LESSON 1

# MYSQL BASICS.
# CREATING DATABASES AND TABLES

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**Short description**

Familiarize students with the MySQL console and basic commands. Teach how to create databases and tables with appropriate data types. Cover essential database management commands (import/export, user management).

**Kurzbeschreibung**

Machen Sie die Studierenden mit der MySQL-Konsole und grundlegenden Befehlen vertraut. Bringen Sie ihnen bei, wie man Datenbanken und Tabellen mit entsprechenden Datentypen erstellt. Behandeln Sie wichtige Befehle zur Datenbankverwaltung (Import/Export, Benutzerverwaltung).

# Introduction to the MySQL Console

Connecting to MySQL:

```
mysql -u[username] -p
```

*Example*

```
mysql -uroot -p
Enter password:

mysql>
```

Basic Commands:

| | |
|---|---|
| Show databases: | `SHOW DATABASES;` |
| Use a database: | `USE [database_name];` |
| Show tables: | `SHOW TABLES;` |
| Show users: | `SELECT user FROM mysql.user;` |
| Show current user: | `SELECT current_user();` |

# Creating and Managing Databases

Creating a Database: `CREATE DATABASE [database_name];`

Deleting a Database: `DROP DATABASE [database_name];`

Exporting Databases:

```
mysqldump -u [username] -p [database_name] > [file_name].sql
```

Importing Databases:

```
mysql -u [username] -p [database_name] < [file_name].sql
```

# Managing Users and Privileges

Creating Users:

```
    CREATE USER '[username]'@'[host]' IDENTIFIED BY '[password]';
```

Granting Privileges:

```
    GRANT ALL PRIVILEGES ON [database_name].* TO '[username]'@'[host]';
```

Revoking Privileges:

```
    REVOKE ALL PRIVILEGES ON [database_name].* FROM '[username]'@'[host]';
```

Viewing User Privileges:

```
    SHOW GRANTS FOR '[username]'@'[host]';
```

Flushing Privileges:

```
    FLUSH PRIVILEGES;
```

# Understanding MySQL Data Types

Numeric Types:

**INT, BIGINT, SMALLINT, DECIMAL, FLOAT, DOUBLE.**

String Types:

**VARCHAR, CHAR, TEXT, BLOB.**

Date and Time Types:

**DATE, DATETIME, TIMESTAMP, TIME.**

Special Types:

**ENUM, SET.**

*Example*

```
CREATE TABLE products (
    product_id INT NOT NULL AUTO_INCREMENT,

    price DECIMAL(10,2),
            -- 10 total digits, 2 decimal places
            -- for precise fixed-point numbers

   temperature FLOAT
     --  for floating-point numbers, less precise but takes up
          less space

   username VARCHAR(50), -- Up to 50 characters

   content TEXT,

    event_date DATE, -- format 'YYYY-MM-DD'

    log_time TIMESTAMP DEFAULT CURRENT_TIMESTAMP,

    status ENUM('active', 'inactive', 'pending'),
    roles SET('admin', 'editor', 'viewer'
    -- String object with a set of predefined values.

    PRIMARY KEY (product_id)
);
```

# Creating Tables

Basic Syntax:

```
CREATE TABLE [table_name] (
    [column_name] [data_type] [constraints],
    [column_name] [data_type] [constraints],
    PRIMARY KEY ([column_name])
);
```

*Example*

```
CREATE TABLE students (
    student_id INT AUTO_INCREMENT
        PRIMARY KEY,
    name VARCHAR(50) NOT NULL,
    email VARCHAR(100) UNIQUE,
    enrollment_date DATE
);
```

Common Constraints: `NOT NULL, UNIQUE, DEFAULT, PRIMARY KEY, FOREIGN KEY`

Dropping a Table: `DROP TABLE [table_name];`

Viewing Table Structure: `DESCRIBE [table_name];`