

LAB CYCLE 1

I. 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.

```
mysql> create database cybercollege;
Query OK, 1 row affected (0.26 sec)

mysql> use database;
ERROR 1049 (42000): Unknown database 'database'
mysql> use databases;
ERROR 1049 (42000): Unknown database 'databases'
mysql> use cybercollege;
Database changed
mysql> CREATE TABLE Student(Stud_no CHAR(9) PRIMARY KEY,Stud_Fname CHAR(20),Stud_Lname CHAR(20),Stud_address char(50),Stud_city char(30),Stud_state Char(2),Stud_post char(9));
Query OK, 0 rows affected (1.72 sec)

mysql> CREATE TABLE Instructor(Inst_id char(5) PRIMARY KEY,Inst_Fname char(20),Inst_lname char(20),Inst_ph char(10));
Query OK, 0 rows affected (0.91 sec)

mysql> CREATE TABLE Course(Course_code char(6) PRIMARY KEY,Course_title char(25),Course_hour Numeric(2,0));
Query OK, 0 rows affected (0.56 sec)

mysql> CREATE TABLE Section(Sec_id char(7) PRIMARY KEY,Time_off char(10),Days_off char(10),Sec_room char(8),Class_size numeric(3,0) CHECK(Class_size>=0),Num_enrolled numeric(3,0) CHECK(Num_enrolled>=0),Inst_id char(5) REFERENCES Instructor(Inst_id),Course_code char(6) REFERENCES Course(Course_code));
Query OK, 0 rows affected (0.96 sec)

mysql> CREATE table Enroll(Stud_no char(9) REFERENCES Student(Stud_no),Sec_id char(7) REFERENCES Section(Sec_id),Grade char(2));
Query OK, 0 rows affected (0.47 sec)
```

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

```
mysql> desc Student;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Stud_no    | char(9)   | NO   | PRI | NULL    |       |
| Stud_Fname | char(20)  | YES  |     | NULL    |       |
| Stud_Lname | char(20)  | YES  |     | NULL    |       |
| Stud_address | char(50) | YES  |     | NULL    |       |
| Stud_city  | char(30)  | YES  |     | NULL    |       |
| Stud_state | char(2)   | YES  |     | NULL    |       |
| Stud_post  | char(9)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.21 sec)

mysql> alter table Student add country varchar(20) 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    | char(9)   | NO   | PRI | NULL    |       |
| Stud_Fname | char(20)  | YES  |     | NULL    |       |
| Stud_Lname | char(20)  | YES  |     | NULL    |       |
| Stud_address | char(50) | YES  |     | NULL    |       |
| Stud_city  | char(30)  | YES  |     | NULL    |       |
| Stud_state | char(2)   | YES  |     | NULL    |       |
| Stud_post  | char(9)   | YES  |     | NULL    |       |
| country    | varchar(20) | YES  |     | India   |       |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.00 sec)
```

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

```
mysql> alter table Enroll ADD CONSTRAINT grade CHECK (grade IN('A','B','C'));
Query OK, 0 rows affected (2.05 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc Enroll;
+-----+-----+-----+-----+-----+-----+
| Field | Type   | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Stud_no | char(9) | YES  |     | NULL    |       |
| Sec_id  | char(7) | YES  |     | NULL    |       |
| Grade   | char(2) | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.07 sec)
```

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

```
mysql> desc Enroll;
+-----+-----+-----+-----+-----+-----+
| Field | Type   | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Stud_no | char(9) | YES  |     | NULL    |       |
| Sec_id  | char(7) | YES  |     | NULL    |       |
| Grade   | char(2) | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.25 sec)

mysql> alter table Enroll modify Grade varchar(1);
Query OK, 3 rows affected (5.88 sec)
Records: 3 Duplicates: 0 Warnings: 0

mysql>
mysql> desc Enroll;
+-----+-----+-----+-----+-----+-----+
| Field | Type       | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Stud_no | char(9)    | YES  |     | NULL    |       |
| Sec_id  | char(7)    | YES  |     | NULL    |       |
| Grade   | varchar(1) | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

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

