

**MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION**

**GOVERNMENT POLYTECHNIC, AWASARI (KH)**

**TAL-AMBEGAON, DIST – PUNE – 412405**

**ACADEMIC YEAR : 2021-22**

- **COURSE NAME : Database Management**
- **COURSE CODE : 22416**
- **BRANCH : INFORMATION TECHNOLOGY (SY)**
- **TOPIC NAME : Develop Database for College Management System**

**DETAILS OF TEAM MEMBERS:-**

SR. NO.	NAMES OF GROUP MEMBERS	ROLL NO.	ENROLLMENT NO.
1	GHONGE KARISHMA RAJARAM	20IF213	2010510360
2	GITE AKSHAY SANGRAM	20IF214	2010510361
3	HULE GAYATRI KERBHAU	20IF215	2010510362
4	HULE SANIKA RAJENDRA	20IF216	2010510363
5	JADHAV KISHOR HARI	20IF217	2010510364
6	JADHAV PRANAV TANAJI	20IF218	2010510365

**GUIDANCE BY :**

**SMT. S.D.RAUT**

**GROUP LEADER :**

**AKSHAY GITE.**

## PART A – A MICRO PROJECT PROPOSAL

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### **Aims / benefits of micro-project :**

➤ **Aim:** Develop Database for College Management System

➤ **Benefits:**

- First we understand concept of MySQL very well.
- We learn how to run Queries.
- We learn how to create Databases and Tables .
- We learn how to insert Records and Retrieve Them.

➤ **Course Outcomes (COs) : -**

**CO1:** Create Database using SQL commands.

**CO2:** Manage Database using SQL commands .

**CO3:** Implement Advanced SQL Concepts on Database.

➤ **Proposed Methodology: -**

- First we select the **Develop Database for College Management System** with the help of Teacher.
- Then we will install MySQL and learn to access it using command prompt.
- We will discuss how to cover maximum Cos in our project.
- Then we will start creating Database and Tables.
- We will insert Data/Records in tables.
- Then we will create Part B of our project in soft copy then Print hard copy and submit it in college.

➤ **Action Plan: -**

<b>Sr. No.</b>	<b>details of activity</b>	<b>planned start date</b>	<b>Planned Finished date</b>	<b>Responsible Name of members</b>
<b>1</b>	<b>Group formation and allocation of Micro project title</b>			<b>All team members</b>
<b>2</b>	<b>Information search and required analysis.</b>			<b>All team members</b>
<b>3</b>	<b>Actual project / assembly project</b>			<b>All team members</b>
<b>4</b>	<b>Testing of project</b>			<b>All team Members</b>
<b>5</b>	<b>Acquire the printout and submit it.</b>			<b>All team members</b>
<b>6</b>	<b>Submission of project.</b>			<b>All team members</b>

➤ **Resources Required: -**

<b>Sr.no.</b>	<b>Name of Resource</b>	<b>Specification</b>	<b>Qty.</b>	<b>Remarks</b>
1	Software	MySQL Server, Command Prompt, Microsoft word	-	
2	Websites	w3schools , tutorialspoint , javatpoint	-	

Date :-     /     /

**TEACHER**  
**(Smt. S.D.Raut)**

**PRINCIPAL**  
**(DR. D.R. NANDANWAR)**

**H.O.D**  
**(DR. D.N.REWADKAR)**

**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**GOVERNMENT POLYTECHNIC AWASARI (KHURD)**



**SEMESTER —IV (2021-22)**  
**CERTIFICATE**

This is to certify the following students of semester Fourth of Diploma in Information Technology of Institute : Government polytechnic, Awasari (kh) ( code : 1051 ) has completed the micro project satisfactorily in subject- Database Management (**22416**) for the academic year 2021-22 as prescribed in the curriculum.

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4	HULE SANIKA RAJENDRA	20IF216	2010510363
5	JADHAV KISHOR HARI	20IF217	2010510364
6	JADHAV PRANAV TANAJI	20IF218	2010510365

**TEACHER**  
(Smt. S.D.Raut)

**PRINCIPAL**  
(DR. D.R. NANDANWAR)

**H.O.D**  
(DR.D.N.REWADKAR)

## PART B - Micro Project Report

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➤ **Aim:** Develop Database for College Management System

➤ **Rationale :-**

In today's world every device needs to store data. For that purpose we rely on many database servers but one of the most easy and oldest is MySQL.

MySQL is an **open-source relational database management system**. As with other relational databases, MySQL stores data in tables made up of rows and columns. Users can define, manipulate, control, and query data using Structured Query Language, more commonly known as SQL.

➤ **Course Outcomes (COs) :-**

**CO1:** Create Database using SQL commands.

**CO2:** Manage Database using SQL commands .

**CO3:** Implement Advanced SQL Concepts on Database.

➤ **Actual Methodology followed :-**

- First we selected the topic **Develop Database for College Management System** with the help of Teacher.
- Then we installed MySQL and learned to access it using command prompt.
- We discussed about how to cover maximum Cos in our project.
- Then we created Database and Tables.
- We inserted Data/Records in tables.
- Then we created Part B of our project in soft copy then Print hard copy and submitted it in college.

➤ **Actual Resources Required: -**

Sr.no.	Name of Resource	Specification	Qty.	Remarks
1	Software	MySQL Server, Command Prompt, Microsoft word	-	
2	Websites	w3schools , tutorialspoint , javatpoint	-	

➤ **Skill developed/ learned out of this project:**

- We are understood main concept and importance of MySQL
- We are able to make a project with a team.
- We are understood how to manage database.



