Lab 31
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Topic: MySQL Introduction

What is MySQL?

MySQL is an open-source relational database management system (RDBMS) that uses
structured query language (SQL) to manage and manipulate data in a database. It is
widely used for various applications, from small web applications to large enterprise
systems.
MySQL's key features include:

- **Scalability:** Capable of handling large amounts of data and concurrent connections.
- **Flexibility**: Supports various data types and storage engines.
- **Performance**: Optimized for speed and efficiency.
- **Reliability**: Known for its stability and robustness

What are ER Diagrams?

An Entity-Relationship Diagram (ERD) is a visual representation of the data model that shows the entities, attributes, relationships between entities, and cardinality. ERDs are commonly used in database design to help developers and stakeholders understand the structure and relationships within a database.

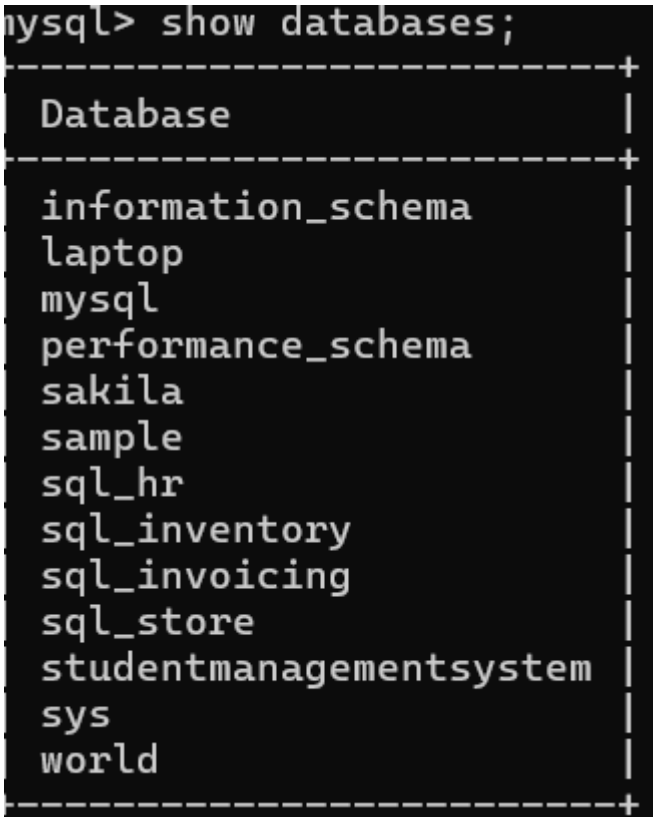
Question 1:

Create a Database & Table Using MySQL Command-Line Client.

a. Create a database with the name **StudentManagementSystem.**

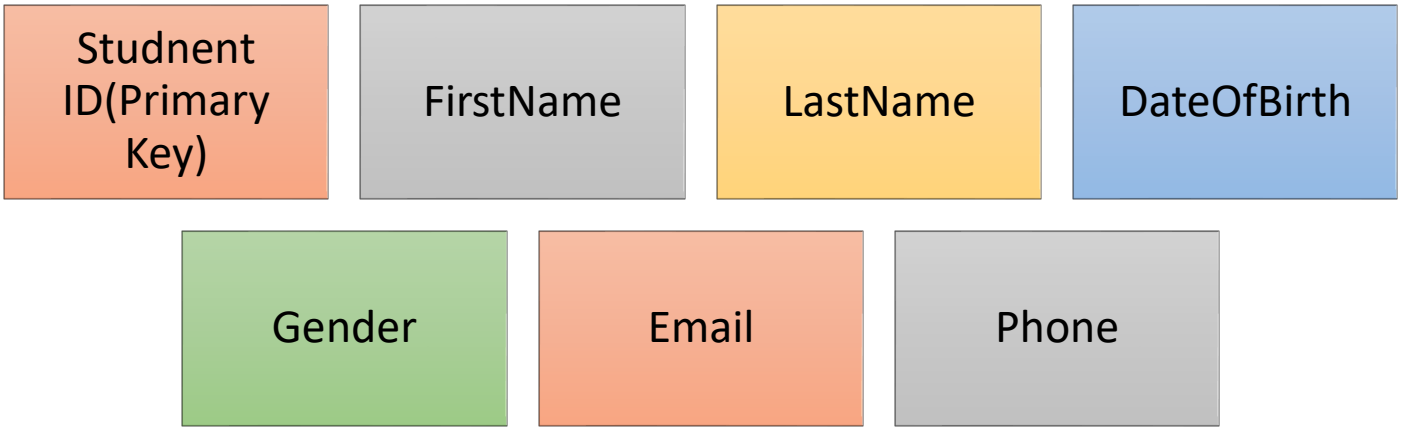
Solution:

```
CREATE DATABASE StudentManagementSystem;
```



```
mysql> show databases;
+------------------------+
| Database               |
+------------------------+
| information_schema     |
| laptop                 |
| mysql                  |
| performance_schema     |
| sakila                 |
| sample                 |
| sql_hr                 |
| sql_inventory          |
| sql_invoicing          |
| sql_store              |
| studentmanagementsystem |
| sys                    |
| world                  |
+------------------------+
```

b. Create a table with named **Student** with attributes:



Solution:

CREATE TABLE student (studentID INT PRIMARY KEY, firstName VARCHAR(30), lastName VARCHAR(30), dateOfBirth DATE, gender VARCHAR(10), email VARCHAR(30), phone VARCHAR(30));