```
mysql> desc Instructor;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Inst_id    | char(5)   | NO   | PRI | NULL    |       |
| Inst_Fname | char(20)  | YES  |     | NULL    |       |
| Inst_Lname | char(20)  | YES  |     | NULL    |       |
| Inst_ph    | char(10)  | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> alter table Instructor add salary varchar(10);
Query OK, 0 rows affected (0.64 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> desc Instructor;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Inst_id    | char(5)   | NO   | PRI | NULL    |       |
| Inst_Fname | char(20)  | YES  |     | NULL    |       |
| Inst_Lname | char(20)  | YES  |     | NULL    |       |
| Inst_ph    | char(10)  | YES  |     | NULL    |       |
| salary     | varchar(10)| YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.07 sec)
```

6. Drop the column Country from the STUDENT table.

```
mysql> alter table Student drop country;
Query OK, 0 rows affected (2.39 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc Student;
```

Field	Type	Null	Key	Default	Extra
Stud_no	char(9)	NO	PRI	NULL	
Stud_Fname	char(20)	YES		NULL	
Stud_Lname	char(20)	YES		NULL	
Stud_address	char(50)	YES		NULL	
Stud_city	char(30)	YES		NULL	
Stud_state	char(2)	YES		NULL	
Stud_post	char(9)	YES		NULL	

```
7 rows in set (0.07 sec)
```

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

```
mysql> update Section set Inst_id=101 where Sec_id=301;
Query OK, 1 row affected (0.14 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> update Section set Inst_id=102 where Sec_id=302;
Query OK, 1 row affected (0.13 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> update Section set Inst_id=103 where Sec_id=303;
Query OK, 1 row affected (0.11 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> select * from Section;
```

Sec_id	Time_off	Days_off	Sec_room	Class_size	Num_enrolled	Inst_id	Course_code
301	2.4	MW	BLGNG102	39	0	101	20MCA260
302	2	MW	BLGNG103	35	5	102	20MCA104
303	2	MW	BLGNG104	35	5	103	20MCA109

```
3 rows in set (0.00 sec)

mysql> create view inst as select i.Inst_id,i.Inst_Fname,i.Inst_Lname,i.Inst_ph,c.Course_title from Instructor i join Course c join Section s where i.Inst_id=s.Inst_id
and s.Course_code=c.Course_code;
ERROR 1050 (42S01): Table 'inst' already exists
mysql> create view insta as select i.Inst_id,i.Inst_Fname,i.Inst_Lname,i.Inst_ph,c.Course_title from Instructor i join Course c join Section s where i.Inst_id=s.Inst_id
and s.Course_code=c.Course_code;
Query OK, 0 rows affected (0.33 sec)

mysql> select * from insta;
```

Inst_id	Inst_Fname	Inst_Lname	Inst_ph	Course_title
101	Asha	Sarath	9987662314	DATA MINING
102	Ashna	Biju	7594802484	ASE

```
2 rows in set (0.05 sec)
```

Activate Windows
Go to Settings to activate Windows.

II. 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.


```
mysql> INSERT into Student VALUES(001,'Krishna','Priya','Valloor','Thrissur','Kerala',680306);
Query OK, 1 row affected (0.33 sec)

mysql> INSERT into Student VALUES(002,'Anu','Mol','Chakkalakkal','Kollam','Kerala',6876304);
Query OK, 1 row affected (0.08 sec)

mysql> INSERT into Student VALUES(003,'Anoop','Sathyan','Chirakkal','Kasargod','Kerala',669302);
Query OK, 1 row affected (0.12 sec)

mysql> INSERT into Student VALUES(004,'Andriya','James','Polliylil','Ernamkulam','Kerala',676398);
Query OK, 1 row affected (0.14 sec)

mysql> INSERT into Student VALUES(005,'Arya','Babu','Kallayath','Palakkad','Kerala',656201);
Query OK, 1 row affected (0.07 sec)

mysql> select * from Student;
```

Stud_no	Stud_Fname	Stud_Lname	Stud_address	Stud_city	Stud_state	Stud_post
1	Krishna	Priya	Valloor	Thrissur	Kerala	680306
2	Anu	Mol	Chakkalakkal	Kollam	Kerala	6876304
3	Anoop	Sathyan	Chirakkal	Kasargod	Kerala	669302
4	Andriya	James	Polliylil	Ernamkulam	Kerala	676398
5	Arya	Babu	Kallayath	Palakkad	Kerala	656201

