CO 1	Design and build a simple relational database system and demonstrate competence with the fundamentals tasks involved with modelling, designing and implementing a database.

CYBER COLLEGE DATABASE:

1. **Table Name: STUDENT**

COLUMN NAME	DATATYPE(LENGTH)	CONSTRAINTS
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)	

2) Table Name: INSTRUCTOR

COLUMN NAME	DATATYPE(LENGTH)	CONSTRAINTS
Instructor_id	VARCHAR(5)	PRIMARY KEY
Instructor_lname	VARCHAR(30)	
Instructor_fname	VARCHAR(20)	
Instructor_phone	VARCHAR(8)	

3) Table Name: COURSE

COLUMN NAME	DATATYPE(LENGTH)	CONSTRAINTS
Course_Code	VARCHAR(6)	PRIMARY KEY
Course_Title	VARCHAR(25)	
Course_Hours	NUMBER(2,0)	
Semester	VARCHAR(20)	

4) Table Name: SECTION

COLUMN NAME	DATATYPE(LENGTH)	CONSTRAINTS
Section_id	NUMBER	PRIMARY KEY
Time_Offered	VARCHAR(10)	

Days_Offered	VARCHAR(10)	
Section_Room	VARCHAR(8)	
Class_Size	NUMBER(3,0)	CHECK >=0
Number_Enrolled	NUMBER(3,0)	CHECK >=0
Instructor_id	VARCHAR(5)	FOREIGN KEY
Course_Code	VARCHAR(6)	FOREIGN KEY

5) Table Name: ENROLMENT

COLUMN NAME	DATATYPE(LENGTH)	CONSTRIANTS
Stud_No	VARCHAR(9)	PRIMARY KEY, FOREIGN KEY
Section_id	VARCHAR(7)	PRIMARY KEY, FOREIGN KEY
Grade	VARCHAR(2)	

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.

Student table:

```
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 (2.75 sec)

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 (0.23 sec)
```

Instructor table:

```
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 (0.80 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 (0.19 sec)
```


Course table:

```
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 (1.13 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 (0.10 sec)
```

Section table:

```
mysql> CREATE TABLE SECTION(section_id numeric primary key,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(
course_code));
Query OK, 0 rows affected (1.39 sec)

mysql> desc section;
+----------------+--------------+------+-----+---------+-------+
| Field          | Type         | Null | Key | Default | Extra |
+----------------+--------------+------+-----+---------+-------+
| section_id     | decimal(10,0) | NO   | PRI | 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 (0.12 sec)
```

Enrolment table:

```
mysql> CREATE TABLE ENROLLMENT(stud_no varchar(9) NOT NULL REFERENCES student(stud_no),section_id varchar(7) NOT NULL REFERENCES section(section_id),Grade varchar(2),pr
imary key(stud_no,section_id));
Query OK, 0 rows affected (1.25 sec)

mysql> desc enrollment;
+------------+-----------+------+-----+---------+-------+
| 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 (0.14 sec)
```

2. Add a field Country to the STUDENT table with the default values set to “India”.

```
mysql> alter table student add country varchar(30) default "india";
Query OK, 0 rows affected (1.72 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(30) | YES  |     | india   |       |
+--------------+-------------+------+-----+---------+-------+
8 rows in set (0.10 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 enrollment add constraint Grade check (grade in('a','b','c'));
Query OK, 0 rows affected (3.88 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

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

```
mysql> alter table enrollment modify grade varchar(2);
Query OK, 0 rows affected (0.67 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

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

```
mysql> alter table instructor add salary varchar(30);
Query OK, 0 rows affected (1.31 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(30) | YES  |     | NULL    |       |
+------------------+-------------+------+-----+---------+-------+
5 rows in set (0.11 sec)
```

6. Drop the column Country from the STUDENT table.

```
mysql> alter table student drop country;
Query OK, 0 rows affected (3.05 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 (0.04 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> 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;
ERROR 1050 (42S01): Table 'inst' already exists
mysql> select * from inst;
+---------------+-----------------+-----------------+-----------------+--------------+
| instructor_id | instructor_fname | instructor_lname | instructor_phone | course_title |
+---------------+-----------------+-----------------+-----------------+--------------+
| i03           | sandeep          | r               | 456766          | data mining  |
| i02           | ashna            | sh              | 345678          | aos          |
+---------------+-----------------+-----------------+-----------------+--------------+
2 rows in set (0.00 sec)
```


DML Commands:

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

```
mysql> insert into student values(1,'j','minnu','pk','clk','ke',68);
Query OK, 1 row affected (0.22 sec)

mysql> insert into student values(2,'s','mijo','ak','ban','ka',69);
Query OK, 1 row affected (0.19 sec)

mysql> insert into student values(3,'g','merli','fk','coi','ta',90);
Query OK, 1 row affected (0.09 sec)

mysql> insert into student values(4,'i','maria','ok','sel','ati',70);
ERROR 1406 (22001): Data too long for column 'state' at row 1
mysql> insert into student values(4,'i','maria','ok','sel','at',70);
Query OK, 1 row affected (0.10 sec)

mysql> insert into student values(5,'m','manu','bg','fer','rt',60);
Query OK, 1 row affected (0.11 sec)

mysql> select*from student;
+---------+------------+------------+--------------+-----------+-------+------------+
| stud_no | stud_lname | stud_fname | stud_address | stud_city | state | postalcode |
+---------+------------+------------+--------------+-----------+-------+------------+
| 1       | j          | minnu      | pk           | clk       | ke    | 68         |
| 2       | s          | mijo       | ak           | ban       | ka    | 69         |
| 3       | g          | merli      | fk           | coi       | ta    | 90         |
| 4       | i          | maria      | ok           | sel       | at    | 70         |
| 5       | m          | manu       | bg           | fer       | rt    | 60         |
+---------+------------+------------+--------------+-----------+-------+------------+
5 rows in set (0.00 sec)
```

```
mysql> insert into instructor values('i01','m','asha',897555,23000);
Query OK, 1 row affected (0.13 sec)

mysql> insert into instructor values('i02','sh','ashna',345678,30000);
Query OK, 1 row affected (0.10 sec)

mysql> insert into instructor values('i03','r','sandeep',456766,25000);
Query OK, 1 row affected (0.10 sec)

mysql> insert into instructor values('i04','g','asifa',46567674,35000);
Query OK, 1 row affected (0.14 sec)

mysql> insert into instructor values('i05','k','george',2345767,31000);
Query OK, 1 row affected (0.14 sec)

mysql> select
    -> ;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server vers
mysql> select*from instructor;
+---------------+-----------------+------------------+------------------+--------+
| instructor_id | instructor_lname | instructor_fname | instructor_phone | salary |
+---------------+-----------------+------------------+------------------+--------+
| i01           | m               | asha             | 897555           | 23000  |
| i02           | sh              | ashna            | 345678           | 30000  |
| i03           | r               | sandeep          | 456766           | 25000  |
| i04           | g               | asifa            | 46567674         | 35000  |
| i05           | k               | george           | 2345767          | 31000  |
+---------------+-----------------+------------------+------------------+--------+
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

```
mysql> insert into course values('20mca1','ads',7,1);
Query OK, 1 row affected (0.16 sec)

mysql> insert into course values('20mca2','ase',8,1);
Query OK, 1 row affected (0.13 sec)

mysql> insert into course values('20mca3','adbms',9,2);
Query OK, 1 row affected (0.21 sec)

mysql> insert into course values('20mca4','aos',7,2);
Query OK, 1 row affected (0.10 sec)

mysql> insert into course values('20mca260','data mining',4,2);
ERROR 1406 (22001): Data too long for column 'course_code' at row 1
mysql> insert into course values('20mca26','data mining',4,2);
ERROR 1406 (22001): Data too long for column 'course_code' at row 1
mysql> insert into course values('20mca6','data mining',4,2);
Query OK, 1 row affected (0.11 sec)

mysql> select*from course;
+-------------+--------------+---------------+----------+
| course_code | course_title | course_hours | semester |
+-------------+--------------+---------------+----------+
| 20mca1      | ads          |             7 | 1        |
| 20mca2      | ase          |             8 | 1        |
| 20mca3      | adbms        |             9 | 2        |
| 20mca4      | aos          |             7 | 2        |
| 20mca6      | data mining  |             4 | 2        |
+-------------+--------------+---------------+----------+
5 rows in set (0.04 sec)
```

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(301,2-4,'MW','BLGNG102',35,0,'i3','20mca6');
Query OK, 1 row affected (0.25 sec)

mysql> insert into section values(302,2,'MW','BLGNG102',35,5,'i2','20mca4');
Query OK, 1 row affected (0.15 sec)

mysql> insert into section values(303,2,'MW','BLGNG102',35,5,'i5','20mca5');
Query OK, 1 row affected (0.08 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 | i3            | 20mca6      |
|        302 | 2            | MW           | BLGNG102     |         35 |               5 | i2            | 20mca4      |
|        303 | 2            | MW           | BLGNG102     |         35 |               5 | i5            | 20mca5      |
+------------+--------------+--------------+--------------+------------+-----------------+---------------+-------------+
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 8.0 Command Line Client

mysql> Insert into Enrolment values(1,301,'');
Query OK, 1 row affected (0.07 sec)

mysql> Insert into Enrolment values(2,302,'');
Query OK, 1 row affected (0.10 sec)

mysql> Insert into Enrolment values(3,303,'');
Query OK, 1 row affected (0.11 sec)

mysql> select * from Enrolment;
+---------+------------+-------+
| Stud_no | Section_id | Grade |
+---------+------------+-------+
| 1       | 301        |       |
| 2       | 302        |       |
| 3       | 303        |       |
+---------+------------+-------+
3 rows in set (0.00 sec)

mysql>
```

