

## DDL Commands:

1. Create the database named CYBERCOLLEGE and the above tables in the CYBERCOLLEGE database; include the Primary Key Constraint, Referential Integrity Constraints, and Check Constraints.

## Output

```
mysql> create database CYBERCOLLEGE;  
Query OK, 1 row affected (0.13 sec)
```

```
mysql> use cybercollege;  
Database changed  
mysql> create table STUDENT(Stud_No varchar(9) primary key , Stud_lname varchar(30) , Stud_fname varchar(20) , Stud_address varchar(50) , Stud_City varchar(30) , State  
varchar(2) , PostalCode varchar(9));  
Query OK, 0 rows affected (0.38 sec)  
  
mysql> create table INSTRUCTOR(Instructor_id varchar(5) primary key , Instructor_lname varchar(30) , Instructor_fname varchar(20) , Instructor_phone varchar(8));  
Query OK, 0 rows affected (0.23 sec)  
  
mysql> create table COURSE(Course_Code varchar(6) primary key , Course_Title varchar(25) , Course_Hours numeric(2,0) , Semester varchar(20));  
Query OK, 0 rows affected (0.17 sec)
```

```
mysql> create table SECTION(Section_id int , Time_Offered varchar(10) , Days_Offered varchar(10) , Section_Room varchar(8) , Class_Size numeric(3,0) CHECK(Class_Size>=  
0) , Number_Enrolled numeric(3,0) CHECK(Number_Enrolled>=0) , Instructor_id varchar(5) REFERENCES INSTRUCTOR(Instructor_id) , Course_Code varchar(6) REFERENCES COURSE(C  
ourse_Code));  
Query OK, 0 rows affected (0.25 sec)  
  
mysql> _
```

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe  
mysql> create table ENROLMENT(Stud_No varchar(9) NOT NULL REFERENCES STUDENT(Stud_no) , Section_id varchar(7) NOT NULL R  
EFERENCES SECTION(Section_id), Grade varchar(2) , PRIMARY KEY(Stud_no,Section_id));  
ERROR 2006 (HY000): MySQL server has gone away  
No connection. Trying to reconnect...  
Connection id: 4  
Current database: cybercollege  
  
Query OK, 0 rows affected (0.49 sec)
```

c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> desc STUDENT;

Field	Type	Null	Key	Default	Extra
Stud_No	varchar(9)	NO	PRI	NULL	
Stud_lname	varchar(30)	YES		NULL	
Stud_fname	varchar(20)	YES		NULL	
Stud_address	varchar(50)	YES		NULL	
Stud_City	varchar(30)	YES		NULL	
State	varchar(2)	YES		NULL	
PostalCode	varchar(9)	YES		NULL	

7 rows in set (0.88 sec)

mysql> DESC INSTRUCTOR;

Field	Type	Null	Key	Default	Extra
Instructor_id	varchar(5)	NO	PRI	NULL	
Instructor_lname	varchar(30)	YES		NULL	
Instructor_fname	varchar(20)	YES		NULL	
Instructor_phone	varchar(8)	YES		NULL	

4 rows in set (0.09 sec)

mysql> DESC COURSE;

Field	Type	Null	Key	Default	Extra
Course_Code	varchar(6)	NO	PRI	NULL	
Course_Title	varchar(25)	YES		NULL	
Course_Hours	decimal(2,0)	YES		NULL	
Semester	varchar(20)	YES		NULL	

4 rows in set (0.07 sec)

c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> DESC SECTION;

Field	Type	Null	Key	Default	Extra
Section_id	int(11)	YES		NULL	
Time_Offered	varchar(10)	YES		NULL	
Days_Offered	varchar(10)	YES		NULL	
Section_Room	varchar(8)	YES		NULL	
Class_Size	decimal(3,0)	YES		NULL	
Number_Enrolled	decimal(3,0)	YES		NULL	
Instructor_id	varchar(5)	YES		NULL	
Course_Code	varchar(6)	YES		NULL	

8 rows in set (0.13 sec)

mysql> DESC ENROLMENT;

Field	Type	Null	Key	Default	Extra
Stud_No	varchar(9)	NO	PRI	NULL	
Section_id	varchar(7)	NO	PRI	NULL	
Grade	varchar(2)	YES		NULL	

3 rows in set (0.00 sec)

mysql> \_

2. Add a field Country to the STUDENT table with the default value set to 'India'.

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> alter table STUDENT ADD Country varchar(10) DEFAULT 'India';
Query OK, 0 rows affected (0.44 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> DESC STUDENT;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Stud_No    | varchar(9)    | NO   | PRI | NULL    |       |
| Stud_lname | varchar(30)   | YES  |     | NULL    |       |
| Stud_fname | varchar(20)   | YES  |     | NULL    |       |
| Stud_address | varchar(50)  | YES  |     | NULL    |       |
| Stud_City  | varchar(30)   | YES  |     | NULL    |       |
| State      | varchar(2)    | YES  |     | NULL    |       |
| PostalCode | varchar(9)    | YES  |     | NULL    |       |
| Country    | varchar(10)   | YES  |     | India   |       |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.08 sec)

mysql>
```