```
5 rows in set (0.08 sec)
```

```
mysql> INSERT into Instructor values(101,'Asha','Sarath',9987662314,50000);
Query OK, 1 row affected (0.28 sec)

mysql> INSERT into Instructor values(102,'Ashna','Biju',7594802484,10000);
Query OK, 1 row affected (0.23 sec)

mysql> INSERT into Instructor values(103,'Sandeep','K',9447704981,100000);
Query OK, 1 row affected (0.12 sec)

mysql> INSERT into Instructor values(104,'Asifa','Abdul',8848182886,55000);
Query OK, 1 row affected (0.15 sec)

mysql> INSERT into Instructor values(105,'George','Fransis',9567419962,150000);
Query OK, 1 row affected (0.13 sec)

mysql> select * from Instructor;
```

Inst_id	Inst_Fname	Inst_lname	Inst_ph	salary
101	Asha	Sarath	9987662314	50000
102	Ashna	Biju	7594802484	10000
103	Sandeep	K	9447704981	100000
104	Asifa	Abdul	8848182886	55000
105	George	Fransis	9567419962	150000

```
5 rows in set (0.07 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

```
mysql> INSERT into Course VALUES('20MCA101','MFCS',8),('20MCA102','DFCA',7),('20MCA103','ADS',10),('20MCA104','ASE',6),('20MCA201','ACN',7),('20MCA202','ADBMS',7),('20MCA203','AOS',6),('20MCA204','AI',7),('20MCA260','DATA MINING',4);INSERT into Course VALUES('20MCA101','MFCS',8),('20MCA102','DFCA',7),('20MCA103','ADS',10),('20MCA104','ASE',6),('20MCA201','ACN',7),('20MCA202','ADBMS',7),('20MCA203','AOS',6),('20MCA204','AI',7),('20MCA260','DATA MINING',4);
Query OK, 9 rows affected (0.14 sec)
Records: 9 Duplicates: 0 Warnings: 0

ERROR 1062 (23000): Duplicate entry '20MCA101' for key 'course.PRIMARY'
mysql> select * from Course;
```

Course_code	Course_title	Course_hour
20MCA101	MFCS	8
20MCA102	DFCA	7
20MCA103	ADS	10
20MCA104	ASE	6
20MCA201	ACN	7
20MCA202	ADBMS	7
20MCA203	AOS	6
20MCA204	AI	7
20MCA260	DATA MINING	4

```
9 rows in set (0.08 sec)
```

Activate Windows
Go to Settings to activate Windows.

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.

```
mysql> INSERT into Section VALUES(301,2,'MW','BLGNG102',35,0,1113,'20MCA260');
Query OK, 1 row affected (0.23 sec)

mysql> INSERT into Section VALUES(302,2,'MW','BLGNG103',35,5,1114,'20MCA104');
Query OK, 1 row affected (0.13 sec)

mysql> INSERT into Section VALUES(303,2,'MW','BLGNG104',35,5,1115,'20MCA109');
Query OK, 1 row affected (0.13 sec)

mysql> select * from Section;
```

Sec_id	Time_off	Days_off	Sec_room	Class_size	Num_enrolled	Inst_id	Course_code
301	2	MW	BLGNG102	35	0	1113	20MCA260
302	2	MW	BLGNG103	35	5	1114	20MCA104
303	2	MW	BLGNG104	35	5	1115	20MCA109

```
3 rows in set (0.00 sec)
```

```
mysql> update Section set Time_off=2.4 where Sec_id=301;  
Query OK, 1 row affected (0.12 sec)  
Rows matched: 1  Changed: 1  Warnings: 0
```

```
mysql> select * from Section;
```

