

MYSQL

Introduction

- DBMS vs RDBMS
- Intro to SQL
- SQL vs NoSQL
- MySQL Installation

Keys

- Primary Key
- Foreign Key

Constraints

- Unique
- Not NULL
- Check
- Default
- Auto Increment

CRUD Operations

- Create
- Retrieve
- Update
- Delete

SQL Languages

- Data Definition Language (DDL)
- Data Query Language
- Data Manipulation Language (DML)
- Data Control Language
- Transaction Control Language

Windows Function

- Rank
- Dense Rank
- Row number
- Partition, group by

SQL Commands

- Create
- Insert
- Alter, Modify, Rename, Update
- Delete, Truncate, Drop
- Grant, Revoke
- Commit, Rollback
- Select

SQL Clause

- Where
- Distinct
- OrderBy
- GroupBy
- Having
- Limit

Operators

- Comparison Operators
- Logical Operators
- Membership Operators
- Identity Operators

Wild Cards

Aggregate Functions

SQL Joins

- Inner Join & Outer Join
- Left Join & Right Join
- Self & Cross Join
- Natural Join

Power BI

Introduction

- Power BI for Data Scientist
- Types of reports
- Data source types
- Installation

Basic Report Design

- Data sources and Visual types
- Canvas and fields
- Table and Tree map
- Format button and Data Labels
- Legend, Category and Grid
- CSV and PDF Exports
- Conditional Formatting

Visual Sync, Grouping

- Slicer visual
- Orientation, selection process
- Slicer: Number, Text, slicer list
- Bin count, Binning

Hierarchies, Filters

- Creating Hierarchies
- Drill Down options
- Expand and show
- Visual filter, Page filter, Report filter
- Drill Thru Reports

Power Query

- Power Query transformation
- Table and Column Transformations
- Text and time transformations
- Power query functions
- Merge and append transformations

DAX Functions

- DAX Architecture, Entity Sets
- DAX Data types, Syntax Rules
- DAX measures and calculations
- Creating measures
- Creating Columns

Projects

- End to End 3 Projects
- Publish Project
- Export to PPT, PDF

STATISTICS

Introduction

- Population & Sample
- Reference & Sampling technique

Types of Data

- Qualitative or Categorical – Nominal & Ordinal
- Quantitative or Numerical – Discrete & Continuous
- Cross Sectional Data & Time Series Data

Measures of Central Tendency

- Mean, Mode & Median – Their frequency distribution

Descriptive Statistic Measures of Symmetry

- Skewness (positive skew, negative skew, zero skew)
- Kurtosis (Leptokurtic, Mesokurtic, Platykurtic)

Measurement of Spread

- Range, Variance, Standard Deviation

Measures of Variability

- Interquartile Range (IQR)
- Mean Absolute Deviation (MAD)
- Coefficient of Variation
- Covariance

Levels of Data Measurement

- Nominal, Ordinal, Interval, Ratio

Variable

• Types of Variables:

- Categorical Variables – Nominal variable & ordinal variables
- Numerical Variables – Discrete & Continuous
- Dependent Variable
- Independent Variable
- Control Moderating & Mediating

Frequency Distribution Table

- Nominal, Ordinal, Interval, Ratio

Frequency Distribution Table

- Relative Frequency, Cumulative Frequency
- Histogram
- Scatter Plots
- Range
- Calculate Class Width:
 - Create Intervals
 - Count Frequencies
 - Construct the Table

ADVANCED EXCEL

Excel Basics

- Introduction
- Cells & Cell Range
- Cell Reference
 - Absolute Reference
 - Relative Reference
- Data Types in excel
- Table Creation and Formatting
- Sorting
- Filtering
- Remove Duplicates
- Conditional Formatting
- Sub-Total
- Charts/Graphs
- Pivot Charts
- Microcharts
- HyperLink
- Comments

Advanced Excel

- Formulas:
 - Text Formulas
 - Aggregate Formulas
 - Date and Time Formulas
 - Lookup Formulas
 - Statistical Formulas
- Slicers
- Data Validation
- Power Pivot
- Power Query
- Creating Excel Dashboard
- Office 365 formulas
 - XLOOKUP
 - FILTER
 - TEXTJOIN
 - TEXT SPLIT

GENERATIVE AI TOOLS

What are AI Tools?

- Definition and applications of AI
- Overview of popular AI tools (e.g., ChatGPT, Gemini, Co-pilot, DALL-E, etc.).
- Brief history and evolution of AI.
- How AI tools are transforming industries.

