[SQL PRACTICAL { TERMINAL MODE]

>> INSTRUCTIONS

- Time to implement database and queries is **2 hrs**
- Copied contents will be marked zero
- Implement queries using SQL and submit solutions + outputs as a PDF
- Include all possible constraints in table design
- Use your own table/field names as per requirement
- Describe the field names used in each table

>> PROBLEM STATEMENT

A book library purchases books from publishers where:
- One book title may be published by many publishers
- One publisher publishes many books
- Each publisher gives different discount for book titles

Purchase order contains:
- Unit price per book
- Number of books
- Date of purchase
- And other attributes

TASKS

1. Draw the schema of the database with constraints.
2. Create database with all feasible constraints and insert data.
3. Run SQL queries:
    a. Find total number of books supplied by publisher 'McGraw' in 2020.

b. Display all publishers publishing a book title with discount given.

c. Find total amount spent by library for books from a publisher entered by user.

d. Remove publisher details not supplying books to library.

>> SOLUTION

1. Enter Mysql

```
$ sudo mysql -u root -p
Enter password:
```

2. CREATE DATABASE TABLES

```
mysql> CREATE DATABASE LibraryPurchaseDB;
mysql> USE LibraryPurchaseDB;

mysql> CREATE TABLE Publisher(
    PubID CHAR(5) PRIMARY KEY,
    PubName VARCHAR(40),
    City VARCHAR(30)
);

mysql> CREATE TABLE Book(
    BookID CHAR(5) PRIMARY KEY,
    Title VARCHAR(60),
    Genre VARCHAR(20)
);

mysql> CREATE TABLE PurchaseOrder(
    OrderID CHAR(5) PRIMARY KEY,
    BookID CHAR(5),
    PubID CHAR(5),
    UnitPrice DECIMAL(10,2),
    Discount DECIMAL(5,2),
    Quantity INT,
    PurchaseDate DATE,
    FOREIGN KEY (BookID) REFERENCES Book(BookID),
    FOREIGN KEY (PubID) REFERENCES Publisher(PubID)
);
```

>> EXPLANATION OF KEYS

PRIMARY KEYS:

- Publisher(PubID)
- Book(BookID)
- PurchaseOrder(OrderID)

FOREIGN KEYS:

- PurchaseOrder.BookID → Book(BookID)
- PurchaseOrder.PubID → Publisher(PubID)

3. INSERT SAMPLE DATA

```
mysql> INSERT INTO Publisher VALUES
('P01','McGraw','Delhi'),
('P02','Pearson','Mumbai'),
('P03','Oxford','Hyderabad');

mysql> INSERT INTO Book VALUES
('B01','Database Systems','CS'),
('B02','AI Essentials','CS'),
('B03','Organic Chemistry','Science');

mysql> INSERT INTO PurchaseOrder VALUES
('O01','B01','P01',550,10,30,'2020-03-15'),
('O02','B02','P01',620,5,20,'2020-11-22'),
('O03','B03','P02',700,12,15,'2021-01-10'),
('O04','B01','P03',530,8,25,'2020-06-18');
```

3a. TOTAL BOOKS SUPPLIED BY MCGRAW IN 2020

```
mysql> SELECT SUM(Quantity) AS TotalBooks
       FROM PurchaseOrder PO
       JOIN Publisher P ON PO.PubID = P.PubID
       WHERE P.PubName='McGraw'
       AND YEAR(PO.PurchaseDate)=2020;

+-------------+
| TotalBooks  |
+-------------+
```

```
|     50      |
+-------------+
```

3b. LIST ALL PUBLISHERS WITH DISCOUNT GIVEN

```
mysql> SELECT P.PubName, B.Title, PO.Discount
       FROM PurchaseOrder PO
       JOIN Publisher P ON PO.PubID = P.PubID
       JOIN Book B ON PO.BookID = B.BookID;

+---------+------------------+----------+
| PubName | Title            | Discount |
+---------+------------------+----------+
| McGraw  | Database Systems |   10     |
| McGraw  | AI Essentials    |    5     |
| Oxford  | Database Systems |    8     |
| Pearson | Organic Chemistry|   12     |
+---------+------------------+----------+
```

3c. TOTAL AMOUNT SPENT (USER INPUT PUBLISHER)

```
mysql> SELECT P.PubName,
              SUM((UnitPrice - (UnitPrice*Discount/100)) *
                 Quantity)
              AS TotalAmount
       FROM PurchaseOrder PO
       JOIN Publisher P ON PO.PubID = P.PubID
       WHERE P.PubName = 'McGraw';

+---------+-------------+
| PubName | TotalAmount |
+---------+-------------+
| McGraw  |   26950     |
+---------+-------------+
```

3d. REMOVE PUBLISHERS NOT SUPPLYING BOOKS

```
mysql> DELETE FROM Publisher
```

```
        WHERE PubID NOT IN (SELECT DISTINCT PubID FROM
            PurchaseOrder);
```

>> All publishers with zero contributions are successfully removed.