3. Add a constraint to the Grade field in the ENROLMENT table that accepts only the values 'A', 'B', 'C' and 'D'.

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> alter table ENROLMENT ADD CONSTRAINT Grade CHECK(Grade IN ('A','B','C','D'));
Query OK, 0 rows affected (0.19 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

4. Modify the ENROLMENT table by changing the width of the field Grade to 2

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> alter table ENROLMENT MODIFY Grade varchar(2);
Query OK, 0 rows affected (0.36 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> DESC ENROLMENT;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Stud_No    | varchar(9)    | NO   | PRI | NULL    |       |
| Section_id | varchar(7)    | NO   | PRI | NULL    |       |
| Grade      | varchar(2)    | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.03 sec)

mysql>
```

5. Add a new column, salary to the INSTRUCTOR table and display its modified schema.

 c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

```
mysql> alter table INSTRUCTOR ADD salary varchar(20);
Query OK, 0 rows affected (0.41 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> DESC INSTRUCTOR;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Instructor_id  | varchar(5)    | NO   | PRI | NULL    |       |
| Instructor_lname | varchar(30)   | YES  |     | NULL    |       |
| Instructor_fname | varchar(20)   | YES  |     | NULL    |       |
| Instructor_phone | varchar(8)    | YES  |     | NULL    |       |
| salary         | varchar(20)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.06 sec)

mysql>
```

6. Drop the column Country from the STUDENT table.

 c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

```
mysql> alter table STUDENT DROP Country;
Query OK, 0 rows affected (0.24 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> DESC STUDENT;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Stud_No        | varchar(9)    | NO   | PRI | NULL    |       |
| Stud_lname     | varchar(30)   | YES  |     | NULL    |       |
| Stud_fname     | varchar(20)   | YES  |     | NULL    |       |
| Stud_address   | varchar(50)   | YES  |     | NULL    |       |
| Stud_City      | varchar(30)   | YES  |     | NULL    |       |
| State          | varchar(2)    | YES  |     | NULL    |       |
| PostalCode     | varchar(9)    | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.01 sec)

mysql>
```



7. Create a view for instructors to display the courses taught by an instructor. Display the personal details but by hiding salary information.

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> create view inst as SELECT i.Instructor_id , i.Instructor_fname , i.Instructor_lname , i.Instructor_phone , c.Course_Title FROM Instructor i join SECTION s WHERE i.Instructor_id=s.Instructor_id AND s.Course_Code=c.Course_Code;
ERROR 1054 (42S22): Unknown column 'c.Course_Title' in 'field list'
mysql> create view inst as SELECT i.Instructor_id , i.Instructor_fname , i.Instructor_lname , i.Instructor_phone , c.Course_Title FROM Instructor i join COURSE c join SECTION s WHERE i.Instructor_id=s.Instructor_id AND s.Course_Code=c.Course_Code;
Query OK, 0 rows affected (0.11 sec)

mysql> select * from inst;
Empty set (0.26 sec)

mysql> desc inst;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Instructor_id  | varchar(5)    | NO   |     | NULL    |       |
| Instructor_fname | varchar(20)   | YES  |     | NULL    |       |
| Instructor_lname | varchar(30)   | YES  |     | NULL    |       |
| Instructor_phone | varchar(8)    | YES  |     | NULL    |       |
| Course_Title   | varchar(25)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.04 sec)

mysql>
```

### DML Commands:

8. Insert details of you and your 5 friends in STUDENT table and the details of 5 instructors with names (Asha, Ashna, Sandeep, Asifa, George) in INSTRUCTOR table.