• Text Generation & Content Creation:

- Google AI Studio: Your All-in-One-Co-Pilot for effortless productivity
- How to use Google Gemini's for 5+ Advance use cases
- How to create your own Personalized AI assistant chatbot in 10 mins
- How to research the web with recently launched advanced AI search assistant

• Image, Audio & Visual Content Creation:

- Master the Art of Recreating Any Image and Video with AI
- Master the art of creating stunning QR codes with AI
- Compose your won Hit Song with AI.
- Convert any text content into Audio Format using AI tool

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• Career and Job Search

- Preparing Resume, Covering Letter for applying Job using AI
- Updating Resume using ChatGPT magic prompts
- Practicing mock Interview using AI chatbots
- Get better Career Growth Opportunities by creating LinkedIn profile and Posts

• Communication and public speaking:

- How to improve Public Speaking & Communication using Google Gemini for free
- Learn the fastest way to Read & Listen to any PDF, Book, Document or Article
- Draft e-mail for Business Communication
- How to Learn Any New Language effortlessly with an exciting AI tool.

• Productivity & Workflow Optimization:

- Brainstorm ideas using AI tools (mymind, mindmap)
- Create Power Point presentations with AI
- Using Napkin AI to create visuals for your presentations and education materials in minutes
- NotebookLM by Google: Your Personal AI note-taking Research/Information Assistant

PYTHON

Introduction to Data Science

- Introduction to Data Science
- Discussion on Course Curriculum
- Introduction to Programming

Python – Basics

- Introduction to Python: Installation and Running (Jupyter Notebook, .py file from terminal, Google Colab)
- Data types and type conversion
- Variables
- Operators
- Flow Control: If, Elif, Else
- Loops
- Python Identifier
- Building Functions (print, type, id, sys, len)

Python - Data Types & Utilities

- List, List of Lists, and List Comprehension
- List creation
- Create a list with variable
- List mutable concept
- len() || append() || pop()
- insert() || remove() || sort() || reverse()
- Forward indexing
- Backward Indexing
- Forward slicing
- Backward slicing
- Step slicing

Set

- SET creation with variable
- len() || add() || remove() || pop()
- union() || intersection() || difference()

Tuple

- TUPLE Creation
- Create Tuple with variable
- Tuple Immutable concept
- len() || count() || index()
- Forward indexing
- Backward Indexing

Dictionary and Dictionary Comprehension

- Create a dictionary using a variable
- Keys:Values concept
- len() || keys() || values() || items()
- get() || pop() || update()
- Comparison of data structure
- Introduce to range()
- Pass range() in the list
- range() arguments
- For loop introduction using range()

Functions

- Inbuilt vs User Defined
- User Defined Function
- Function Argument
- Types of Function Arguments
- Actual Argument
- Global variable vs Local variable
- Anonymous Function | LAMBDA

Packages

Python - Production Level

- Error / Exception Handling
- File Handling
- Docstrings
- Modularization

Pickling & Unpickling

Pandas

- Introduction, Fundamentals, Importing Pandas, Aliasing, DataFrame
- Series – Intro, Creating Series Object, Empty Series Object, Create series from List/Array/Column from DataFrame, Index in Series, Accessing values in Series
- NaN Value
- Series – Attributes (Values, index, dtypes, size)
- Series – Methods – head(), tail(), sum(), count(), unique(), etc.
- Date Frame
- Loading Different Files
- Data Frame Attributes
- Data Frame Methods
- Rename Column & Index
- Inplace Parameter
- Handling missing or NaN values
- iLoc and Loc
- Data Frame – Filtering
- Data Frame – Sorting
- Data Frame – GroupBy
- Merging or Joining
- Data Frame – Concat

- DataFrame - Adding, Dropping Columns & Rows
- DataFrame - Date and Time
- DataFrame - Concatenate Multiple CSV Files

NumPy

- Introduction, Installation, pip command, import NumPy package, ModuleNotFoundError, Famous Alias name to NumPy
- Fundamentals – Create NumPy Array, Array Manipulation, Mathematical Operations, Indexing & Slicing
- NumPy Attributes
- Important Methods - min(), max(), sum(), reshape(), count_nonzero(), sort(), flatten(), etc.
- Adding value to array of values
- Diagonal of a Matrix
- Trace of a Matrix
- Parsing, Adding, and Subtracting Matrices
- Statistical Functions: numpy.mean()
- numpy.median()
- numpy.std()
- numpy.sum()
- numpy.min()
- Filter in NumPy

Matplotlib

- Introduction
- Pyplot
- Figure Class
- Axes Class
- Setting Limits and Tick Labels
- Multiple Plots
- Legend
- Different Types of Plots:
 - Line Graph
 - Bar Chart
 - Histograms
 - Scatter Plot
 - Pie Chart
 - 3D Plots
- Working with Images
- Customizing Plots

Seaborn

- catplot() function
- stripplot() function
- boxplot() function
- violinplot() function
- pointplot() function
- barplot() function
- Visualizing statistical relationship with Seaborn relplot() function
- scatterplot() function
- regplot() function
- Implot() function
- Seaborn Facetgrid() function
- Multi-plot grids
- Statistical Plots:
 - Color Palettes
 - Faceting
 - Regression Plots
 - Distribution Plots
 - Categorical Plots
 - Pair Plots

