CASE-STUDY

DBMS LAB (15B17CI372)

PROJECT TITLE

COLLEGE MANAGEMENT SYSTEM

BATCH: B13

GROUP MEMBERS:

Khushboo Kumari (19803003)

Kanistha (19803008)

Kanishka Khullar (19803011)

Pranav Gupta (19803021)

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INTRODUCTION

College Management System

It is a small scale project which manages the database of a particular college. This system contains details about Students, Batches,Departments , Faculties and Time Table and thus helps to reduce the burden and haphazard in maintaining records.

Here a limited dataset is taken into consideration which can be enhanced in future . Also some assumptions are made so as to avoid the confusion , like all students of a particular batch have the same subjects.

1.The College database Management System keeps a record of its students:

1.1 Every student has a unique ID, name, email ,date of birth and contacts.

1.2 The database keeps track of enrollments made by the students.

1.3 It keeps track of actual strength in a batch corresponding to insertion and update queries.

1.4 Each batch has a class representative who manages the day to day work

2. The College database Management System keeps a track of the employees (Faculties) and stores their information in the database.

2.1 The name, employee id, email and salary are stored in the database.

2.2 Each employee has a unique id.

2.3 Since this is a rapidly growing establishment, the college database continually keeps employing more employees to keep up with the workload.

2.4 The institute can employ various employees.

3. It also stores the information of Timetable with time slot and corresponding day

3.1 No same slot is allotted to a batch twice as students can be present only at one place at a time whereas different batches can have a slot at the same time.

4. Each department has a faculty corresponding to a department

4.1 This database system contains details about all the subjects taught in the college along with subject code.

4.2 Each department may have more than one one faculty.

COMPONENTS OF DATABASE DESIGN

These definitions will help in better understanding of the project.

An **Entity** is anything in the enterprise that is to be represented in our database. An entity can be a place, person, object, event or a concept, which stores data in the database. The characteristics of entities must have an attribute, and a unique key. Every entity is made up of some 'attributes' which represent that entity.

An **Attribute** is a single-valued property of either an entity-type or a relationship type.

Primary Key - is a column or group of columns in a table that uniquely identifies every row in that table. These are represented in underlined form.

Foreign Key - is a column that creates a relationship between two tables. The purpose of Foreign keys is to maintain data integrity and allow navigation between two different instances of an entity. It is represented by an '*' mark at the end of the attribute.

Here we represent the database management system for a college.

Relationships and Cardinality

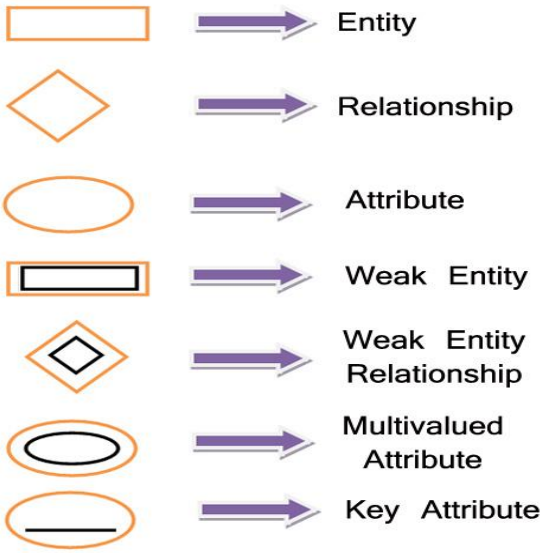
Relationship is nothing but an association among two or more entities.Entities take part in relationships. We can often identify relationships with verbs or verb phrases.

Cardinality defines the numerical attributes of the relationship between two entities or entity sets. These are most useful in describing binary relation sets.

Different types of cardinal relationships are:

- **One-to-One Relationships (1 : 1)** : One entity from entity set X can be associated with at most one entity of entity set Y and vice versa.
- **One-to-Many Relationships (1 : M)** : One entity from entity set X can be associated with multiple entities of entity set Y, but an entity from entity set Y can be associated with at least one entity.
- **Many to One Relationships (M : 1)** : More than one entity from entity set X can be associated with at most one entity of entity set Y. However, an entity from entity set Y may or may not be associated with more than one entity from entity set X.
- **Many-to-Many Relationships (M : N)** : One entity from X can be associated with more than one entity from Y and vice versa.

ENTITY RELATIONSHIP DIAGRAM



ER diagrams help to explain the logical structure of databases. ER diagrams are created based on three basic concepts: entities, attributes and relationships

ER Diagrams contain different symbols, here's how they are represented.