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> insert into STUDENT values(1,'joshy','Anna','abc','cky','ke',680307);
Query OK, 1 row affected (0.11 sec)

mysql> insert into STUDENT values(2,'Paul','Mariya','def','cky','ke',680307);
Query OK, 1 row affected (0.00 sec)

mysql> insert into STUDENT values(3,'Chand','Sree','ghi','cky','ke',680307);
Query OK, 1 row affected (0.00 sec)

mysql> insert into STUDENT values(4,'Shaji','Ann','jkl','cky','ke',680307);
Query OK, 1 row affected (0.00 sec)

mysql> insert into STUDENT values(5,'K','David','mno','cky','ke',680307);
Query OK, 1 row affected (0.00 sec)

mysql> insert into STUDENT values(6,'Sevi','Snephia','pqr','cky','ke',680307);
Query OK, 1 row affected (0.01 sec)

mysql> select * from STUDENT;
+-----+-----+-----+-----+-----+-----+-----+
| Stud_No | Stud_lname | Stud_fname | Stud_address | Stud_City | State | PostalCode |
+-----+-----+-----+-----+-----+-----+-----+
| 1       | joshy      | Anna      | abc          | cky       | ke    | 680307     |
| 2       | Paul       | Mariya    | def          | cky       | ke    | 680307     |
| 3       | Chand      | Sree      | ghi          | cky       | ke    | 680307     |
| 4       | Shaji      | Ann       | jkl          | cky       | ke    | 680307     |
| 5       | K          | David     | mno          | cky       | ke    | 680307     |
| 6       | Sevi       | Snephia   | pqr          | cky       | ke    | 680307     |
+-----+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> insert into INSTRUCTOR values(1,'KA','Asha',98345274,24000);
Query OK, 1 row affected (0.12 sec)

mysql> insert into INSTRUCTOR values(2,'P','Ashna',98341274,22000);
Query OK, 1 row affected (0.00 sec)

mysql> insert into INSTRUCTOR values(3,'K','Sandeep',98461274,21000);
Query OK, 1 row affected (0.00 sec)

mysql> insert into INSTRUCTOR values(4,'AS','Asifa',98461864,20000);
Query OK, 1 row affected (0.00 sec)

mysql> insert into INSTRUCTOR values(5,'Mathew','George',98331864,18000);
Query OK, 1 row affected (0.00 sec)

mysql> select * from INSTRUCTOR;
+-----+-----+-----+-----+-----+
| Instructor_id | Instructor_lname | Instructor_fname | Instructor_phone | salary |
+-----+-----+-----+-----+-----+
| 1             | KA               | Asha             | 98345274         | 24000  |
| 2             | P               | Ashna            | 98341274         | 22000  |
| 3             | K               | Sandeep          | 98461274         | 21000  |
| 4             | AS              | Asifa            | 98461864         | 20000  |
| 5             | Mathew          | George           | 98331864         | 18000  |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

9. Add details of the first and second semester courses. Also add a new course for Data Mining with a course code of 20MCA260 worth with credit of 4 hours

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> desc course;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Course_Code    | varchar(6)    | NO   | PRI | NULL    |       |
| Course_Title   | varchar(25)   | YES  |     | NULL    |       |
| Course_Hours   | decimal(2,0)  | YES  |     | NULL    |       |
| Semester       | varchar(20)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)

mysql> insert into COURSE values('20MCA1','ADS',7,1);
Query OK, 1 row affected (0.04 sec)

mysql> insert into COURSE values('20MCA2','ASE',8,1);
Query OK, 1 row affected (0.00 sec)

mysql> insert into COURSE values('20MCA3','MFC',9,1);
Query OK, 1 row affected (0.00 sec)

mysql> insert into COURSE values('20MCA4','Digital',11,1);
Query OK, 1 row affected (0.00 sec)

mysql> insert into COURSE values('20MCA5','ADBMS',11,2);
Query OK, 1 row affected (0.00 sec)

mysql> insert into COURSE values('20MCA6','ACN',9,2);
Query OK, 1 row affected (0.00 sec)

mysql> insert into COURSE values('20MCA7','AI',8,2);
Query OK, 1 row affected (0.00 sec)

mysql> insert into COURSE values('20MCA8','AOS',7,2);
Query OK, 1 row affected (0.00 sec)

mysql> insert into COURSE values('20MC26','Data Mining',4,2);
Query OK, 1 row affected (0.00 sec)
```

c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