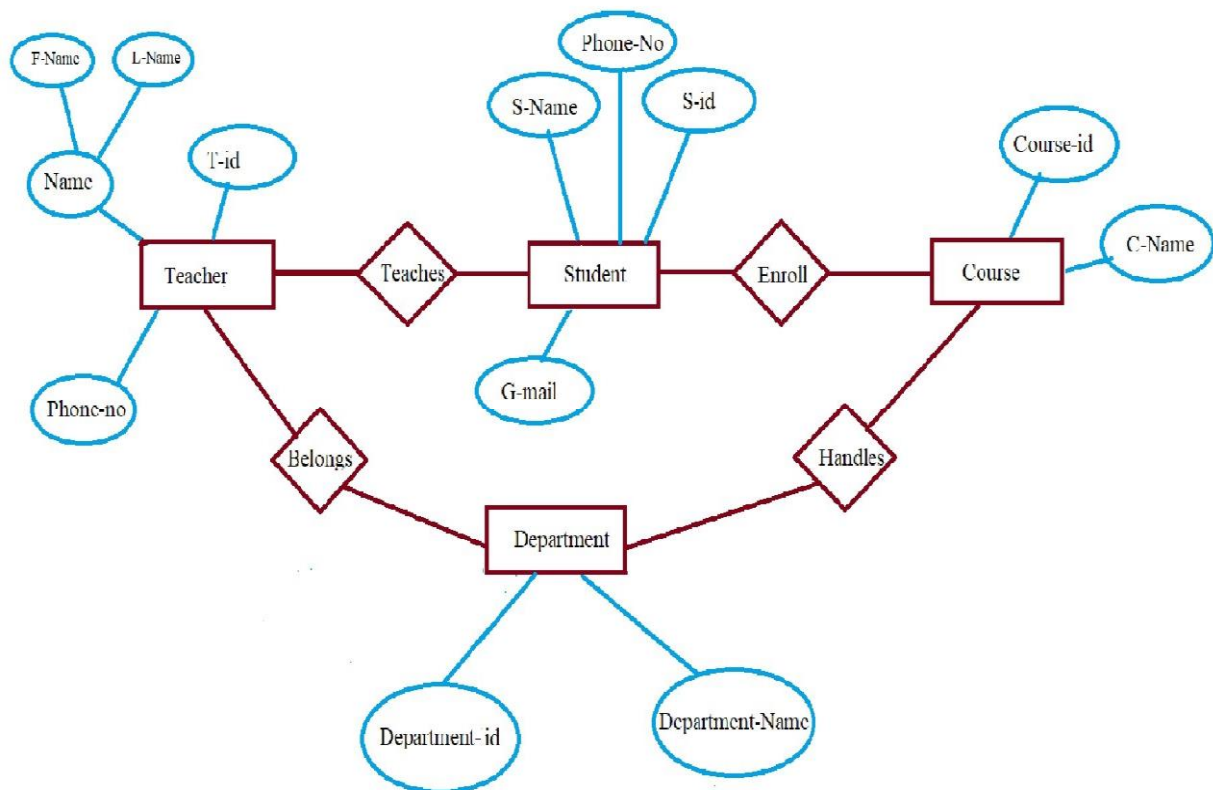
# • **Index**

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## ➤ Introduction to MySQL

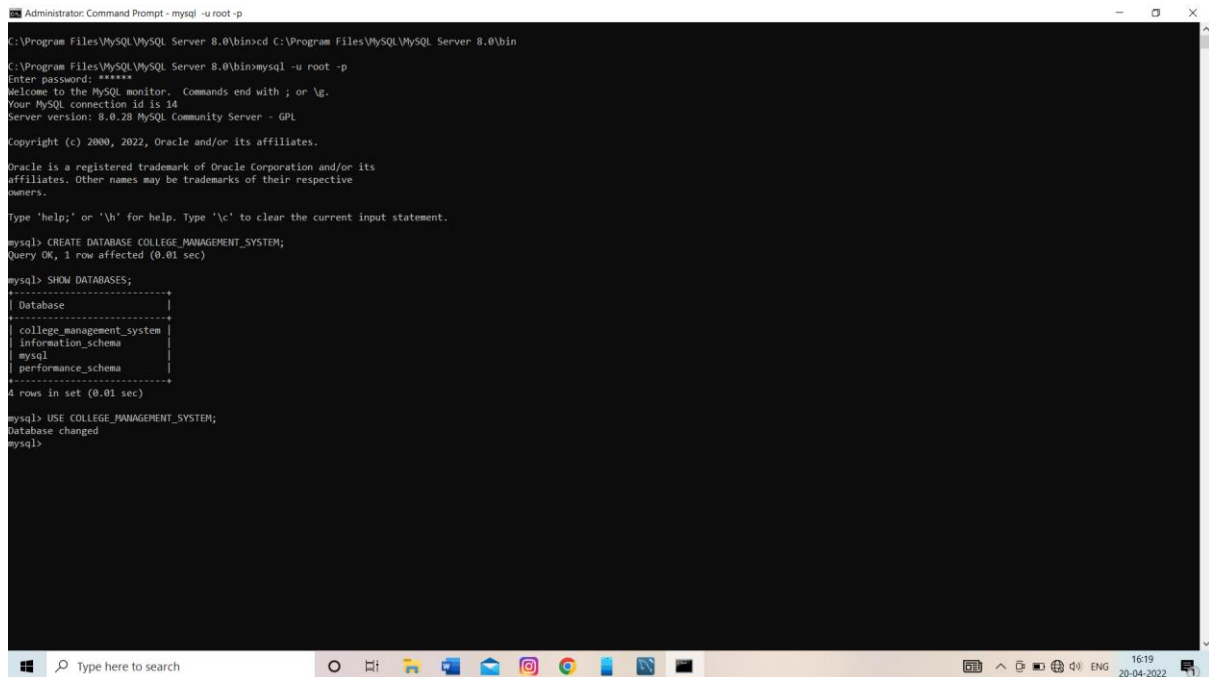
- MySQL is a database system used for developing web-based software applications.
- MySQL used for both small and large applications.
- MySQL is a relational database management system (RDBMS).
- MySQL is fast, reliable, and flexible and easy to use.
- MySQL supports standard SQL (Structured Query Language).
- MySQL is free to download and use.
- MySQL was developed by Michael Widenius and David Axmark in 1994.
- MySQL is presently developed, distributed, and supported by Oracle Corporation.