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 section_id=301;
Query OK, 1 row affected, 1 warning (0.14 sec)
Rows matched: 1  Changed: 1  Warnings: 1

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 | i3            | 20mca6      |
|        302 | 2            | MW           | BLGNG102     |         35 |               5 | i2            | 20mca4      |
|        303 | 2            | MW           | BLGNG102     |         35 |               5 | i5            | 20mca5      |
+------------+--------------+--------------+--------------+------------+-----------------+---------------+-------------+
3 rows in set (0.03 sec)

mysql>
```

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

```
mysql> update instructor set salary=salary+(salary * 10/100);
Query OK, 5 rows affected (0.13 sec)
Rows matched: 5  Changed: 5  Warnings: 0

mysql> select*from instructor;
+---------------+------------------+------------------+------------------+--------+
| instructor_id | instructor_lname | instructor_fname | instructor_phone | salary |
+---------------+------------------+------------------+------------------+--------+
| i01           | m                | asha             | 897555           |  25300 |
| i02           | sh               | ashna            | 345678           |  33000 |
| i03           | r                | sandeep          | 456766           |  27500 |
| i04           | g                | asifa            | 46567674         |  38500 |
| i05           | k                | george           | 2345767          |  34100 |
+---------------+------------------+------------------+------------------+--------+
5 rows in set (0.00 sec)
```

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

```
mysql> delete from section where section_id =302;
Query OK, 1 row affected (0.14 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 | i03           | 20mca6      |
|        303 | 2            | MW           | BLGNG102     |         35 |               5 | i5            | 20mca5      |
+------------+--------------+--------------+--------------+------------+-----------------+---------------+-------------+
2 rows in set (0.03 sec)
```

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 (0.00 sec)
```

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

```
mysql> create user 'U1'identified by '1234';
Query OK, 0 rows affected (1.23 sec)

mysql> select user from mysql.user;
+------------------+
| user             |
+------------------+
| U1               |
| mysql.infoschema |
| mysql.session    |
| mysql.sys        |
| root             |
+------------------+
5 rows in set (0.00 sec)
```

```
mysql> grant select,delete on Enrollment to U1;
Query OK, 0 rows affected (0.17 sec)

mysql> show grants for 'U1';
+-----------------------------------------------------+
| Grants for U1@%                                     |
+-----------------------------------------------------+
| GRANT USAGE ON *.* TO `U1`@`%`                      |
| GRANT SELECT, DELETE ON `minnu`.`enrollment` TO `U1`@`%` |
+-----------------------------------------------------+
2 rows in set (0.02 sec)
```

18. Revoke the delete privilege from U1

```
mysql> REVOKE delete ON enrollment from U1;
Query OK, 0 rows affected (0.12 sec)

mysql> SHOW GRANTS FOR 'U1';
+-----------------------------------------------------+
| Grants for U1@%                                     |
+-----------------------------------------------------+
| GRANT USAGE ON *.* TO `U1`@`%`                      |
| GRANT SELECT ON `minnu`.`enrollment` TO `U1`@`%`    |
+-----------------------------------------------------+
2 rows in set (0.00 sec)
```

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

```
mysql> select stud_lname,stud_fname,stud_address from student where stud_city="kochi";
+------------+------------+--------------+
| stud_lname | stud_fname | stud_address |
+------------+------------+--------------+
| h          | lal        | sdsa         |
+------------+------------+--------------+
1 row in set (0.00 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_lname | stud_fname | stud_address | stud_city | state | postalcode |
+---------+------------+------------+-------------+-----------+-------+------------+
| 1       | j          | minnu      | pk          | clk       | ke    | 68         |
| 3       | g          | merli      | fk          | coi       | ta    | 90         |
| 4       | i          | maria      | ok          | sel       | at    | 70         |
+---------+------------+------------+-------------+-----------+-------+------------+
3 rows in set (0.09 sec)
```