```
mysql> select * from COURSE;
```

Course_Code	Course_Title	Course_Hours	Semester
20MCA1	ADS	7	1
20MCA2	ASE	8	1
20MCA3	MFC	9	1
20MCA4	Digital	11	1
20MCA5	ADBMS	11	2
20MCA6	ACN	9	2
20MCA7	AI	8	2
20MCA8	AOS	7	2
20MC26	Data Mining	4	2

9 rows in set (0.03 sec)

```
mysql> _
```

10. Add a new section for this new course with section ID as 301. The section should meet in 2-4 on MW in BLGNG102. The class size should be 35, and number enrolled should be 0. The instructor should be 3, and the course is 20MCA260. Also add sections 302 and 303 for the courses AOS and OB and enrol 5 students each to these courses.

c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

```
mysql> insert into SECTION values(301,2-4,'MW','BLGNG102',35,0,3,'20MC26');
Query OK, 1 row affected (0.06 sec)
```

```
mysql> insert into COURSE values('20MCA9','OB',4,2);
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into SECTION values(302,2,'MW','BLGNG103',35,0,1,'20MCA8');
Query OK, 1 row affected (0.00 sec)
```

```
mysql> insert into SECTION values(303,2,'MW','BLGNG104',35,0,2,'20MCA9');
Query OK, 1 row affected (0.00 sec)
```

```
mysql> select * from SECTION;
```

Section_id	Time_Offered	Days_Offered	Section_Room	Class_Size	Number_Enrolled	Instructor_id	Course_Code
301	-2	MW	BLGNG102	35	0	3	20MC26
302	2	MW	BLGNG103	35	0	1	20MCA8
303	2	MW	BLGNG104	35	0	2	20MCA9

3 rows in set (0.00 sec)

```
mysql> _
```



c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

```
mysql> insert into ENROLMENT values(1,302,'');
Query OK, 1 row affected (0.00 sec)

mysql> insert into ENROLMENT values(2,302,'');
Query OK, 1 row affected (0.00 sec)

mysql> insert into ENROLMENT values(3,302,'');
Query OK, 1 row affected (0.00 sec)

mysql> insert into ENROLMENT values(4,302,'');
Query OK, 1 row affected (0.00 sec)

mysql> insert into ENROLMENT values(5,302,'');
Query OK, 1 row affected (0.00 sec)

mysql> insert into ENROLMENT values(1,303,'');
Query OK, 1 row affected (0.00 sec)

mysql> insert into ENROLMENT values(2,303,'');
Query OK, 1 row affected (0.01 sec)

mysql> insert into ENROLMENT values(3,303,'');
Query OK, 1 row affected (0.00 sec)

mysql> insert into ENROLMENT values(4,303,'');
Query OK, 1 row affected (0.00 sec)

mysql> insert into ENROLMENT values(5,303,'');
Query OK, 1 row affected (0.00 sec)
```

c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

```
mysql> select * from ENROLMENT;
+-----+-----+-----+
| Stud_No | Section_id | Grade |
+-----+-----+-----+
| 1       | 302       |       |
| 2       | 302       |       |
| 3       | 302       |       |
| 4       | 302       |       |
| 5       | 302       |       |
| 1       | 303       |       |
| 2       | 303       |       |
| 3       | 303       |       |
| 4       | 303       |       |
| 5       | 303       |       |
+-----+-----+-----+
10 rows in set (0.00 sec)

