

**21CS8056**  
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## **DBMS Lab**

### **Lab 1**

#### ***University database:***

*A student is described by a unique Roll Number, Name Address, and Semester. Each student enrolls himself in an Academic programme offered by a Department. Academic programmes have programme name(unique), duration, a programme code(unique) and a list of courses (both core and elective course) while the departments have department code (unique), department name (unique), HoD who is a Teacher and list of courses offered by it. Each teacher is described by employee code (unique), name, department and designation. A student registers some courses in a semester. A course is described by a unique course number, title of the course, credit allotted for the course and offering department. Database stores the grades obtained by different students in different courses registered by him/her in different semesters. Database also stores information about the courses offered by a department in a semester, the corresponding teacher(s) for each course.*

***Make appropriate tables for the above database***

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=>

#### **1. Creating user database from root user account:**

- a. `sudo mysql -u root -p`
- b. `create user 's056' @'localhost' identified by 's056';`

- c. create database d056;
- d. grant all privileges on d056.\* to 's056'@'localhost';

## 2. Accessing create database from the other user account:

**Logging with username and password and using the user database.**

```
=====
```

```
student@nitcse-OptiPlex-7000:~$ mysql -u s056 -p
```

Enter password:

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 14

Server version: 8.0.32-0ubuntu0.22.04.2 (Ubuntu)

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

```
mysql> use d056;
```

Database changed

```
mysql> show tables;
```

Empty set (0.00 sec)

```
=====
```

**As per the given info, the relational schema is shown below:**

student( **roll no**, student name, address, semester)

programme ( *programme name*, duration, **programme code**, core courses, elective courses)

department ( **department code**, *dept name* ,HOD {teacher})

teacher(**employee code**, teacher name, department code, designation)

Couse ( **course no**, tittle, credit, department code)

**Bold** are **primary key** and *italics* are *unique key*

**Required relations:**

Department - programme (1-m)

Student - programme ( m-1)

Student - courses (m-m)

Department - courses ( 1-m)

Total 5 tables are required.

```
=====
```

```
mysql> create table department (dcode int not null, dname
varchar(255) not null, hod int not null, primary key (dcode),
unique(dname));
```

Query OK, 0 rows affected (1.48 sec)

```
mysql> show tables;
```

```
+-----+
| Tables_in_d056 |
+-----+
| department     |
+-----+
1 row in set (0.00 sec)
```

```
mysql> describe department;
```

```
+-----+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| dcode | int       | NO   | PRI | NULL    |       |
| dname | varchar(255) | NO   | UNI | NULL    |       |
```

hod	int	NO	NULL

3 rows in set (0.09 sec)

```
mysql> create table course ( coursenum int not null, tittle
varchar(100) not null, credit int, dcode int, primary key(
coursenum) , foreign key ( dcode) references
department(dcode));
```

Query OK, 0 rows affected (0.84 sec)

```
mysql> show tables;
```

Tables_in_d056
course
department

2 rows in set (0.00 sec)

```
mysql> describe course;
```

Field	Type	Null	Key	Default	Extra
coursenum	int	NO	PRI	NULL	
tittle	varchar(100)	NO		NULL	
credit	int	YES		NULL	
dcode	int	YES	MUL	NULL	

4 rows in set (0.00 sec)

```
mysql> create table programme ( pname varchar(255) not null ,
pcode int not null, duration int not null, corecourses int,
eleccourses int, dcode int not null, primary key(pcode),
unique(pname), foreign key(dcode) references
department(dcode));
```

Query OK, 0 rows affected (0.80 sec)y(dcode) references  
department(dcode));

```
mysql> show tables;
```

```
+-----+
| Tables_in_d056 |
+-----+
| course          |
| department      |
| programme       |
+-----+
3 rows in set (0.00 sec)
```

```
mysql> describe programme;
```

```
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| pname      | varchar(255) | NO   | UNI | NULL    |      |
| pcode      | int         | NO   | PRI | NULL    |      |
| duration   | int         | NO   |     | NULL    |      |
| corecourses | int         | YES  |     | NULL    |      |
| eleccourses | int         | YES  |     | NULL    |      |
| dcode      | int         | NO   | MUL | NULL    |      |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

```
mysql> create table student ( rollno varchar(255) not null, sname
varchar(1024) not null, address varchar(2000), semester int not
```

**null, pcode int not null, primary key(rollno), foreign key(pcode) references programme(pcode));**

Query OK, 0 rows affected (1.47 sec)

mysql> show tables;

```
+-----+
| Tables_in_d056 |
+-----+
| course          |
| department      |
| programme       |
| student         |
+-----+
```

4 rows in set (0.01 sec)

mysql> **create table teacher (empcode int not null, tname varchar(1023), dcode int not null, designation varchar(255), primary key(empcode), foreign key(dcode) references department (dcode));**

Query OK, 0 rows affected (0.75 sec)

mysql> show tables;

```
+-----+
| Tables_in_d056 |
+-----+
| course          |
| department      |
| programme       |
| student         |
| teacher         |
+-----+
```

+-----+

5 rows in set (0.00 sec)

mysql> describe student;

Field	Type	Null	Key	Default	Extra
rollno	varchar(255)	NO	PRI	NULL	
sname	varchar(1024)	NO		NULL	
address	varchar(2000)	YES		NULL	
semester	int	NO		NULL	
pcode	int	NO	MUL	NULL	

5 rows in set (0.00 sec)

mysql> describe teacher;

Field	Type	Null	Key	Default	Extra
empcode	int	NO	PRI	NULL	
tname	varchar(1023)	YES		NULL	
dcode	int	NO	MUL	NULL	
designation	varchar(255)	YES		NULL	

4 rows in set (0.01 sec)

mysql>