## ➤ E-R Diagram for College Management System



## ➤ Based on the E-R Model We can create a New Database.

- **CREATE DATABASE COLLEGE\_MANAGEMENT\_DATABASE;**



```
Administrator: Command Prompt - mysql -u root -p
C:\Program Files\MySQL\MySQL Server 8.0\bin>cd C:\Program Files\MySQL\MySQL Server 8.0\bin
C:\Program Files\MySQL\MySQL Server 8.0\bin>mysql -u root -p
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 14
Server version: 8.0.28 MySQL Community Server - GPL

Copyright (c) 2000, 2022, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

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

mysql> CREATE DATABASE COLLEGE_MANAGEMENT_SYSTEM;
Query OK, 1 row affected (0.01 sec)

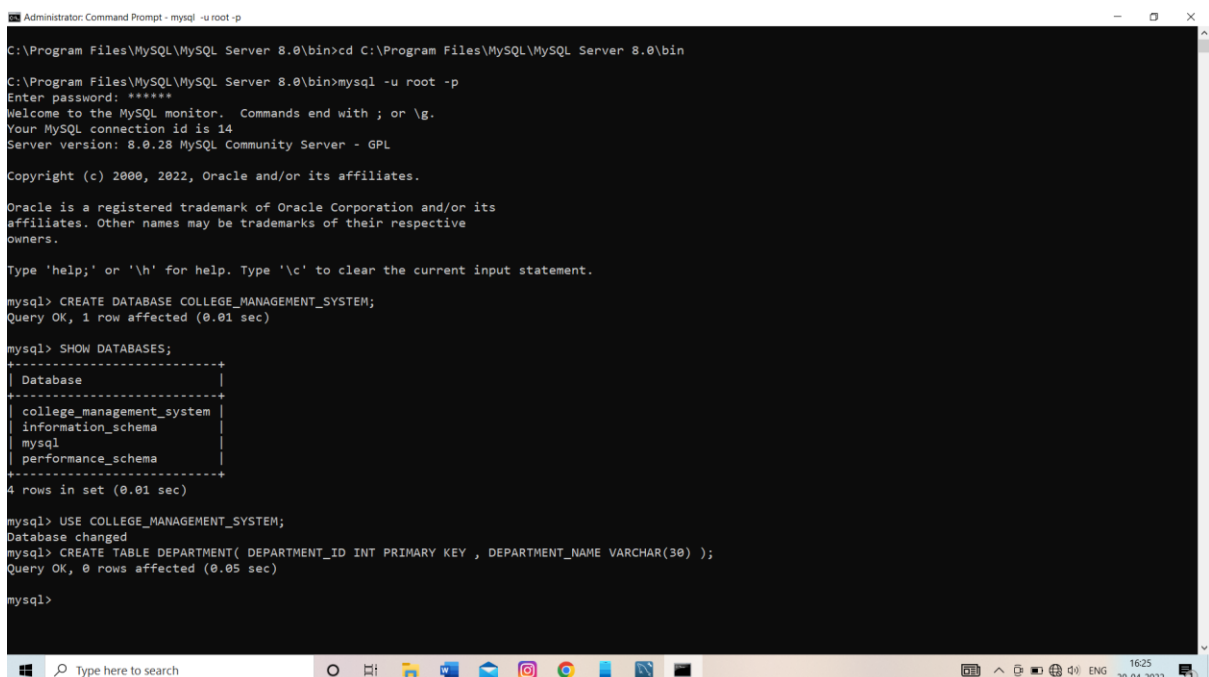
mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| college_management_system |
| information_schema |
| mysql |
| performance_schema |
+-----+
4 rows in set (0.01 sec)

mysql> USE COLLEGE_MANAGEMENT_SYSTEM;
Database changed
mysql>
```

## ➤ Creating Tables

### o Table – 1: Department

- Create two columns in the Department table as Department\_ID and Department\_name, Apply Primary key on Department\_ID column and Insert records



```
Administrator: Command Prompt - mysql -u root -p
C:\Program Files\MySQL\MySQL Server 8.0\bin>cd C:\Program Files\MySQL\MySQL Server 8.0\bin
C:\Program Files\MySQL\MySQL Server 8.0\bin>mysql -u root -p
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 14
Server version: 8.0.28 MySQL Community Server - GPL

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affiliates. Other names may be trademarks of their respective
owners.

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

mysql> CREATE DATABASE COLLEGE_MANAGEMENT_SYSTEM;
Query OK, 1 row affected (0.01 sec)

mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| college_management_system |
| information_schema |
| mysql |
| performance_schema |
+-----+
4 rows in set (0.01 sec)

mysql> USE COLLEGE_MANAGEMENT_SYSTEM;
Database changed
mysql> CREATE TABLE DEPARTMENT( DEPARTMENT_ID INT PRIMARY KEY , DEPARTMENT_NAME VARCHAR(30) );
Query OK, 0 rows affected (0.05 sec)

mysql>
```

- Verifying if Table is Created or Not

```
Administrator: Command Prompt - mysql -u root -p
mysql> USE COLLEGE_MANAGEMENT_SYSTEM;
Database changed
mysql> SHOW TABLES;
+-----+
| Tables_in_college_management_system |
+-----+
| department |
+-----+
1 row in set (0.02 sec)

mysql>
```

- Inserting Data Into Table

```
Administrator: Command Prompt - mysql -u root -p
mysql> INSERT INTO DEPARTMENT VALUES (1,'INFORMATION TECHNOLOGY'),(2,'MECHANICAL'),(3,'ELECTRICAL'),(4,'CIVIL'),(5,'AUTOMOBILE');
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM DEPARTMENT;
+-----+
| DEPARTMENT_ID | DEPARTMENT_NAME |
+-----+
| 1 | INFORMATION TECHNOLOGY |
| 2 | MECHANICAL |
| 3 | ELECTRICAL |
| 4 | CIVIL |
| 5 | AUTOMOBILE |
+-----+
5 rows in set (0.00 sec)

mysql>
```

## o Table – 2: Course

- Create two columns in Course table as Course\_ID, Course\_Name. Apply Primary Key on Course\_ID column and Insert Record.

- Creating Table and Inserting Data/Records

```
Administrator: Command Prompt - mysql -u root -p
mysql> CREATE TABLE COURSE(COURSE_ID INT PRIMARY KEY ,COURSE_NAME VARCHAR(50));
Query OK, 0 rows affected (0.02 sec)

mysql> INSERT INTO COURSE VALUES(22412,'JAVA PROGRAMMING');
Query OK, 1 row affected (0.02 sec)

mysql> INSERT INTO COURSE VALUES(22413,'SOFTWARE ENGINEERING');
Query OK, 1 row affected (0.00 sec)

mysql> INSERT INTO COURSE VALUES(22416,'DATABASE MANAGEMENT');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO COURSE VALUES(22417,'COMPUTER NETWORK');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO COURSE VALUES(22034,'GUI APPLICATION DEVELOPMENT USING VB.NET');
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM COURSE;
+-----+-----+
| COURSE_ID | COURSE_NAME |
+-----+-----+
| 22034 | GUI APPLICATION DEVELOPMENT USING VB.NET |
| 22412 | JAVA PROGRAMMING |
| 22413 | SOFTWARE ENGINEERING |
| 22416 | DATABASE MANAGEMENT |
| 22417 | COMPUTER NETWORK |
+-----+-----+
5 rows in set (0.00 sec)

mysql>
```

### o Table – 3 : Teacher

- Create Four column in Teacher table as Teacher\_ID,Teacher\_Name. Apply Primary Key on Teacher\_ID column and Insert record.

