MySQL

📚 Detailed Workshop Schedule

🕘 Session 1: Introduction to Databases & SQL (60 mins)

- What is a Database and why is it important?
- Types of Databases: Relational vs Non-Relational
- ER Diagrams and Normalization (1NF, 2NF, 3NF) – *new*
- SQL vs NoSQL: Real-world use cases – *new*
- Tools setup: MySQL Workbench / pgAdmin / SQLiteStudio
- Sample Database Schema walkthrough (e.g., university or e-commerce)

🕘 Session 2: SQL Basics – CRUD Operations (75 mins)

- CREATE TABLE, INSERT INTO, SELECT, UPDATE, DELETE
- Primary Key, Foreign Key, Auto Increment – *new*
- Default values, NOT NULL, UNIQUE, CHECK constraints – *new*
- Bulk Insert and Importing data from CSV – *new*
- Hands-on Practice: Create and populate a Student/Employee table

🕙 Session 3: Data Retrieval & Filtering (60 mins)

- WHERE, ORDER BY, LIMIT, BETWEEN, IN, LIKE
- Sorting data with multiple columns
- Using logical operators (AND, OR, NOT)
- Working with NULL values and IS NULL, IS NOT NULL – *new*
- Practice Task: Create filters for marks, salary, or product sales

🕚 Session 4: Aggregate Functions & Grouping (60 mins)

- SUM(), AVG(), COUNT(), MIN(), MAX()
- Grouping data with GROUP BY, Filtering groups with HAVING
- Nesting aggregates with subqueries – *new*
- Calculating percentages and ranks using SQL – *new*
- Hands-on: Generate analytics (total sales per product, avg marks by department)

🕛 Session 5: Mastering SQL Joins & Relationships (75 mins)

- Concept of relational integrity and foreign keys
- Inner Join, Left Join, Right Join, Full Outer Join
- Self Join, Cross Join – with real examples – *expanded*
- Join multiple tables (3+ tables scenario) – *new*

🕐 Session 6: Advanced Queries + Real-time Project (60 mins)

- Subqueries (SELECT in WHERE, FROM, SELECT)
- Common Table Expressions (CTE) – *new*
- Views and temporary tables – *new*
- Indexing basics and performance tips – *new*
- Mini Project: Write a full analysis on Sales/HR/University dataset

🕒 Bonus Session: Career Paths + Certifications + Interview Prep (30 mins)

- Where SQL is used: Data Analytics, Backend Development, ERP, BI Tools
- Sample Interview Questions & Hands-on Tasks – *new*
- Overview of certifications: HackerRank, Coursera, Oracle – *new*
- Resume building tips for SQL/Data Analyst roles
- Creating a GitHub SQL portfolio – *new*

🧠 Optional Add-ons (If time permits)

- **Window Functions**: ROW_NUMBER(), RANK(), OVER(), etc.
- **Stored Procedures & Triggers** (demo only)
- **Real-world Case Studies**: SQL in Banking, HR, Marketing, etc.

🏁 Workshop Deliverables

- Certificate of Participation
- Practice SQL Scripts + Sample Databases (CSV/SQL)
- Cheat Sheet (Joins, Aggregates, Filters)
- Mini Project Template + GitHub Upload Guide

🎯 Enhanced Learning Outcomes

Students will:

- Confidently write and troubleshoot real SQL queries
- Understand relational data handling in business scenarios
- Be job-ready for SQL-related interview questions and internships