Output:

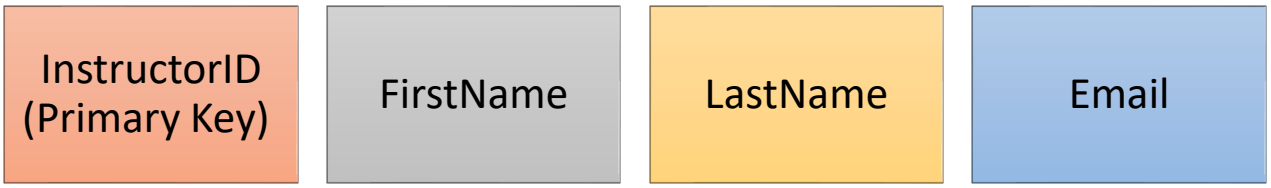
```
mysql> desc student;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| studentID   | int         | NO   | PRI | NULL    |       |
| firstName   | varchar(30) | YES  |     | NULL    |       |
| lastName    | varchar(30) | YES  |     | NULL    |       |
| dateOfBirth | date        | YES  |     | NULL    |       |
| gender      | varchar(10) | YES  |     | NULL    |       |
| email       | varchar(30) | YES  |     | NULL    |       |
| phone       | varchar(30) | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
7 rows in set (0.00 sec)
```

c. Create a table with name **Course** with attributes:

Solution:
CREATE TABLE course (CourseID INT PRIMARY KEY, CourseTitle VARCHAR(30), Credits INT);
Output:

```
mysql> desc course;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| CourseID    | int         | NO   | PRI | NULL    |       |
| CourseTitle | varchar(30) | YES  |     | NULL    |       |
| Credits     | int         | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

d. Create a table with named **Instructor** with attributes:



Solution:

CREATE TABLE instructor (InstructorID INT PRIMARY KEY, firstName VARCHAR(30), lastName VARCHAR(30), email VARCHAR(30));

Output:

```
mysql> desc instructor;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| InstructorID | int         | NO   | PRI | NULL    |       |
| firstName    | varchar(30) | YES  |     | NULL    |       |
| lastName     | varchar(30) | YES  |     | NULL    |       |
| email        | varchar(30) | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

e. Create a table with named **Enrollment** with attributes:

Solution:

```
mysql> create table Enrollment(EnrollmentID int primary key, EnrollmentDate date, Stu
dentID int, CourseID int, InstructorID int, constraint fk_es foreign key(StudentID) r
eferences Student(studentID), constraint fk_ec foreign key(CourseID) references cours
e(CourseID), constraint fk_ei foreign key(InstructorID) references instructor(Instruc
torID));
```

Output:

```
mysql> desc Enrollment;
+---------------+------+------+-----+---------+-------+
| Field         | Type | Null | Key | Default | Extra |
+---------------+------+------+-----+---------+-------+
| EnrollmentID  | int  | NO   | PRI | NULL    |       |
| EnrollmentDate| date | YES  |     | NULL    |       |
| StudentID     | int  | YES  | MUL | NULL    |       |
| CourseID      | int  | YES  | MUL | NULL    |       |
| InstructorID  | int  | YES  | MUL | NULL    |       |
+---------------+------+------+-----+---------+-------+
5 rows in set (0.01 sec)
```

f. Create a table with named **Score** with attributes:

ScoreID (Primary Key)	CourseID (Foreign key)	StudentID (Foreign Key)	DateOfExam	CreditObtained

Solution:

```
mysql> create table Score(ScoreID int primary key, CourseID int, StudentID int, dateO
fExam date, creditObtained int, constraint fk_sc foreign key(CourseID) references cou
rse(CourseID), constraint fk_scst foreign key(StudentID) references student(studentID
));
Query OK, 0 rows affected (0.10 sec)
```

Output:

```
mysql> desc score;
+----------------+------+------+-----+---------+-------+
| Field          | Type | Null | Key | Default | Extra |
+----------------+------+------+-----+---------+-------+
| ScoreID        | int  | NO   | PRI | NULL    |       |
| CourseID       | int  | YES  | MUL | NULL    |       |
| StudentID      | int  | YES  | MUL | NULL    |       |
| dateOfExam     | date | YES  |     | NULL    |       |
| creditObtained | int  | YES  |     | NULL    |       |
+----------------+------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

g. Create a table with named Feedback with attributes:

FeedbackID (Primary Key)	StudentID (Foreign key)	Date	InstructorName	Feedback

Solution:

```
mysql> create table Feedback(FeedbackID int primary key, StudentID int, Date date, In
structorName varchar(30), Feedback varchar(100), constraint fk_fs forei
gn key(StudentID) references student(studentID));
Query OK, 0 rows affected (0.06 sec)
```

Output:

```
mysql> desc feedback;
+----------------+--------------+------+-----+---------+-------+
| Field          | Type         | Null | Key | Default | Extra |
+----------------+--------------+------+-----+---------+-------+
| FeedbackID     | int          | NO   | PRI | NULL    |       |
| StudentID      | int          | YES  | MUL | NULL    |       |
| Date           | date         | YES  |     | NULL    |       |
| InstructorName | varchar(30)  | YES  |     | NULL    |       |
| Feedback       | varchar(100) | YES  |     | NULL    |       |
+----------------+--------------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

Entity-Relationship Diagram for this database