TABLES AND RELATIONS

STUDENT

(Enroll INT , DOB DATE , Name VARCHAR(20) , Mob_Num BIGINT , Email VARCHAR(30));

BATCH

(BID VARCHAR(4) , Strength : INT, CR_Enroll INT);

ENROLLED

(ENROLL INT, BID VARCHAR(4));

SUBJECT

(SCODE VARCHAR(15) , SNAME VARCHAR(30))

DEPARTMENT

(DID INT , DNAME VARCHAR(30))

FACULTY

(FID INT ,FNAME VARCHAR(20) , EMAIL VARCHAR(30), SALARY REAL,DID INT);

HOD

(DID INT , FID INT);

FAC_SUBJ

(FID INT, SCODE VARCHAR(15));

TIME_TABLE

(DAY VARCHAR(11), START_T TIME , DURATION INT , BID VARCHAR(4), SCODE VARCHAR(15), FID INT);

ENTITY RELATIONSHIP DIAGRAM

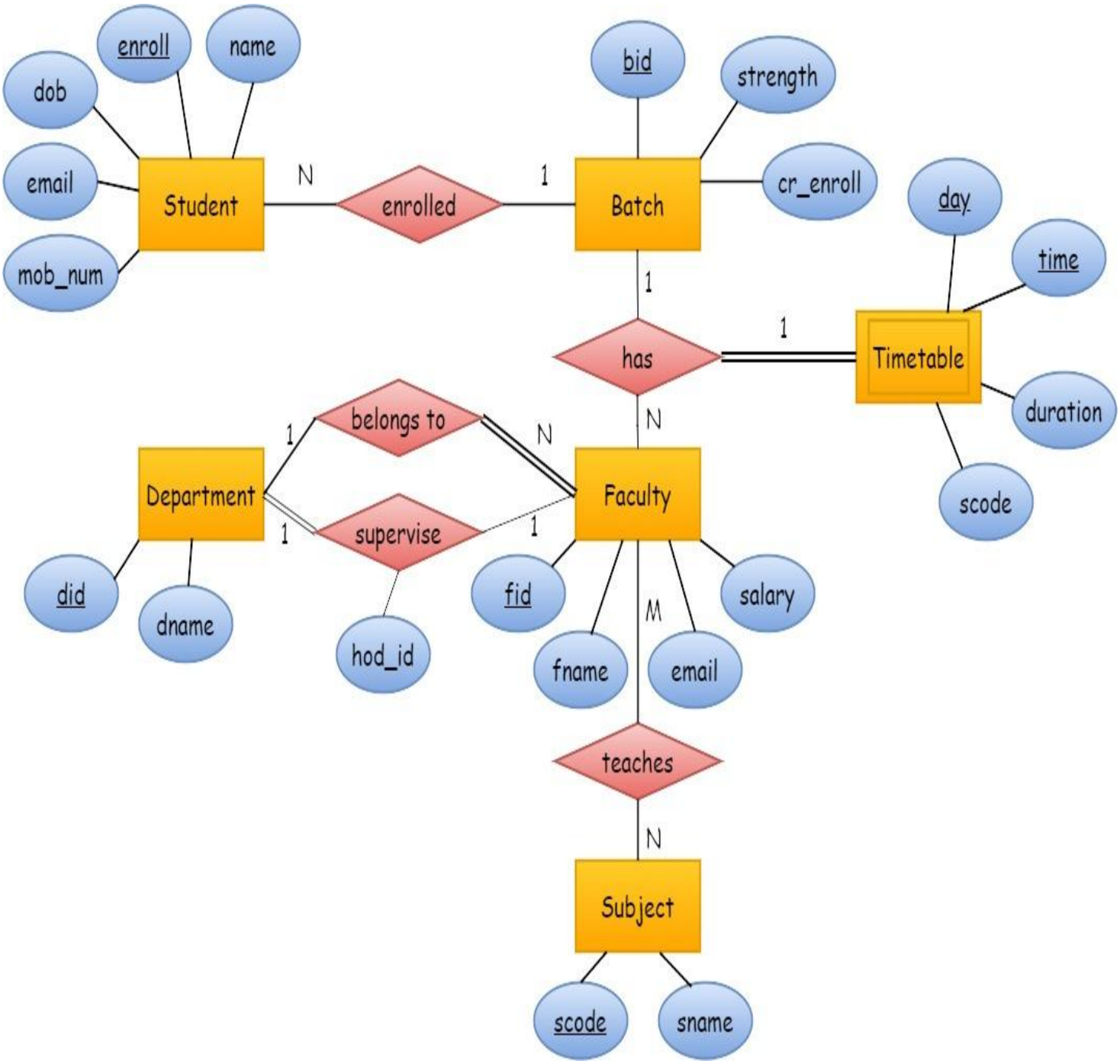


TABLE CREATION AND DATA INSERTION

```
DROP DATABASE IF EXISTS dbw_project;
CREATE DATABASE dbw_project;
USE dbw_project;
CREATE TABLE Student (
   enroll INT PRIMARY KEY,
   name VARCHAR(50),
   dob DATE,
   email VARCHAR(50),
   mob_num BIGINT );
 -- DATA INSERTION
INSERT INTO Student VALUES
(19803021,"PRANAV GUPTA","2001-11-14","guptapranav@gmail.com",7878787878),
(19803003,"KHUSHBOO KUMARI","2001-11-14","kumarikhushboo@gmail.com",9834567878),
(19803008,"KANISTHA","2001-11-14","kanistha@gmail.com",7823456578),
(19803011,"KANISHKA KHULLAR","2001-11-14","khullarkanishka@gmail.com",7878651298),
(19103223,"ABHINAV VERMA","2001-04-06","avverma@gmail.com",9898989898),
(19103029,"MONICA JAIN","2001-10-19","monica@gmail.com",1212121212),
(19103024,"NIDHI JAIN","2000-03-10","nidhijn@gmail.com",9899647123),
(19103015,"PAWAN SONI","2000-10-06","pawansoni@gmail.com",9632786512),
(19103020,"ANIL KUMAR","2000-07-19","anil_k@gmail.com",9627651010),
(19103005,"VAIBHAV TIWARI","2001-03-12","vaibhavt@gmail.com",9455237465),
(19103018,"RISHI BANGAR","2002-12-24","rishbangar@gmail.com",9566905400),
(19803013,"ATUL TIWARI","2000-01-01","atultiw@gmail.com",9080342675),
(19803017,"RAVI GUPTA","2001-11-05","ravi.gupta@gmail.com",9780512676),
(19803007,"YOGESH RAJ","2000-08-01","yog.raj@gmail.com",8880382675),
(19803016,"PANKAJ SHARMA","2002-05-12","pankaj__@gmail.com",9780032161),
(19803019,"EKANSH SHARMA","2000-11-03","1kansh@gmail.com",9980352775),
(19103221,"STUTI BHARDWAJ","2000-03-11","stutiii@gmail.com",8798449658),
(19103214,"RAGHAV BANSAL","2000-10-13","r.raghav@gmail.com",9899107648),
```

```