- Creating Table and Inserting Data/Records

```
Administrator: Command Prompt - mysql -u root -p
mysql> CREATE TABLE TEACHER (TEACHER_ID INT PRIMARY KEY , FIRST_NAME VARCHAR(30) , LAST_NAME VARCHAR(30), PHONE_NO INT , COURSE_ID INT UNIQUE KEY);
Query OK, 0 rows affected (0.04 sec)

mysql> INSERT INTO TEACHER VALUES(123,'SNEHA','RAUT',1234567890,22416);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO TEACHER VALUES(456,'SHEETAL','SUTAR',654321670,22417);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO TEACHER VALUES(789,'JYOTI','DABHADE',755544332,22034);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO TEACHER VALUES(211,'PRIYANKA','GHODE',755542132,22412);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO TEACHER VALUES(191,'POONAM','FAFAT',723542332,22413);
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM TEACHER;
+-----+-----+-----+-----+-----+
| TEACHER_ID | FIRST_NAME | LAST_NAME | PHONE_NO | COURSE_ID |
+-----+-----+-----+-----+-----+
| 123 | SNEHA | RAUT | 1234567890 | 22416 |
| 191 | POONAM | FAFAT | 723542332 | 22413 |
| 211 | PRIYANKA | GHODE | 755542132 | 22412 |
| 456 | SHEETAL | SUTAR | 654321670 | 22417 |
| 789 | JYOTI | DABHADE | 755544332 | 22034 |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql>
```

## ○ Table – 4: Student

- Create Four column in Student table as Student\_ID, Student\_Name, Gmail\_ID, Phone\_No. Apply Primary Key on Student\_ID column and Insert records.

- Creating Table and Inserting Data/Records

```
Administrator: Command Prompt - mysql -u root -p

mysql> CREATE TABLE STUDENT(STUDENT_ID INT PRIMARY KEY,FIRST_NAME VARCHAR(30),LAST_NAME VARCHAR(30),GMAIL_ID VARCHAR(50),PHONE_NO INT);
Query OK, 0 rows affected (0.03 sec)

mysql> INSERT INTO STUDENT VALUES(13,'KARISHMA','GHONGE','KARISHMAGHONGE111@GMAIL.COM',1333671890);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO STUDENT VALUES(14,'AKSHAY','GITE','AKSHAYGITE2004@GMAIL.COM',1003671890);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO STUDENT VALUES(15,'GAYATRI','HULE','GAYATRIHULE01@GMAIL.COM',1003991890);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO STUDENT VALUES(16,'SANIKA','HULE','SANIKAHULE0121@GMAIL.COM',1003999990);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO STUDENT VALUES(17,'KISHOR','JADHAV','KISHORJADHAV22@GMAIL.COM',1123988990);
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO STUDENT VALUES(18,'PRANAV','JADHAV','PRANAVJADHAV16@GMAIL.COM',1448832679);
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM STUDENT;
+-----+-----+-----+-----+-----+
| STUDENT_ID | FIRST_NAME | LAST_NAME | GMAIL_ID | PHONE_NO |
+-----+-----+-----+-----+-----+
| 13 | KARISHMA | GHONGE | KARISHMAGHONGE111@GMAIL.COM | 1333671890 |
| 14 | AKSHAY | GITE | AKSHAYGITE2004@GMAIL.COM | 1003671890 |
| 15 | GAYATRI | HULE | GAYATRIHULE01@GMAIL.COM | 1003991890 |
| 16 | SANIKA | HULE | SANIKAHULE0121@GMAIL.COM | 1003999990 |
| 17 | KISHOR | JADHAV | KISHORJADHAV22@GMAIL.COM | 1123988990 |
| 18 | PRANAV | JADHAV | PRANAVJADHAV16@GMAIL.COM | 1448832679 |
+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)

mysql>
```

## ➤ Foreign Key

- COURSE TO TEACHER

```
Administrator: Command Prompt - mysql -u root -p
mysql> ALTER TABLE COURSE
  -> ADD CONSTRAINT FKEY_COURSETEACHER
  -> FOREIGN KEY (COURSE_ID)
  -> REFERENCES TEACHER(COURSE_ID);
Query OK, 5 rows affected (0.07 sec)
Records: 5 Duplicates: 0 Warnings: 0
mysql>
```


## ➤ Tables In Database

```
Administrator: Command Prompt - mysql -u root -p
mysql> SHOW TABLES;
+-----+
| Tables_in_college_management_system |
+-----+
| course                               |
| department                           |
| student                              |
| teacher                              |
+-----+
4 rows in set (0.00 sec)
mysql>
```




## ➤ All Table Views

- DEPARTMENT

 Administrator: Command Prompt - mysql -u root -p

```
mysql> SELECT * FROM DEPARTMENT;
+-----+-----+
| DEPARTMENT_ID | DEPARTMENT_NAME |
+-----+-----+
|          1    | INFORMATION TECHNOLOGY |
|          2    | MECHANICAL |
|          3    | ELECTRICAL |
|          4    | CIVIL |
|          5    | AUTOMOBILE |
+-----+-----+
5 rows in set (0.01 sec)
```

- COURSE

 Administrator: Command Prompt - mysql -u root -p

```
mysql> SELECT * FROM COURSE;
+-----+-----+
| COURSE_ID | COURSE_NAME |
+-----+-----+
|      22034 | GUI APPLICATION DEVELOPMENT USING VB.NET |
|      22412 | JAVA PROGRAMMING |
|      22413 | SOFTWARE ENGINEERING |
|      22416 | DATABASE MANAGEMENT |
|      22417 | COMPUTER NETWORK |
+-----+-----+
5 rows in set (0.00 sec)
```

- **TEACHER**

Administrator: Command Prompt - mysql -u root -p

```
mysql> SELECT * FROM TEACHER;
```

TEACHER_ID	FIRST_NAME	LAST_NAME	PHONE_NO	COURSE_ID
123	SNEHA	RAUT	1234567890	22416
191	POONAM	FAFAT	723542332	22413
211	PRIYANKA	GHODE	755542132	22412
456	SHEETAL	SUTAR	654321670	22417
789	JYOTI	DABHADE	755544332	22034

```
5 rows in set (0.01 sec)
```

- **STUDENT**

Administrator: Command Prompt - mysql -u root -p

```
mysql> SELECT * FROM STUDENT;
```

STUDENT_ID	FIRST_NAME	LAST_NAME	GMAIL_ID	PHONE_NO
13	KARISHMA	GHONGE	KARISHMAGHONGE111@GMAIL.COM	1333671890
14	AKSHAY	GITE	AKSHAYGITE2004@GMAIL.COM	1003671890
15	GAYATRI	HULE	GAYATRIHULE01@GMAIL.COM	1003991890
16	SANIKA	HULE	SANIKAHULE0121@GMAIL.COM	1003999990
17	KISHOR	JADHAV	KISHORJADHAV22@GMAIL.COM	1123988990
18	PRANAV	JADHAV	PRANAVJADHAV16@GMAIL.COM	1448832679

```
6 rows in set (0.01 sec)
```

