

# DATA ANALYST MASTER PROGRAM

Master industry-relevant tools and technologies through a structured curriculum designed to build practical skills in data analysis, visualization, reporting, and business intelligence with real-time projects and hands-on training.

## COURSE:

- Advanced Excel
- MySQL
- Power bi
- Tableau
- Python
- Chat gpt
- Git and git hub

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# EXCEL

## INTRODUCTION

- MS Office Versions (similarities and differences)
- Interface (latest available version)
- Row and columns
- Keyboard shortcuts for easy navigation
- Data entry (fill series)
- Find and select
- Clear options
- Ctrl+enter
- Formatting options - Font, Alignment,
- Clipboard (copy, paste special)

## Referencing, Named ranges, Uses, Arithmetic Functions

- Mathematical calculations with cell referencing
- (Absolute, Relative, Mixed)
- Functions with name range
- Arithmetic functions (SUM, SUMIF, SUMIFS,
- COUNT, COUNTA, COUNTIFS, AVERAGE,
- AVERAGEIFS, MAX, MAXIFS, MIN, MINIFS)

## Logical functions

- IF
- AND
- OR
- NESTED IFS

- NOT
- IFERROR
- Usage of mathematical and logical
- functions nested together

## Referring data from different tables: Various types of Lookup, Nested IF

- LOOKUP
- VLOOKUP
- NESTED VLOOKUP
- HLOOKUP
- INDEX
- INDEX WITH MATCH FUNCTION
- INDIRECT
- OFFSET

## Advanced functions

- Combination of arithmetic, logical, lookup functions
- Data validation (With dependent drop down)

## Date and Text Functions

- Date functions: DATE, DAY, MONTH, YEAR, YEARFRAC, DATEDIFF, EOMONTH
- Text functions: TEXT, UPPER, LOWER, PROPER, LEFT, RIGHT, SEARCH, FIND,
- MID, TTC, Flash fill

## Data Handling: Data cleaning, Data type identification, Remove Duplicates, Formatting and Filtering

- Number formatting (with shortcuts)
- CTRL+T (converting into an excel table)
- Formatting table
- Remove duplicate
- SORT
- Advanced sort
- FILTER
- Advanced Filter

## Data Visualization: Conditional formatting, Charts

- Conditional formatting (Icon sets/Highlighted colour sets/Data bars/custom formatting)
- Charts: Bar, column, lines, scatter, combo, Gantt, waterfall, pie

## Data Summarization: Pivot Report and Charts

- Pivot Reports: Insert, Interface, Crosstable Reports, Filter, Pivot Charts
- Slicers: Add, Connect to multiple reports and charts
- Calculated field
- Calculated item

## Data Summarization: Dashboard Creation, Tips and Trick

- Dashboard: Types, getting reports and charts together, use of slicers
- Design and placement: Formatting of tables, charts, sheets, proper use of colours and shapes

## Connecting to Data: Power query, pivot, power pivot within Excel

- Power Query: Interface, Tabs
- Connecting to data from other excel files, text files, other sources
- Data cleaning
- Transforming
- Loading data into Excel query
- Using loaded queries
- Merge and append
- Insert power pivot
- Similarities and differences in pivot and power pivot reporting
- Getting data from databases, workbooks, webpages

# MYSQL

## Introduction to MySQL

- Introduction to Databases
- Introduction to RDBMS
- Explain RDBMS through normalization
- Different types of RDBMS
- Software Installation (MySQL Workbench)

## SQL Commands and Data Types

- Types of SQL Commands (DDL, DML, DQL, DCL, TCL) and their applications
- Data Types in SQL (Numeric, Char, Datetime)

## DQL & Operators

- SELECT: LIMIT, DISTINCT, WHERE, AND, OR, IN, NOT IN, BETWEEN, EXIST,
- ISNULL, IS NOT NULL, Wild Cards, ORDER BY

## Case When Then and Handling NULL Values

- Usage of Case When Then to solve logical problems and handling NULL Values (IFNULL, COALESCE)

## Group Operations & Aggregate Functions

- Group By, Having clause
- COUNT, SUM, AVG, MIN, MAX, COUNT
- String functions
- Date & Time function

## Constraints

- INOT NULL
- UNIQUE
- CHECK
- DEFAULT
- Primary key
- Foreign Key (Both at column level and table level)

## Joins

- Inner
- Left
- Right
- Cross
- Self joins
- Full outer join

## DDL

- Create
- Drop
- Alter
- Rename
- Truncate
- Modify
- Comment

## DML & TCL Commands

- DML: Insert, Update, and Delete
- TCL: Commit, Rollback, Savepoint, and Data Partitioning

## Indexes and Views

- Indexes (Different Type of Indexes) and Views in SQL

## Stored Procedure

- Procedure with IN Parameter
- Procedure with OUT parameter
- Procedure with INOUT parameter

## Function, Constructs

- User Defined Function
- Window Functions - Rank, Dense Rank, Lead, Lag, Row\_number