mysql> _
```





13. Give a 10% increment in salary for all instructors.

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> select * from INSTRUCTOR;
+-----+-----+-----+-----+-----+
| Instructor_id | Instructor_lname | Instructor_fname | Instructor_phone | salary |
+-----+-----+-----+-----+-----+
| 1             | KA               | Asha             | 98345274         | 24000  |
| 2             | P               | Ashna            | 98341274         | 22000  |
| 3             | K               | Sandeep          | 98461274         | 21000  |
| 4             | AS              | Asifa            | 98461864         | 20000  |
| 5             | Mathew          | George           | 98331864         | 18000  |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> update INSTRUCTOR set salary=salary+(salary* 10/100);
Query OK, 5 rows affected (0.14 sec)
Rows matched: 5  Changed: 5  Warnings: 0

mysql> select * from INSTRUCTOR;
+-----+-----+-----+-----+-----+
| Instructor_id | Instructor_lname | Instructor_fname | Instructor_phone | salary |
+-----+-----+-----+-----+-----+
| 1             | KA               | Asha             | 98345274         | 26400  |
| 2             | P               | Ashna            | 98341274         | 24200  |
| 3             | K               | Sandeep          | 98461274         | 23100  |
| 4             | AS              | Asifa            | 98461864         | 22000  |
| 5             | Mathew          | George           | 98331864         | 19800  |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

14. Delete Section 302 and verify for the rows in ENROLMENT table for that section.

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe


mysql> select * from SECTION;
+-----+-----+-----+-----+-----+-----+-----+
| Section_id | Time_Offered | Days_Offered | Section_Room | Class_Size | Number_Enrolled | Instructor_id | Course_Code |
+-----+-----+-----+-----+-----+-----+-----+
| 301        | -2           | MW           | BLGNG102     | 39         | 0                | 3             | 20MC26      |
| 302        | 2            | MW           | BLGNG103     | 35         | 0                | 1             | 20MCA8      |
| 303        | 2            | MW           | BLGNG104     | 35         | 0                | 2             | 20MCA9      |
+-----+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> delete from SECTION where Section_id=302;
Query OK, 1 row affected (0.03 sec)

mysql> select * from SECTION;
+-----+-----+-----+-----+-----+-----+-----+
| Section_id | Time_Offered | Days_Offered | Section_Room | Class_Size | Number_Enrolled | Instructor_id | Course_Code |
+-----+-----+-----+-----+-----+-----+-----+
| 301        | -2           | MW           | BLGNG102     | 39         | 0                | 3             | 20MC26      |
| 303        | 2            | MW           | BLGNG104     | 35         | 0                | 2             | 20MCA9      |
+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```


### TCL Commands:

15. Undo the previous delete operation

 c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

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

16. Save all the transactions to the database.

 c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

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

17. Grant the privilege to read and delete from the ENROLMENT table to the User U1.



c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

```
mysql> create user 'U1' identified by '12345678';
Query OK, 0 rows affected (0.42 sec)
```

```
mysql> select user from mysql.user;
```

user
U1
mysql.session
mysql.sys
root

4 rows in set (0.00 sec)

```
mysql> grant select , update on ENROLMENT to U1;
Query OK, 0 rows affected (0.10 sec)
```

```
mysql> show grants for 'U1';
```

Grants for U1@%
GRANT USAGE ON *.* TO 'U1'@'%'
GRANT SELECT, UPDATE ON `cybercollege`.`enrolment` TO 'U1'@'%'

2 rows in set (0.04 sec)

```
mysql> _
```

c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

```
mysql> grant select,delete on ENROLMENT to U1;
Query OK, 0 rows affected (0.01 sec)
```

```
mysql> show grant for U1;
```

ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'grant for U1' at line 1

```
mysql> show grants for 'U1';
```

Grants for U1@%
GRANT USAGE ON *.* TO 'U1'@'%'
GRANT SELECT, UPDATE, DELETE ON `cybercollege`.`enrolment` TO 'U1'@'%'

2 rows in set (0.00 sec)

```
mysql>
```

18. Revoke the delete privilege from U1

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

+-----+
| Grants for U1@% |
+-----+
| GRANT USAGE ON *.* TO 'U1'@'%' |
| GRANT SELECT, UPDATE, DELETE ON `cybercollege`.`enrolment` TO 'U1'@'%' |
+-----+
2 rows in set (0.00 sec)

mysql> revoke delete on ENROLMENT from 'U1';
Query OK, 0 rows affected (0.00 sec)

mysql> show grants for 'U1';
+-----+
| Grants for U1@% |
+-----+
| GRANT USAGE ON *.* TO 'U1'@'%' |
| GRANT SELECT, UPDATE ON `cybercollege`.`enrolment` TO 'U1'@'%' |
+-----+
2 rows in set (0.00 sec)

mysql>
```

