# Intro to Database and BigQuery Setup

## Agenda:

In today's session, we'll cover essential topics, including:-

🔸 Problem Statement

🔸 Relationships

🔸 ER Diagram

🔸 SQL Commands

🔸 SELECT Query

🔸 ORDER BY

🔸 LIMIT & OFFSET

🔸 Inline Calculation

🔸 Alias (AS)

🔸 ROUND() function

## Summary of Previous Lecture:

Problem Statement:

- You're a Data Analyst at Amazon Fresh tasked with growing revenue through farmer's market stores.

- You have access to a MySQL relational database and its schema.

​​What is a Database?

- A database is a collection of interrelated tables.

- Database Management System (DBMS) is a set of programs to access and manipulate data.

- Operations include CRUD (Create, Read, Update, Delete), search, insert, etc.

- Relational DBMS (RDBMS) stores data in tables (e.g., MySQL, PostgreSQL).

Why Use Databases Over Excel?

- Scalability: Databases handle large datasets effectively.

- Performance: Databases are optimized for fast data retrieval.

- Data Integrity: Databases enforce data accuracy.

- Concurrent Access: Multiple users can access data simultaneously.

- Security: Databases provide user access management.

DB Schema (Entity-Relationship Diagram):

- A schema represents data organization and table relationships.

- Tables are represented as boxes, relationships as lines.

- Data types define the kind of data stored in each column.

Common Data Types

- String: Char(), Varchar()

- Numeric: Int64, Float64

- Date & Time: Date, Time, Datetime, Timestamp

Concept of Keys

- Keys ensure unique identification of records in a table.

- Primary Key: Uniquely identifies rows, can't be updated.

- Unique Key: Unique, non-updatable, may have NULL.

- Foreign Key: Links to the primary key in another table.

- Candidate Key: Any column or set of columns that can act as a primary key. Every table must have at least one candidate key.

Working with BigQuery on GCP:

- BigQuery is a cloud-based data warehouse.

- Set up a project, create a dataset, and upload tables.

- BigQuery is used for analytics and querying large datasets

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BigQuery setup doc - [link](https://drive.google.com/file/d/1HRVuzOLtQciRpPkn1HGSMqWb_UOOTqry/view?usp=sharing)

BigQuery setup video - [link](https://www.loom.com/share/d15dc68cd07a43f6a61212e9311b1564?sid=9c7fbdba-9619-4936-8680-055ca01bd26c)