## ➤ All Tables Schemas (DESC)

- DEPARTMENT

```
Administrator: Command Prompt - mysql -u root -p
mysql> DESC DEPARTMENT;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| DEPARTMENT_ID | int       | NO   | PRI | NULL    |       |
| DEPARTMENT_NAME | varchar(30) | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql>
```

- COURSE

```
Administrator: Command Prompt - mysql -u root -p
mysql> DESC COURSE;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| COURSE_ID   | int       | NO   | PRI | NULL    |       |
| COURSE_NAME | varchar(50) | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.01 sec)

mysql>
```

- TEACHER

```
Administrator: Command Prompt - mysql -u root -p
mysql> DESC TEACHER;
+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+
| TEACHER_ID | int           | NO   | PRI | NULL    |       |
| FIRST_NAME  | varchar(30)   | YES  |     | NULL    |       |
| LAST_NAME   | varchar(30)   | YES  |     | NULL    |       |
| PHONE_NO    | int           | YES  |     | NULL    |       |
| COURSE_ID   | int           | YES  |     | NULL    |       |
+-----+
5 rows in set (0.00 sec)

mysql>
```

- STUDENT

```
Administrator: Command Prompt - mysql -u root -p
mysql> DESC STUDENT;
+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+
| STUDENT_ID | int           | NO   | PRI | NULL    |       |
| FIRST_NAME  | varchar(30)   | YES  |     | NULL    |       |
| LAST_NAME   | varchar(30)   | YES  |     | NULL    |       |
| EMAIL_ID    | varchar(50)   | YES  |     | NULL    |       |
| PHONE_NO    | int           | YES  |     | NULL    |       |
+-----+
5 rows in set (0.00 sec)

mysql>
```

## ➤ Join Operations

```
C:\Windows\System32\cmd.exe - mysql -u root -p
mysql> SELECT * FROM TEACHER
-> INNER JOIN
-> COURSE
-> ON TEACHER.COURSE_ID=COURSE.COURSE_ID;
```

TEACHER_ID	FIRST_NAME	LAST_NAME	PHONE_NO	COURSE_ID	COURSE_ID	COURSE_NAME
789	JYOTI	DABHADE	755544332	22034	22034	GUI APPLICATION DEVELOPMENT USING VB.NET
211	PRIYANKA	GHODE	755542132	22412	22412	JAVA PROGRAMMING
191	POONAM	FAFAT	723542332	22413	22413	SOFTWARE ENGINEERING
123	SNEHA	RAUT	1234567890	22416	22416	DATABASE MANAGEMENT
456	SHEETAL	SUTAR	654321670	22417	22417	COMPUTER NETWORK

5 rows in set (0.00 sec)

```
mysql> SELECT * FROM TEACHER
-> LEFT OUTER JOIN
-> COURSE
-> ON TEACHER.COURSE_ID=COURSE.COURSE_ID;
```

TEACHER_ID	FIRST_NAME	LAST_NAME	PHONE_NO	COURSE_ID	COURSE_ID	COURSE_NAME
123	SNEHA	RAUT	1234567890	22416	22416	DATABASE MANAGEMENT
191	POONAM	FAFAT	723542332	22413	22413	SOFTWARE ENGINEERING
211	PRIYANKA	GHODE	755542132	22412	22412	JAVA PROGRAMMING
456	SHEETAL	SUTAR	654321670	22417	22417	COMPUTER NETWORK
789	JYOTI	DABHADE	755544332	22034	22034	GUI APPLICATION DEVELOPMENT USING VB.NET
821	YOGESH	BODHE	1233333333	NULL	NULL	NULL

6 rows in set (0.00 sec)

```
mysql> SELECT * FROM TEACHER
-> RIGHT OUTER JOIN
-> COURSE
-> ON TEACHER.COURSE_ID=COURSE.COURSE_ID;
```

TEACHER_ID	FIRST_NAME	LAST_NAME	PHONE_NO	COURSE_ID	COURSE_ID	COURSE_NAME
789	JYOTI	DABHADE	755544332	22034	22034	GUI APPLICATION DEVELOPMENT USING VB.NET
211	PRIYANKA	GHODE	755542132	22412	22412	JAVA PROGRAMMING
191	POONAM	FAFAT	723542332	22413	22413	SOFTWARE ENGINEERING
123	SNEHA	RAUT	1234567890	22416	22416	DATABASE MANAGEMENT
456	SHEETAL	SUTAR	654321670	22417	22417	COMPUTER NETWORK

5 rows in set (0.00 sec)

## ➤ Creating View

```
C:\Windows\System32\cmd.exe - mysql -u root -p
mysql> SELECT * FROM TEACHER;
```

TEACHER_ID	FIRST_NAME	LAST_NAME	PHONE_NO	COURSE_ID
123	SNEHA	RAUT	1234567890	22416
191	POONAM	FAFAT	723542332	22413
211	PRIYANKA	GHODE	755542132	22412
456	SHEETAL	SUTAR	654321670	22417
789	JYOTI	DABHADE	755544332	22034
821	YOGESH	BODHE	1233333333	NULL

6 rows in set (0.00 sec)

```
mysql> CREATE VIEW TEACHING_STAFF AS
-> SELECT * FROM TEACHER
-> WHERE COURSE_ID IS NOT NULL;
Query OK, 0 rows affected (0.01 sec)

mysql> SELECT * FROM TEACHING_STAFF;
```

TEACHER_ID	FIRST_NAME	LAST_NAME	PHONE_NO	COURSE_ID
789	JYOTI	DABHADE	755544332	22034
211	PRIYANKA	GHODE	755542132	22412
191	POONAM	FAFAT	723542332	22413
123	SNEHA	RAUT	1234567890	22416
456	SHEETAL	SUTAR	654321670	22417