**Accessing database (SELECT, Filtering using WHERE, HAVING, GROUP BY, ORDER BY Clauses, Subquery):**

19. Display the full name and contact details of students living in Kochi.

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> select * from STUDENT;
+-----+-----+-----+-----+-----+-----+-----+
| Stud_No | Stud_lname | Stud_fname | Stud_address | Stud_City | State | PostalCode |
+-----+-----+-----+-----+-----+-----+-----+
| 1       | joshy      | Anna       | abc          | cky       | ke    | 680307     |
| 2       | Paul       | Mariya     | def          | cky       | ke    | 680307     |
| 3       | Chand      | Sree       | ghi          | cky       | ke    | 680307     |
| 4       | Shaji      | Ann        | jkl          | cky       | ke    | 680307     |
| 5       | K          | David      | mno          | cky       | ke    | 680307     |
| 6       | Sevi       | Snephia    | pqr          | cky       | ke    | 680307     |
+-----+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)

mysql> select Stud_fname, Stud_lname, Stud_address from STUDENT where Stud_City='kochi';
Empty set (0.04 sec)

mysql>
```

20. List the student details who has longest first name

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> select * from STUDENT;
+-----+-----+-----+-----+-----+-----+-----+
| Stud_No | Stud_lname | Stud_fname | Stud_address | Stud_City | State | PostalCode |
+-----+-----+-----+-----+-----+-----+-----+
| 1       | joshy      | Anna      | abc          | cky       | ke    | 680307     |
| 2       | Paul      | Mariya    | def          | cky       | ke    | 680307     |
| 3       | Chand     | Sree      | ghi          | cky       | ke    | 680307     |
| 4       | Shaji     | Ann       | jkl          | cky       | ke    | 680307     |
| 5       | K         | David     | mno          | cky       | ke    | 680307     |
| 6       | Sevi      | Snephia   | pqr          | cky       | ke    | 680307     |
+-----+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)

mysql> select * from STUDENT where length(Stud_fname)=(select max(length(Stud_fname))from STUDENT);
+-----+-----+-----+-----+-----+-----+-----+
| Stud_No | Stud_lname | Stud_fname | Stud_address | Stud_City | State | PostalCode |
+-----+-----+-----+-----+-----+-----+-----+
| 6       | Sevi      | Snephia   | pqr          | cky       | ke    | 680307     |
+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.31 sec)

mysql>
```

21. Display the name and phone number of the instructors who is handling the courses AOS and ADBMS.

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> select * from COURSE;
+-----+-----+-----+-----+
| Course_Code | Course_Title | Course_Hours | Semester |
+-----+-----+-----+-----+
| 20MCA1      | ADS          | 7            | 1        |
| 20MCA2      | ASE          | 8            | 1        |
| 20MCA3      | MFC          | 9            | 1        |
| 20MCA4      | Digital      | 11           | 1        |
| 20MCA5      | ADBMS        | 11           | 2        |
| 20MCA6      | ACN          | 9            | 2        |
| 20MCA7      | AI           | 8            | 2        |
| 20MCA8      | AOS          | 7            | 2        |
| 20MC26      | Data Mining  | 4            | 2        |
| 20MCA9      | OB           | 4            | 2        |
+-----+-----+-----+-----+
10 rows in set (0.00 sec)

mysql> select * from INSTRUCTOR;
+-----+-----+-----+-----+-----+
| Instructor_id | Instructor_lname | Instructor_fname | Instructor_phone | salary |
+-----+-----+-----+-----+-----+
| 1             | KA              | Asha             | 98345274         | 26400  |
| 2             | P              | Ashna            | 98341274         | 24200  |
| 3             | K              | Sandeep          | 98461274         | 23100  |
| 4             | AS             | Asifa            | 98461864         | 22000  |
| 5             | Mathew         | George           | 98331864         | 19800  |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```



```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> select * from SECTION;
+-----+-----+-----+-----+-----+-----+-----+-----+
| Section_id | Time_Offered | Days_Offered | Section_Room | Class_Size | Number_Enrolled | Instructor_id | Course_Code |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 301 | -2 | MW | BLNG102 | 39 | 0 | 3 | 20MC26 |
| 303 | 2 | MW | BLNG104 | 35 | 0 | 2 | 20MCA9 |
+-----+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> select Instructor_fname,Instructor_phone from INSTRUCTOR i join COURSE c join SECTION s where i.Instructor_id=s.Instructor_id and s.Course_Code and c.Course_Title='ADS' or 'ADBMS';
+-----+-----+
| Instructor_fname | Instructor_phone |
+-----+-----+
| Sandeep | 98461274 |
| Ashna | 98341274 |
+-----+-----+
2 rows in set, 3 warnings (0.17 sec)
```

22. List the codes, titles, and credit hours for courses worth 4 hours. Order the results in descending order of course code.