Sec_id	Time_off	Days_off	Sec_room	Class_size	Num_enrolled	Inst_id	Course_code
301	2.4	MW	BLGNG102	35	0	1113	20MCA260
302	2	MW	BLGNG103	35	5	1114	20MCA104
303	2	MW	BLGNG104	35	5	1115	20MCA109

```
3 rows in set (0.00 sec)
```

11. Register yourself along with your 3 friends for this new course by adding a row to the ENROLMENT table. The grade should be null.

```
mysql> INSERT into Enroll VALUES(1,301,NULL);
Query OK, 1 row affected (1.14 sec)

mysql> select * from Enroll;
+-----+-----+-----+
| Stud_no | Sec_id | Grade |
+-----+-----+-----+
| 1       | 301    | NULL  |
+-----+-----+-----+
1 row in set (0.06 sec)

mysql> INSERT into Enroll VALUES(2,303,'');
ERROR 3819 (HY000): Check constraint 'grade' is violated.
mysql> INSERT into Enroll VALUES(2,303,NULL);
Query OK, 1 row affected (0.15 sec)

mysql> INSERT into Enroll VALUES(1,302,NULL);
Query OK, 1 row affected (0.12 sec)

mysql> select * from Enroll;
+-----+-----+-----+
| Stud_no | Sec_id | Grade |
+-----+-----+-----+
| 1       | 301    | NULL  |
| 2       | 303    | NULL  |
| 1       | 302    | NULL  |
+-----+-----+-----+
3 rows in set (0.05 sec)
```

12. Update the 301 section, and increase the class sizes by 10%.

```
mysql> update Section set Class_size=Class_size+(Class_size * 10/100) where Sec_id=301;
Query OK, 1 row affected, 1 warning (0.37 sec)
Rows matched: 1  Changed: 1  Warnings: 1

mysql> select * from Section;
+-----+-----+-----+-----+-----+-----+-----+-----+
| Sec_id | Time_off | Days_off | Sec_room | Class_size | Num_enrolled | Inst_id | Course_code |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 301    | 2.4      | MW       | BLGNG102 | 39         | 0             | 1113    | 20MCA260    |
| 302    | 2        | MW       | BLGNG103 | 35         | 5             | 1114    | 20MCA104    |
| 303    | 2        | MW       | BLGNG104 | 35         | 5             | 1115    | 20MCA109    |
+-----+-----+-----+-----+-----+-----+-----+-----+
3 rows in set (0.01 sec)
```


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

```
mysql> select * from Instructor;
+-----+-----+-----+-----+-----+
| Inst_id | Inst_Fname | Inst_lname | Inst_ph | salary |
+-----+-----+-----+-----+-----+
| 101     | Asha       | Sarath     | 9987662314 | 50000 |
| 102     | Ashna     | Biju       | 7594802484 | 10000 |
| 103     | Sandeep    | K          | 9447704981 | 100000 |
| 104     | Asifa     | Abdul      | 8848182886 | 55000 |
| 105     | George     | Fransis    | 9567419962 | 150000 |
+-----+-----+-----+-----+-----+
5 rows in set (0.09 sec)

mysql> update Instructor set salary=salary+(salary*10/100);
Query OK, 5 rows affected (0.18 sec)
Rows matched: 5  Changed: 5  Warnings: 0

mysql> select * from Instructor;
+-----+-----+-----+-----+-----+
| Inst_id | Inst_Fname | Inst_lname | Inst_ph | salary |
+-----+-----+-----+-----+-----+
| 101     | Asha       | Sarath     | 9987662314 | 55000 |
| 102     | Ashna     | Biju       | 7594802484 | 11000 |
| 103     | Sandeep    | K          | 9447704981 | 110000 |
| 104     | Asifa     | Abdul      | 8848182886 | 60500 |
| 105     | George     | Fransis    | 9567419962 | 165000 |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

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