5 rows in set (0.01 sec)

```
mysql>
```

## ➤ Creating Index

- We have created Composite Index

```
C:\Windows\System32\cmd.exe - mysql -u root -p
mysql> select * from department;
+-----+-----+
| DEPARTMENT_ID | DEPARTMENT_NAME |
+-----+-----+
| 1 | INFORMATION TECHNOLOGY |
| 2 | MECHANICAL |
| 3 | ELECTRICAL |
| 4 | CIVIL |
| 5 | AUTOMOBILE |
| 6 | ENTC |
+-----+-----+
6 rows in set (0.02 sec)

mysql> create index department_index
      -> on department(department_id,department_name);
Query OK, 0 rows affected (0.04 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> select * from department;
+-----+-----+
| DEPARTMENT_ID | DEPARTMENT_NAME |
+-----+-----+
| 1 | INFORMATION TECHNOLOGY |
| 2 | MECHANICAL |
| 3 | ELECTRICAL |
| 4 | CIVIL |
| 5 | AUTOMOBILE |
| 6 | ENTC |
+-----+-----+
6 rows in set (0.00 sec)

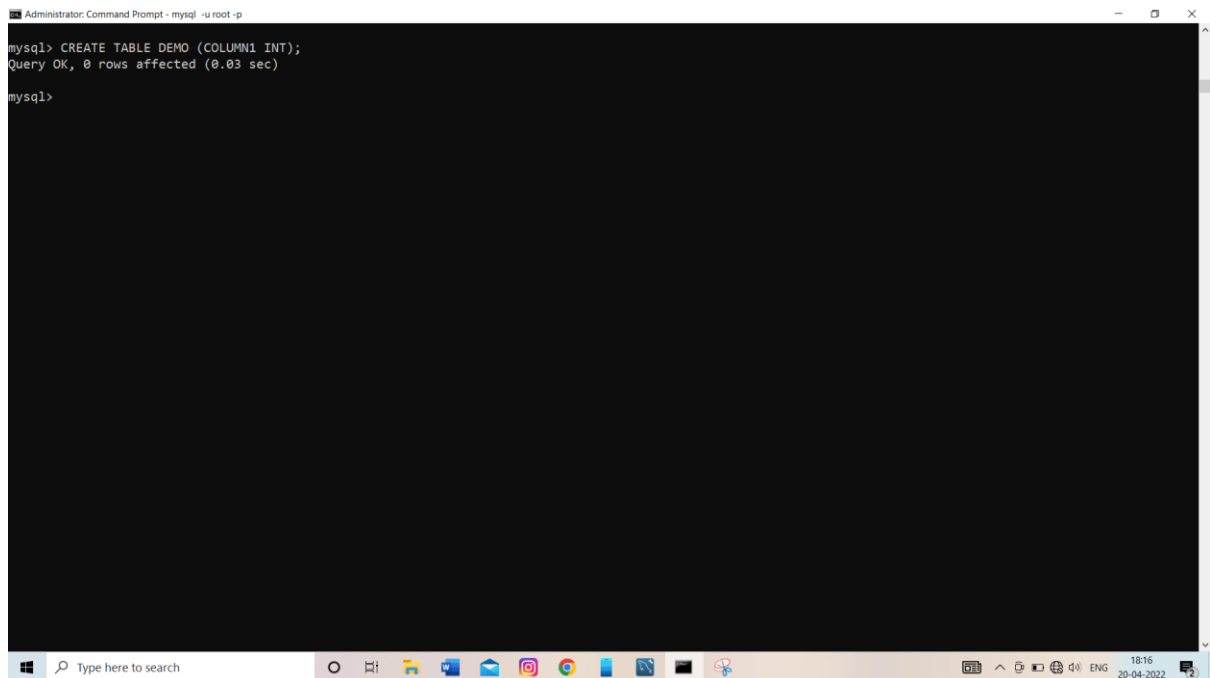
mysql>
```

## ➤ Commands

### ○ DDL - [ Data Definition Language ]

- DDL changes the structure of the table like creating a table, deleting a table, altering a table, etc.
- All the command of DDL are auto-committed that means it permanently save all the changes in the database.

#### ● CREATE TABLE



```
Administrator: Command Prompt - mysql -u root -p
mysql> CREATE TABLE DEMO (COLUMN1 INT);
Query OK, 0 rows affected (0.03 sec)

mysql>
```

The screenshot shows a Windows Command Prompt window titled "Administrator: Command Prompt - mysql -u root -p". The prompt is at the mysql> line. The user has entered the command "CREATE TABLE DEMO (COLUMN1 INT);". The output shows "Query OK, 0 rows affected (0.03 sec)". The prompt is now at the mysql> line again. The Windows taskbar is visible at the bottom, showing the search bar and various application icons. The system clock in the bottom right corner shows 18:16 on 20-04-2022.

## • ALTER

```
Administrator: Command Prompt - mysql -u root -p
mysql> CREATE TABLE DEMO (COLUMN1 INT);
Query OK, 0 rows affected (0.03 sec)

mysql> ALTER TABLE DEMO
    -> ADD COLUMN2 VARCHAR(30);
Query OK, 0 rows affected (0.02 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> ALTER TABLE DEMO
    -> MODIFY COLUMN2 VARCHAR(100);
ERROR 1054 (42S22): Unknown column 'COLUMN2' in 'demo'
mysql> DROP TABLE DEMO;
Query OK, 0 rows affected (0.03 sec)

mysql> CREATE TABLE DEMO (COLUMN1 INT);
Query OK, 0 rows affected (0.02 sec)

mysql> ALTER TABLE DEMO
    -> ADD COLUMN2 VARCHAR(30);
Query OK, 0 rows affected (0.03 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> ALTER TABLE DEMO
    -> MODIFY COLUMN2 VARCHAR(100);
Query OK, 0 rows affected (0.05 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> ALTER TABLE DEMO
    -> ADD COLUMN3 INT;
Query OK, 0 rows affected (0.02 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> ALTER TABLE DEMO
    -> DROP COLUMN COLUMN3;
Query OK, 0 rows affected (0.05 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM DEMO;
```

```
Administrator: Command Prompt - mysql -u root -p

mysql> SELECT * FROM DEMO;
Empty set (0.00 sec)

mysql> DESC DEMO;
+-----+
| Field | Type          | Null | Key | Default | Extra |
+-----+
| COLUMN1 | int           | YES  |     | NULL    |       |
| COLUMN2 | varchar(100)  | YES  |     | NULL    |       |
+-----+
2 rows in set (0.00 sec)

mysql>
```



- **TRUNCATE**

```
Administrator: Command Prompt - mysql -u root -p
mysql> INSERT INTO DEMO VALUES(111,'AAAAA');
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM DEMO;
+-----+-----+
| COLUMN1 | COLUMN2 |
+-----+-----+
|      111 | AAAAA   |
+-----+-----+
1 row in set (0.00 sec)

mysql> TRUNCATE DEMO;
Query OK, 0 rows affected (0.04 sec)

mysql> SELECT * FROM DEMO;
Empty set (0.01 sec)

mysql>
```