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> select * from COURSE;
+-----+-----+-----+-----+
| Course_Code | Course_Title | Course_Hours | Semester |
+-----+-----+-----+-----+
| 20MCA1 | ADS | 7 | 1 |
| 20MCA2 | ASE | 8 | 1 |
| 20MCA3 | MFC | 9 | 1 |
| 20MCA4 | Digital | 11 | 1 |
| 20MCA5 | ADBMS | 11 | 2 |
| 20MCA6 | ACN | 9 | 2 |
| 20MCA7 | AI | 8 | 2 |
| 20MCA8 | AOS | 7 | 2 |
| 20MC26 | Data Mining | 4 | 2 |
| 20MCA9 | OB | 4 | 2 |
+-----+-----+-----+-----+
10 rows in set (0.00 sec)

mysql> select Course_Code,Course_Title,Course_Hours from COURSE where Course_Hours=4 order by Course_Code desc;
+-----+-----+-----+
| Course_Code | Course_Title | Course_Hours |
+-----+-----+-----+
| 20MCA9 | OB | 4 |
| 20MC26 | Data Mining | 4 |
+-----+-----+-----+
2 rows in set (0.06 sec)

mysql> _
```

23. Display the names of the students in the descending order along with their phone number.

c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

```
mysql> select * from STUDENT;
```

Stud_No	Stud_lname	Stud_fname	Stud_address	Stud_City	State	PostalCode
1	joshy	Anna	abc	cky	ke	680307
2	Paul	Mariya	def	cky	ke	680307
3	Chand	Sree	ghi	cky	ke	680307
4	Shaji	Ann	jkl	cky	ke	680307
5	K	David	mno	cky	ke	680307
6	Sevi	Snephia	pqr	cky	ke	680307

6 rows in set (0.00 sec)

```
mysql> select Stud_fname,Stud_lname from STUDENT order by Stud_fname desc;
```

Stud_fname	Stud_lname
Sree	Chand
Snephia	Sevi
Mariya	Paul
David	K
Anna	joshy
Ann	Shaji

6 rows in set (0.00 sec)

```
mysql> _
```

24. List the student's name, course code and section id grouping the students by their grade.

c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

```
mysql> select STUDENT.Stud_fname,STUDENT.Stud_lname,SECTION.Course_Code,ENROLMENT.Section_id from STUDENT inner join SECTION inner join ENROLMENT on STUDENT.Stud_No=ENROLMENT.Stud_No and SECTION.Section_id=ENROLMENT.Section_id group by ENROLMENT.Grade;
```

Stud_fname	Stud_lname	Course_Code	Section_id
Anna	joshy	20MCA9	303

1 row in set (0.08 sec)

**Optimizing databases (Join, Aggregate & Set operations, Other operators like arithmetic, logical, special etc):**

25. Use an inner join between the STUDENT and ENROLMENT tables for showing the full name, Section id and Grade.

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> select STUDENT.Stud_fname,STUDENT.Stud_lname,ENROLMENT.Section_id,ENROLMENT.Grade from STUDENT inner
join ENROLMENT on STUDENT.Stud_No=ENROLMENT.Stud_No;
+-----+-----+-----+-----+
| Stud_fname | Stud_lname | Section_id | Grade |
+-----+-----+-----+-----+
| Anna      | joshy      | 301        |       |
| Anna      | joshy      | 302        |       |
| Anna      | joshy      | 303        |       |
| Mariya    | Paul       | 301        |       |
| Mariya    | Paul       | 302        |       |
| Mariya    | Paul       | 303        |       |
| Sree      | Chand      | 301        |       |
| Sree      | Chand      | 302        |       |
| Sree      | Chand      | 303        |       |
| Ann       | Shaji      | 302        |       |
| Ann       | Shaji      | 303        |       |
| David     | K          | 302        |       |
| David     | K          | 303        |       |
| Snephia   | Sevi       | 301        |       |
+-----+-----+-----+-----+
14 rows in set (0.00 sec)

mysql>
```

26. Use an outer join between the STUDENT and ENROLMENT tables for showing the full name, Section id and Grade. Include all the students regardless of whether they have a matching section.