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

```
mysql> select n.instructor_fname,n.instructor_phone as instructor,co.course_title as course from instructor n,course co where course_title ='aos'and 'dbms';
Empty set, 1 warning (0.03 sec)
```

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

```
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 |
+-------------+--------------+--------------+
| 20mca6      | data mining  |            4 |
+-------------+--------------+--------------+
1 row in set (0.00 sec)
```

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

```
mysql> select stud_fname,stud_lname,stud_phone from student order by stud_fname desc;
+------------+------------+------------+
| stud_fname | stud_lname | stud_phone |
+------------+------------+------------+
| minnu      | j          | 66777      |
| mijo       | s          | 65657      |
| merli      | g          | 45667      |
| maria      | i          | 45632      |
| manu       | m          | 8766       |
| lal        | h          | 356788     |
+------------+------------+------------+
6 rows in set (0.00 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,enrollment.section_id from student inner join section inner join enrollment on student.stud_no =
enrollment.stud_no and section. section_id = enrollment.section_id group by enrollment.grade;
+------------+------------+-------------+------------+
| stud_fname | stud_lname | course_code | section_id |
+------------+------------+-------------+------------+
| minnu      | j          | 20mca6      | 301        |
+------------+------------+-------------+------------+
1 row in set (0.11 sec)
```

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

```
mysql> select student.stud_fname,student.stud_lname,enrollment.section_id,enrollment.grade from student inner join enrollment on student.stud_no=enrollment.stud_no;
+------------+------------+------------+-------+
| stud_fname | stud_lname | section_id | grade |
+------------+------------+------------+-------+
| minnu      | j          | 301        |       |
| mijo       | s          | 302        |       |
| merli      | g          | 303        |       |
+------------+------------+------------+-------+
3 rows in set (0.07 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,enrollment.section_id,enrollment.grade from student left join enrollment on student.stud_no=enrollment.stud_no;
+------------+------------+------------+-------+
| stud_fname | stud_lname | section_id | grade |
+------------+------------+------------+-------+
| minnu      | j          | 301        |       |
| mijo       | s          | 302        |       |
| merli      | g          | 303        |       |
| maria      | i          | NULL       | NULL  |
| manu       | m          | NULL       | NULL  |
| lal        | h          | NULL       | NULL  |
+------------+------------+------------+-------+
```

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

```
mysql> update instructor set salary =salary+(salary*7/100) where salary<(select avg(salary));
Query OK, 0 rows affected (0.06 sec)
Rows matched: 0  Changed: 0  Warnings: 0

mysql> select* from instructor;
+---------------+------------------+------------------+------------------+--------+
| instructor_id | instructor_lname | instructor_fname | instructor_phone | salary |
+---------------+------------------+------------------+------------------+--------+
| i01           | m                | asha             | 897555           | 25300  |
| i02           | sh               | ashna            | 345678           | 33000  |
| i03           | r                | sandeep          | 456766           | 27500  |
| i04           | g                | asifa            | 46567674         | 38500  |
| i05           | k                | george           | 2345767          | 34100  |
+---------------+------------------+------------------+------------------+--------+
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.

```
mysql> select instructor_fname,salary from instructor where salary =(select max(salary)from instructor)and instructor_fname in(select instructor_fname from instructor w
here instructor_fname like '%a');
+-----------------+--------+
| instructor_fname | salary |
+-----------------+--------+
| asifa           | 38500  |
+-----------------+--------+
1 row in set (0.06 sec)
```

29. Display the details of instructor who draws lowest salary

```
mysql> select* from instructor where salary =(select min(salary)from instructor);
+---------------+------------------+------------------+------------------+--------+
| instructor_id | instructor_lname | instructor_fname | instructor_phone | salary |
+---------------+------------------+------------------+------------------+--------+
| 101           | m                | asha             | 897555           | 25300  |
+---------------+------------------+------------------+------------------+--------+
1 row in set (0.01 sec)
```

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

```
mysql> select * from student where stud_city ='kerala' and 'kochi' or 'banglore' and 'karnataka' or stud_city in('kerala', 'kochi' , 'banglore' , 'karnataka');
+---------+------------+------------+-------------+-----------+-------+------------+------------+
| stud_no | stud_lname | stud_fname | stud_address | stud_city | state | postalcode | stud_phone |
+---------+------------+------------+-------------+-----------+-------+------------+------------+
| 6       | h          | lal        | sdsa         | kochi     | kr    | 5566       | 356788     |
+---------+------------+------------+-------------+-----------+-------+------------+------------+
1 row in set, 2 warnings (0.01 sec)
```