```
mysql> delete from Section where Sec_id=302;
Query OK, 1 row affected (0.26 sec)

mysql> desc Section;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| Sec_id | char(7) | NO | PRI | NULL | |
| Time_off | char(10) | YES | | NULL | |
| Days_off | char(10) | YES | | NULL | |
| Sec_room | char(8) | YES | | NULL | |
| Class_size | decimal(3,0) | YES | | NULL | |
| Num_enrolled | decimal(3,0) | YES | | NULL | |
| Inst_id | char(5) | YES | | NULL | |
| Course_code | char(20) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.36 sec)

mysql> select * from Section;
+-----+-----+-----+-----+-----+-----+-----+
| Sec_id | Time_off | Days_off | Sec_room | Class_size | Num_enrolled | Inst_id | Course_code |
+-----+-----+-----+-----+-----+-----+-----+
| 301    | 2.4      | MW       | BLGNG102 | 39         | 0             | 101     | 20MCA260    |
| 303    | 2        | MW       | BLGNG104 | 35         | 5             | 103     | 20MCA109    |
+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

III. TCL Commands:

15. Undo the previous delete operation

```
mysql> rollback;  
Query OK, 0 rows affected (0.03 sec)
```

16. Save all the transactions to the database.

```
mysql> commit;  
Query OK, 0 rows affected (0.06 sec)
```

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

```
mysql> CREATE USER 'U1' IDENTIFIED BY '12345678';  
Query OK, 0 rows affected (1.60 sec)  
  
mysql> select user from mysql.user;  
+-----+  
| user |  
+-----+  
| U1   |  
| krishna |  
| mysql.infoschema |  
| mysql.session |  
| mysql.sys |  
| root |  
+-----+  
6 rows in set (0.05 sec)
```

18. Revoke the delete privilege from U1

```
mysql> REVOKE delete ON Enroll FROM U1;
Query OK, 0 rows affected (0.15 sec)
```

```
mysql> SHOW GRANTS FOR 'U1';
```

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

```
mysql> GRANT SELECT,DELETE ON Enroll TO U1;
Query OK, 0 rows affected (0.33 sec)
```

```
mysql> SHOW GRANTS FOR 'U1';
```

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

IV. 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.

```
mysql> update Student set Stud_city='kochi' where Stud_no=2;
Query OK, 1 row affected (0.14 sec)
Rows matched: 1 Changed: 1 Warnings: 0
```

```
mysql> select * from Student;
```

```
+-----+-----+-----+-----+-----+-----+-----+
| Stud_no | Stud_Fname | Stud_Lname | Stud_address | Stud_city | Stud_state | Stud_post |
+-----+-----+-----+-----+-----+-----+-----+
| 1       | Krishna   | Priya      | Valloor      | Thrissur  | Kerala     | 680306    |
| 2       | Anu       | Mol        | Chakkalakkal | kochi     | Kerala     | 6876304   |
| 3       | Anoop     | Sathyan    | Chirakkal    | Kasargod  | Kerala     | 669302    |
| 4       | Andriya   | James      | Polliyiil    | Ernakulam | Kerala     | 676398    |
| 5       | Arya      | Babu       | Kallayath    | Palakkad  | Kerala     | 656201    |
+-----+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

```
mysql> select Stud_Fname,Stud_Lname,Stud_address from Student where Stud_city='kochi';
```

```
+-----+-----+-----+
| Stud_Fname | Stud_Lname | Stud_address |
+-----+-----+-----+
| Anu        | Mol        | Chakkalakkal |
+-----+-----+-----+
1 row in set (0.05 sec)
```

20. List the student details who has longest first name

```
mysql> select * from Student where length(Stud_Fname)=(select max(length(Stud_Fname))from Student);
+-----+-----+-----+-----+-----+-----+-----+
| Stud_no | Stud_Fname | Stud_Lname | Stud_address | Stud_city | Stud_state | Stud_post |
+-----+-----+-----+-----+-----+-----+-----+
| 1       | Krishna   | Priya      | Valloor     | Thrissur  | Kerala     | 680306    |
| 4       | Andriya   | James      | Polliyil    | Ernakulam | Kerala     | 676398    |
+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.13 sec)
```

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