## Union, Intersect, Sub-query

- Union
- Union all
- Intersect
- Sub Queries
- Multiple Query

## Exception Handling

- Triggers

# Tableau

## Introduction to Tableau

- What is Tableau?
- What is Data Visualization?
- Tableau Products
- Tableau Desktop Variations
- Tableau File Extensions
- Data Types, Dimensions, Measures,
- Aggregation concept
- Tableau Desktop Installation
- Data Source Overview
- Live Vs Extract

## Basic Charts & Formatting

- Overview of worksheet sections
- Shelves
- Bar Chart, Stacked Bar Chart
- Discrete & Continuous Line Charts
- Symbol Map & Filled Map
- Text Table, Highlight Table
- Formatting: Remove grid lines, hiding the
- axes, conversion of numbers to thousands,
- millions, Shading, Row divider, Column
- divider
- Marks Card

## Filters

- What are Filters?
- Types of Filters
- Extract, Data Source, Context,
- Dimension, Measure, Quick Filters
- Order of operation of filters
- Cascading
- Apply to Worksheets

## Calculations

- Need for calculations
- Types: Basic, LOD's, Table
- Examples of Basic Calculations: Aggregate functions, Logical functions,
- String functions, Tableau, calculation functions, numerical functions,
- Date functions
- LOD's: Examples
- Table Calculations: Examples

## Data Combining Techniques

- What are Data Combining Techniques?
- Types
- Joins, Relationships, Blending, and Union

## Custom Charts

- Dual Axis
- Combined Axis
- Donut Chart
- Lollipop Chart
- KPI Cards (Simple)
- KPI Cards (With Shape)

## Groups, Bins, Hierarchies, Sets, Parameters

- What are Groups? Purpose
- What are Bins? Purpose
- What are Hierarchies? Purpose
- What are Sets? Purpose
- What are Parameters? Purpose and examples

## Analytics & Dashboard

- Reference Lines
- Trend Line
- Overview of Dashboard: Tiled Vs Floating
- All Objects overview, Layout overview
- Dashboard creation with formatting

## Dashboard Actions & Tableau Public

- Actions: Filter, Highlight, URL, Sheet, Parameter, Set
- How to save the workbook to Tableau Public website?

# Power BI

## Power BI Introduction and Installation

- Understanding Power BI Background
- Installation of Power BI and checklist for perfect installation
- Formatting and Setting prerequisites
- Understanding the difference between Power BI desktop & Power Query

## The Power BI user interface, including types of data sources and visualizations

- Getting familiar with the interface BI Query & Desktop
- Understanding types of visualization
- Loading data from multiple sources
- Data type and the type of default chart on drag drop
- Geo location map integration

## Sample dashboard with Animation Visual

- Financial sample data in Power BI
- Preparing sample dashboard as get started
- Map visual types and usages in different variation
- Understanding scatter Plot chart with Play axis and the parameters.

## Power BI Artificial Intelligence Visual

- Understanding the use of AI in Power BI
- AI analysis in Power BI using chart
- Q&A chat bot and the use in real life
- Hierarchy tree

## Power BI Visualization

- Understanding Column Chart
- Understanding Line Chart
- Implementation of Conditional formatting
- Implementation of Formatting techniques.

## Power Query Editor

- Loading data from folder
- Understanding Power Query in detail
- Promote header, Split to limiter, Add columns, append, merge queries, etc.

## Modelling with Power BI

- Loading multiple data from different format
- Understanding modelling (How to create relationship)
- Connection type, Data cardinality, Filter direction
- Making dashboard using new loaded data

## Power Query Editor Filter Data

- Power Query Custom Column & Conditional Column
- Manage Parameter
- Introduction to Filter and types of filter
- Trend analysis, Future forecast

## Customize the data in Power BI

- Understanding tooltip with information
- Use and understanding of Drill Down
- Visual interaction and customisation of visual interaction
- Drill through function and usage
- Button triggers
- Bookmark and different use and implementation
- Navigation buttons

## Dax Expressions

- Introduction to DAX
- Table Dax, Calculated column, DAX measure and difference
- Eg:- Calendar, Calendar auto, Summarize, Group by, etc.
- Calculated Column
- Related, Lookup value, switch, Datedif, Rankx, Date functions
- Dax Measure and Quick Measure
- Remove filters, Keep filters, All, Allselected, Time Intelligence Functions, Rolling average
- YoY, Running total

## Data Analytical Expressions Functions

- Introduction to DAX functions
- New Measure, New Column and New Table
- Aggregate functions  
(AVERAGE, AVERAGEA, AVERAGEX, COUNT, COUNTBLANK, COUNTROWS, COUNTX)
- DISTINCTCOUNT
- DISTINCTCOUNTNOBLANK
- MAX, MAXX, SUM, SUMX

## INTRODUCTION TO DATE TIME FUNCTIONS

- CALANDER, HOUR, MINUTE, DATEDIFF, NETWORKDAYS, DAY, QUARTER, MONTH, SECOND
- YEAR, TIME, NOW, WEEKEND, TODAY, WEEKNUM, EOMONTH