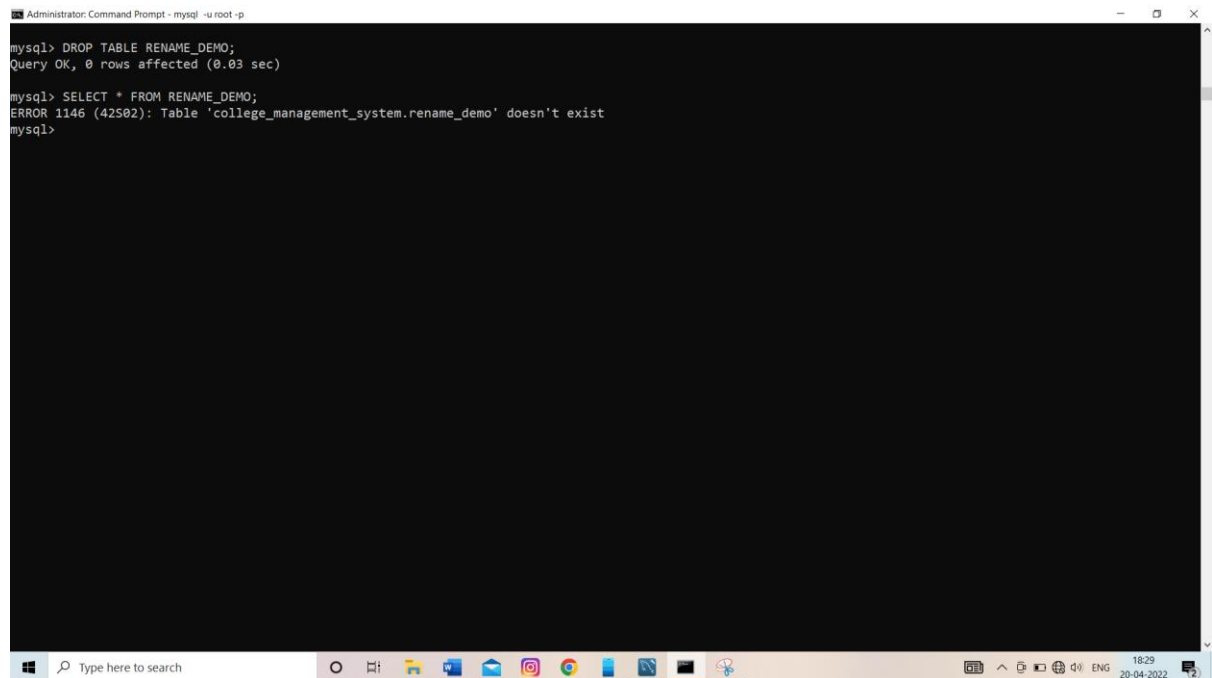
- **RENAME**

```
Administrator: Command Prompt - mysql -u root -p
mysql> RENAME TABLE DEMO TO RENAME_DEMO;
Query OK, 0 rows affected (0.02 sec)

mysql> SELECT * FROM DEMO;
ERROR 1146 (42S02): Table 'college_management_system.demo' doesn't exist
mysql> SELECT * FROM RENAME_DEMO;
Empty set (0.00 sec)

mysql>
```

- **DROP**



```
Administrator: Command Prompt - mysql -u root -p

mysql> DROP TABLE RENAME_DEMO;
Query OK, 0 rows affected (0.03 sec)

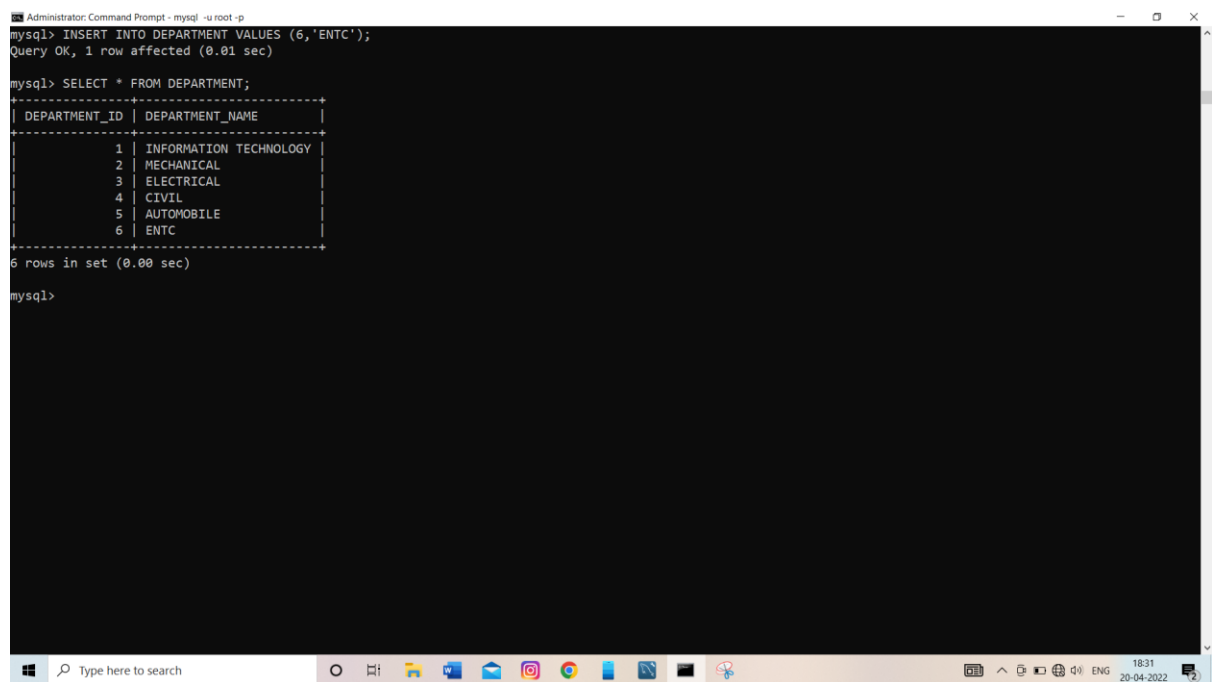
mysql> SELECT * FROM RENAME_DEMO;
ERROR 1146 (42S02): Table 'college_management_system.rename_demo' doesn't exist
mysql>
```

The screenshot shows a Windows Command Prompt window titled "Administrator: Command Prompt - mysql -u root -p". The window has a black background with white text. The text shows the execution of two MySQL commands. The first command is "mysql> DROP TABLE RENAME\_DEMO;", which returns "Query OK, 0 rows affected (0.03 sec)". The second command is "mysql> SELECT \* FROM RENAME\_DEMO;", which returns an error: "ERROR 1146 (42S02): Table 'college\_management\_system.rename\_demo' doesn't exist". The prompt "mysql>" is shown at the end of the line. The Windows taskbar is visible at the bottom of the window, showing the search bar, task view button, and several application icons. The system tray on the right shows the date and time as "18:29 20-04-2022".