```
mysql> select Inst_Fname,Inst_ph from Instructor i join Course c join Section s where i.Inst_id=s.Inst_id and s.Course_code=c.Course_code and c.Course_title='AOS' or 'ADBMS';
Empty set, 1 warning (0.08 sec)
```

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

```
mysql> update Course set Course_hour=4 where Course_code='20MCA101';
Query OK, 1 row affected (0.12 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from Course;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version 5.7.26 at line 1

mysql> select * from Course;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version 5.7.26 at line 1

mysql> select * from Course;
+-----+-----+-----+
| Course_code | Course_title | Course_hour |
+-----+-----+-----+
| 20MCA101    | MFCS         | 4           |
| 20MCA102    | DFCA         | 7           |
| 20MCA103    | ADS          | 10          |
| 20MCA104    | ASE          | 6           |
| 20MCA201    | ACN          | 7           |
| 20MCA202    | ADBMS        | 7           |
| 20MCA203    | AOS          | 6           |
| 20MCA204    | AI           | 7           |
| 20MCA260    | DATA MINING | 4           |
+-----+-----+-----+
9 rows in set (0.00 sec)

mysql> select Course_code,Course_title,Course
-> _hour;
ERROR 1054 (42S22): Unknown column 'Course_code' in 'field list'

mysql> select Course_code,Course_title,Course_hour from Course where Course_hour=4 order by Course_code desc;
+-----+-----+-----+
| Course_code | Course_title | Course_hour |
+-----+-----+-----+
| 20MCA260    | DATA MINING | 4           |
| 20MCA101    | MFCS         | 4           |
+-----+-----+-----+
2 rows in set (0.02 sec)
```

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

```
mysql> select * from Student;
```

Stud_no	Stud_Fname	Stud_Lname	Stud_address	Stud_city	Stud_state	Stud_post
1	Krishna	Priya	Valloor	Thrissur	Kerala	680306
2	Anu	Mol	Chakkalakkal	kochi	Kerala	6876304
3	Anoop	Sathyan	Chirakkal	Kasargod	Kerala	669302
4	Andriya	James	Polliyl	Ernamkulam	Kerala	676398
5	Arya	Babu	Kallayath	Palakkad	Kerala	656201

```
5 rows in set (0.07 sec)
```



```
mysql> select Stud_Fname,Stud_Lname from Student order by Stud_Fname desc;
```

Stud_Fname	Stud_Lname
Krishna	Priya
Arya	Babu
Anu	Mol
Anoop	Sathyan
Andriya	James

```
5 rows in set (0.06 sec)
```

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

```
mysql> select Student.Stud_Fname,Student.Stud_Lname,Section.Course_code,Enroll.Sec_id from Student inner join Section inner join Enroll on Student.Stud_no=Enroll.Stud_no and Section.Sec_id=Enroll.Sec_id group by Enroll.Grade;
```

Stud_Fname	Stud_Lname	Course_code	Sec_id
Krishna	Priya	20MCA260	301

```
1 row in set (0.43 sec)
```

V. 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.

```
mysql> select Stud_Fname,Stud_Lname,Enroll.Sec_id,Enroll.Grade from Student inner join Enroll on Student.Stud_no=Enroll.Stud_no;
```

Stud_Fname	Stud_Lname	Sec_id	Grade
Krishna	Priya	301	NULL
Anu	Mol	303	NULL
Krishna	Priya	302	NULL

```
3 rows in set (0.06 sec)
```

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.


