Supported
- ➢ Libraries
- ➢ To Read Operations
- ➢ On Insert, Update and Delete
- ➢ Performing Transactions
- ➢ Handling Errors

Python

- Installation of Python
- Python Datatypes & Python Loops
- Python Strings
- Python Lists
- Python Tuples

- Python Dictionary
- Python Date & Time
- Python Operators
- Python Functions
- Python I/O Functions
- Debugging & Python Database Access – MySQL
- Working with CSV & Excel Files
- Advanced Data Types
- Python Comprehensions

➢ List Comprehensions
➢ Set Comprehensions
➢ Dictionary Comprehensions
➢ Set Comprehensions

- Numpy
- Pandas
- Data Analysis & Visualization in Python
- Web Scraping
- Email Automation