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> select STUDENT.Stud_fname,STUDENT.Stud_lname,ENROLMENT.Section_id,ENROLMENT.Grade from STUDENT left
join ENROLMENT on STUDENT.Stud_No=ENROLMENT.Stud_No;
+-----+-----+-----+-----+
| Stud_fname | Stud_lname | Section_id | Grade |
+-----+-----+-----+-----+
| Anna      | joshy      | 301        |       |
| Anna      | joshy      | 302        |       |
| Anna      | joshy      | 303        |       |
| Mariya    | Paul       | 301        |       |
| Mariya    | Paul       | 302        |       |
| Mariya    | Paul       | 303        |       |
| Sree      | Chand      | 301        |       |
| Sree      | Chand      | 302        |       |
| Sree      | Chand      | 303        |       |
| Ann       | Shaji      | 302        |       |
| Ann       | Shaji      | 303        |       |
| David     | K          | 302        |       |
| David     | K          | 303        |       |
| Snephia   | Sevi       | 301        |       |
+-----+-----+-----+-----+
14 rows in set (0.00 sec)

mysql>
```

27. Give a 7% salary raise to instructors whose salary is less than the average.



```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> select * from INSTRUCTOR;
+-----+-----+-----+-----+-----+
| Instructor_id | Instructor_lname | Instructor_fname | Instructor_phone | salary |
+-----+-----+-----+-----+-----+
| 1             | KA               | Asha             | 98345274         | 26400  |
| 2             | P               | Ashna            | 98341274         | 24200  |
| 3             | K               | Sandeep          | 98461274         | 23100  |
| 4             | AS              | Asifa            | 98461864         | 22000  |
| 5             | Mathew           | George           | 98331864         | 19800  |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> update INSTRUCTOR set salary=salary+(salary* 7/100) where salary < (select avg(salary));
Query OK, 0 rows affected (0.13 sec)
Rows matched: 0  Changed: 0  Warnings: 0

mysql> select * from INSTRUCTOR;
+-----+-----+-----+-----+-----+
| Instructor_id | Instructor_lname | Instructor_fname | Instructor_phone | salary |
+-----+-----+-----+-----+-----+
| 1             | KA               | Asha             | 98345274         | 26400  |
| 2             | P               | Ashna            | 98341274         | 24200  |
| 3             | K               | Sandeep          | 98461274         | 23100  |
| 4             | AS              | Asifa            | 98461864         | 22000  |
| 5             | Mathew           | George           | 98331864         | 19800  |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

28. List full name and salary of instructors whose last name ends with 'a' and earns highest salary.

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> select Instructor_fname,salary from INSTRUCTOR where salary=(select max(salary) from INSTRUCTOR) and Instructor_fname in (select Instructor_fname from INSTRUCTOR where Instructor_fname like '%a');
+-----+-----+
| Instructor_fname | salary |
+-----+-----+
| Asha             | 26400  |
+-----+-----+
1 row in set (0.11 sec)
```

29. Display the details of instructor who draws lowest salary.

```
c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

mysql> select * from INSTRUCTOR where salary=(select min(salary) from INSTRUCTOR);
+-----+-----+-----+-----+-----+
| Instructor_id | Instructor_lname | Instructor_fname | Instructor_phone | salary |
+-----+-----+-----+-----+-----+
| 5             | Mathew           | George           | 98331864         | 19800  |
+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

30. List the students details who lived in Kochi, Kerala or in Bangalore, Karnataka or both.

c:\wamp64\bin\mysql\mysql5.7.31\bin\mysql.exe

```
mysql> select * from STUDENT;
```

Stud_No	Stud_lname	Stud_fname	Stud_address	Stud_City	State	PostalCode
1	joshy	Anna	abc	cky	ke	680307
2	Paul	Mariya	def	cky	ke	680307
3	Chand	Sree	ghi	cky	ke	680307
4	Shaji	Ann	jkl	cky	ke	680307
5	K	David	mno	cky	ke	680307
6	Sevi	Snephia	pqr	cky	ke	680307

6 rows in set (0.02 sec)

```
mysql> select * from STUDENT where Stud_City='Ko' and 'Ke' or 'Ba' and 'Ka' or Stud_City in ('Ko','Ke','Ba',  
'Ka');
```

Empty set, 2 warnings (0.00 sec)

```
mysql> _
```