- **DML – [ Data Manipulation Language ]**

- DML commands are used to modify the database. It is responsible for all form of changes in the database.
- The command of DML is not auto-committed that means it can't permanently save all the changes in the database. They can be rollback.

- **INSERT**



```
Administrator: Command Prompt - mysql -u root -p
mysql> INSERT INTO DEPARTMENT VALUES (6,'ENTC');
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM DEPARTMENT;
+-----+
| DEPARTMENT_ID | DEPARTMENT_NAME |
+-----+
| 1 | INFORMATION TECHNOLOGY |
| 2 | MECHANICAL |
| 3 | ELECTRICAL |
| 4 | CIVIL |
| 5 | AUTOMOBILE |
| 6 | ENTC |
+-----+
6 rows in set (0.00 sec)

mysql>
```

The screenshot shows a Windows command prompt window titled "Administrator: Command Prompt - mysql -u root -p". The user has executed two MySQL commands. The first command is "mysql> INSERT INTO DEPARTMENT VALUES (6,'ENTC');", which returns "Query OK, 1 row affected (0.01 sec)". The second command is "mysql> SELECT \* FROM DEPARTMENT;", which returns a table with two columns: "DEPARTMENT\_ID" and "DEPARTMENT\_NAME". The table contains six rows of data, with the last row being "6 | ENTC". The output is formatted with a header row and a separator row. The command prompt window has a taskbar at the bottom with various application icons and a system tray showing the time as 18:31 on 20-04-2022.

- **UPDATE**

```
Administrator: Command Prompt - mysql -u root -p

mysql> SELECT * FROM DEPARTMENT;
+-----+-----+
| DEPARTMENT_ID | DEPARTMENT_NAME |
+-----+-----+
| 1 | INFORMATION TECHNOLOGY |
| 2 | MECHANICAL |
| 3 | ELECTRICAL |
| 4 | CIVIL |
| 5 | AUTOMOBILE |
| 6 | ENTC |
+-----+-----+
6 rows in set (0.00 sec)

mysql> UPDATE DEPARTMENT
-> SET DEPARTMENT_NAME='ELECTRONICS'
-> WHERE DEPARTMENT_ID=6;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> SELECT * FROM DEPARTMENT;
+-----+-----+
| DEPARTMENT_ID | DEPARTMENT_NAME |
+-----+-----+
| 1 | INFORMATION TECHNOLOGY |
| 2 | MECHANICAL |
| 3 | ELECTRICAL |
| 4 | CIVIL |
| 5 | AUTOMOBILE |
| 6 | ELECTRONICS |
+-----+-----+
6 rows in set (0.01 sec)

mysql>
```

- **DELETE**

```
Administrator: Command Prompt - mysql -u root -p

mysql> SELECT * FROM DEPARTMENT;
+-----+-----+
| DEPARTMENT_ID | DEPARTMENT_NAME |
+-----+-----+
| 1 | INFORMATION TECHNOLOGY |
| 2 | MECHANICAL |
| 3 | ELECTRICAL |
| 4 | CIVIL |
| 5 | AUTOMOBILE |
| 6 | ELECTRONICS |
+-----+-----+
6 rows in set (0.01 sec)

mysql> DELETE FROM DEPARTMENT
-> WHERE DEPARTMENT_ID=6;
Query OK, 1 row affected (0.01 sec)

mysql> SELECT * FROM DEPARTMENT;
+-----+-----+
| DEPARTMENT_ID | DEPARTMENT_NAME |
+-----+-----+
| 1 | INFORMATION TECHNOLOGY |
| 2 | MECHANICAL |
| 3 | ELECTRICAL |
| 4 | CIVIL |
| 5 | AUTOMOBILE |
+-----+-----+
5 rows in set (0.00 sec)

mysql>
```

## ▪ TCL – [ Transaction Control Language ]

- This command is used to manage the changes made by DML statements.
- There are certain commands present in SQL known as TCL commands that help the user manage the transactions that take place in a database.

### • START TRANSACTION , SAVEPOINT , ROLLBACK

```
C:\Windows\System32\cmd.exe - mysql -u root -p
mysql> select * from demo;
+----+-----+
| id | name |
+----+-----+
| 1 | AAA  |
| 2 | BBB  |
| 3 | CCC  |
+----+-----+
3 rows in set (0.00 sec)

mysql> start transaction;
Query OK, 0 rows affected (0.00 sec)

mysql> savepoint a;
Query OK, 0 rows affected (0.00 sec)

mysql> insert into demo values(4,'DDD');
Query OK, 1 row affected (0.01 sec)

mysql> select * from demo;
+----+-----+
| id | name |
+----+-----+
| 1 | AAA  |
| 2 | BBB  |
| 3 | CCC  |
| 4 | DDD  |
+----+-----+
4 rows in set (0.00 sec)

mysql> rollback to a;
Query OK, 0 rows affected (0.01 sec)

mysql> select * from demo;
+----+-----+
| id | name |
+----+-----+
| 1 | AAA  |
| 2 | BBB  |
| 3 | CCC  |
+----+-----+
3 rows in set (0.01 sec)
```

### • COMMIT, ROLLBACK

```
C:\Windows\System32\cmd.exe - mysql -u root -p
mysql> select * from demo;
+----+-----+
| id | name |
+----+-----+
| 1 | AAA  |
| 2 | BBB  |
| 3 | CCC  |
+----+-----+
3 rows in set (0.00 sec)

mysql> savepoint a;
Query OK, 0 rows affected (0.00 sec)

mysql> insert into demo values(4,'DDD');
Query OK, 1 row affected (0.01 sec)

mysql> commit;
Query OK, 0 rows affected (0.00 sec)

mysql> select * from demo;
+----+-----+
| id | name |
+----+-----+
| 1 | AAA  |
| 2 | BBB  |
| 3 | CCC  |
| 4 | DDD  |
+----+-----+
4 rows in set (0.00 sec)

mysql> rollback;
Query OK, 0 rows affected (0.00 sec)

mysql> select * from demo;
+----+-----+
| id | name |
+----+-----+
| 1 | AAA  |
| 2 | BBB  |
| 3 | CCC  |
| 4 | DDD  |
+----+-----+
4 rows in set (0.00 sec)

mysql> rollback to a;
ERROR 1305 (42000): SAVEPOINT a does not exist
mysql>
```

## ➤ Conclusion

The Project is developed using MySQL. The Project College Management System is very Useful to keep Records of College Deptment Details, Courses Details, Students Details and Teachers Details. This Database is capable of modifying Tables, Columns as per the User requirements using MySQL , So MySQL is Flexible option to Store Text Based Information.