```
mysql> select Student.Stud_Fname,Student.Stud_Lname,Enroll.Sec_id,Enroll.Grade from Student left join Enroll on Student.Stud_no=Enroll.Stud_no;
+-----+-----+-----+-----+
| Stud_Fname | Stud_Lname | Sec_id | Grade |
+-----+-----+-----+-----+
| Krishna    | Priya      | 302    | NULL   |
| Krishna    | Priya      | 301    | NULL   |
| Anu        | Mol        | 303    | NULL   |
| Anoop      | Sathyan    | NULL   | NULL   |
| Andriya    | James      | NULL   | NULL   |
| Arya       | Babu       | NULL   | NULL   |
+-----+-----+-----+-----+
6 rows in set (0.08 sec)
```

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

```
mysql> select Inst_Fname,Inst_ph from Instructor i join Course c join Section s where i.Inst_id=s.Inst_id and s.Course_code=c.Course_code and c.Course_title='AO
5' or 'ADBNS';
Empty set, 1 warning (0.08 sec)

mysql> update Instructor set salary=salary+(salary*7/100) where salary<(select avg(salary));
Query OK, 0 rows affected (0.30 sec)
Rows matched: 0 Changed: 0 Warnings: 0

mysql> select * from Instructor;
+-----+-----+-----+-----+-----+
| Inst_id | Inst_Fname | Inst_Lname | Inst_ph | salary |
+-----+-----+-----+-----+-----+
| 101     | Asha       | Sarath     | 9987662314 | 55000 |
| 102     | Ashna     | Biju       | 7594802484 | 11000 |
| 103     | Sandeep    | K          | 9447704981 | 110000 |
| 104     | Asifa     | Abdul      | 8848182886 | 60500 |
| 105     | George     | Fransis    | 9567419962 | 165000 |
+-----+-----+-----+-----+-----+
5 rows in set (0.05 sec)
```

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

```
mysql> select * from Instructor;
+-----+-----+-----+-----+-----+
| Inst_id | Inst_Fname | Inst_Lname | Inst_ph | salary |
+-----+-----+-----+-----+-----+
| 101     | Asha       | Sarath     | 9987662314 | 55000 |
| 102     | Ashna     | Biju       | 7594802484 | 11000 |
| 103     | Sandeep    | K          | 9447704981 | 110000 |
| 104     | Asifa     | Abdul      | 8848182886 | 60500 |
| 105     | George     | Fransis    | 9567419962 | 165000 |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> select Inst_Fname,Inst_Lname,salary from Instructor where salary=(select max(salary) from Instructor) and Inst_Fname in(select Inst_Fname from Instructor where I
nst_Fname like '%a');
+-----+-----+-----+
| Inst_Fname | Inst_Lname | salary |
+-----+-----+-----+
| Asifa      | Abdul      | 60500  |
+-----+-----+-----+
1 row in set (0.00 sec)
```

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

```
mysql> select * from Instructor where salary=(select min(salary) from Instructor);
+-----+-----+-----+-----+-----+
| Inst_id | Inst_Fname | Inst_Lname | Inst_ph | salary |
+-----+-----+-----+-----+-----+
| 102     | Ashna     | Biju       | 7594802484 | 11000 |
+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

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

```
mysql> select * from Student;
```

Stud_no	Stud_Fname	Stud_Lname	Stud_address	Stud_city	Stud_state	Stud_post
1	Krishna	Priya	Valloor	Thrissur	Kerala	680306
2	Anu	Mol	Chakkalakkal	kochi	Kerala	6876304
3	Anoop	Sathyan	Chirakkal	Kasargod	Kerala	669302
4	Andriya	James	Polliyil	Ernamkulam	Kerala	676398
5	Arya	Babu	Kallayath	Palakkad	Kerala	656201

```
5 rows in set (0.00 sec)
```

```
mysql> select * from Student where Stud_city='kochi' and 'Kerala' or 'banglore', and 'karnataka' or Stud_city in('kochi','Kerala','banglore','karnataka');
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 ', and 'karnat
```

```
aka' or Stud_city in('kochi','Kerala','banglore','karnataka'))' at line 1
```

```
mysql> select * from Student where Stud_city='kochi' and 'Kerala' or 'banglore' and 'karnataka' or Stud_city in('kochi','Kerala','banglore','karnataka');
```

Stud_no	Stud_Fname	Stud_Lname	Stud_address	Stud_city	Stud_state	Stud_post
2	Anu	Mol	Chakkalakkal	kochi	Kerala	6876304

```
1 row in set, 2 warnings (0.04 sec)
```