## Introduction to Text Functions

- COMBINE  
VALUES,, CONCATENATE, CONCATENATEX, EXACT, SEARCH, FIND, FIXED, LEFT, RIGHT
- LEN, UPPER, MID, REPLACE, SUBSTITUTE, REPT, TRIM, VALUE, FORMAT

## Introduction to Logical functions

- IF, AND (or) && operator, OR (or) || operator, NOT (or) < > operator, SWITCH, COALESCE, TRUE

## Introduction to information functions

- CONTAINS, CONTAINSROW, HASHONEFILTER, HASHONEVALUE, ISFILTERES, ISBLANK, ISEMPTY, ISEVEN, USERNAME, USERPRINCIPLENAME

## Introduction to filter functions

- CALCULATE, ALL, ALLCROSSFILTERED, ALLEXCEPT, ALLSELECTED, FILTERED, FIRST, LAST, LOOKUPVALUE, MAVINGAVERAGE, NEXT, PREVIOUS, RUNNINGSUM, SELECTEDVALUE

## Time Intelligence functions

- OPENINGBALANCEMONTH, OPENINGBALANCEQUARTER, OPENINGBALANCEYEAR, CLOSINGBALANCEMONTH, CLOSINGBALANCEYEAR, DATEADD, DATESBETWEEN, DATEINPERIOD, DATEMTD, DATESQTD, DATESYTD, ENDOFMONTH, ENDOFYEAR, FIRSDATE, FIRSTNOBALNK, LASTDATE, LASTNOBLANK, NEXTDAY, NEXTQUARTER, NEXTYEAR.

## Real time scenarios on DAX functions

- 1st real time scenario explanation (1 to 11 questions)

## Explanation about modelling

- Introduction to Model, Providing relationship between the data sets, Edit relationship, Cardinality, Cross filter direction, Making a relationship active or Inactive, How many columns we can provide relationship at a time, Deleting the relationship, Manage relationship,

Triangle relationship not supported in power bi and why ?, Hiding columns in model, How can we refresh the data in the model?, How to remove multiple columns at a time?, How to avoid many to many relationships? How we can do the operations if the relationships is inactive?, Userrelationship function example, Introduction to Refresh option in power bi model

## Discussing other options in Home Tab

- New visual options in Home Tab, text box option in Home Tab, Linked reports,
- More visuals options in Home Tab, Publish option

## Custom Visual

- Custom visual and understanding the use of custom
- Loading custom visual, Pinning visual
- Loading to template for future use
- Publishing Power Bi

## Power BI Service

- Introduction to app.powerbi.com
- Schedule refresh
- Data flow and use power bi from online
- Download data as live in Powerpoint and more.

## Anaconda installation, Introduction to python, Data types, Operators

- Variables, data types (Integer, Boolean, Float, List, Tuple, String), Operators in Python

## Data types Contd, Slicing the data, Inbuilt functions in Python

- Dictionaries, Sequence methods, Concatenate, Repetition, Len, Min Max Functions, Index
- Position, Addition and deletion of elements, Reverse, Sorting

## Sets, Set Theory, Regular Expressions, Decision making Statements

- Sets, re module (Findall, Search, Split, Match) IF, elif, getting input from user, identity operator

## Loops, Functions, Lambda functions, Modules

- For, While Loops, Functions, Lambda Functions, Math Module, Calendar Module, Date & Time Module

## Pandas, Numpy, Matplotlib, Seaborn

- Data frame creation, using different methods, Using Pandas analysis on Universities Salary data Sets, Visualization using Matplotlib and Seaborn, Numpy Introduction

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# ChatGPT for Data Analyst

- Introduction to ChatGPT for Data Analytics
- Prompt Engineering for Analysts
- Using ChatGPT for Excel Formulas
- ChatGPT for Data Cleaning
- Data Analysis using AI Prompts
- SQL Query Generation with ChatGPT
- ChatGPT for Database Queries
- Python Code Generation using ChatGPT
- Data Visualization Assistance
- Dashboard Insights & KPI Analysis
- Report Generation using ChatGPT
- Automating Repetitive Analyst Tasks
- Business Insights using AI
- Creating Data Summaries & Interpretations
- Real-Time Data Analyst Use Cases
- Resume & Interview Preparation with ChatGPT
- AI Productivity Tools for Analysts
- Best Practices & Limitations of AI in Analytics

# Git & GitHub for Data Analyst

- Introduction to Git & Version Control
- Installing Git & GitHub Setup
- Git Commands & Repository Management
- Creating and Cloning Repositories
- GitHub Interface & Workflow
- Branching & Merging Concepts
- Commit, Push & Pull Operations
- Managing Data Analysis Projects with Git
- Uploading Excel, SQL & Python Projects to GitHub
- Collaboration using GitHub
- README File Creation & Documentation
- GitHub for Portfolio Building
- Version Tracking for Data Analyst Projects
- Real-Time Project Workflow
- Best Practices for Project Management
- GitHub Resume & Interview Preparation

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