(19103227,"DIYA SINGH","2001-02-28","diya_sing@gmail.com",9568912893),
(19103211,"TANISHQ VATS","2000-02-16","tanishq07@gmail.com",9899449308),
(19103228,"VIHAAN MEHRA","2000-03-11","vihaanmeh@gmail.com",8798669898);

CREATE TABLE Batch (
   bid VARCHAR(4) PRIMARY KEY,
   strength INT,
   cr_enroll INT,
   FOREIGN KEY (cr_enroll)
   REFERENCES Student (enroll) );
-- DATA INSERTION
INSERT INTO Batch VALUES
("B1",0,19103029),
("B13",0,19803021),
("B7",0,19103223);

CREATE TABLE Enrolled (
   enroll INT,
   bid VARCHAR(4),
   PRIMARY KEY (enroll , bid),
   FOREIGN KEY (enroll)
      REFERENCES Student (enroll),
   FOREIGN KEY (bid)
      REFERENCES Batch (bid)
);
-- 1 AUTOMATIC UPDATION OF BATCH STRENGTH UPON ENROLLMENT OF A STUDENT IN A BATCH
drop procedure if exists insert_trigger_details;
delimiter //
create procedure insert_trigger_details(in sid int,in nbid varchar(4))
begin
update batch set strength=strength+1 where bid=nbid;
end //
```

```
DELIMITER ;
drop trigger if exists insert_batch;
DELIMITER //
CREATE TRIGGER insert_batch  after insert ON enrolled FOR EACH ROW
BEGIN
CALL insert_TRIGGER_DETAILS(new.enroll,new.bid);
END //
DELIMITER ;
 -- DATA INSERTION
INSERT INTO Enrolled VALUES
(19803003,'B13'),(19803008,'B13'),(19803011,'B13'),(19103228,"B7"),
(19103029,"B1"),(19803021,"B13"),(19103223,"B7"),(19103024,"B1"),
(19103015,"B1"),(19103020,"B1"),(19103005,"B1"),(19103018,"B1"),
(19803013,"B13"),(19803017,"B13"),(19803007,"B13"),(19803016,"B13"),
(19803019,"B13"),(19103221,"B7"),(19103214,"B7"),(19103227,"B7"),
(19103211,"B7");

CREATE TABLE Subject (
    scode VARCHAR(15) PRIMARY KEY,
    sname VARCHAR(30) );
 -- DATA INSERTION
INSERT INTO SUBJECT VALUES
("15B11CI313","COA"),
("15B11CI212","DBMS"),
("15B17CI411","SDF-2");

CREATE TABLE Department (
    did INT PRIMARY KEY,
    dname VARCHAR(30));
 -- DATA INSERTION
INSERT INTO DEPARTMENT VALUES
(11,"CSE"),(12,"IT");
```

```
CREATE TABLE Faculty (
  fid INT PRIMARY KEY,
  fname VARCHAR(50),
  email VARCHAR(50),
  salary REAL,
  did INT,
  FOREIGN KEY (did)
     REFERENCES Department (did) );
-- DATA INSERTION
INSERT INTO FACULTY VALUES
(1923,"ANKITA WADHWA","ankita.wadhwa@mail.jiit.ac.in",70000,11),
(1823,"PARUL AGGARWAL","parul.aggarwal@mail.jiit.ac.in",68000,11),
(2212,"EKANT JOSHI","ekant.joshi@mail.jiit.ac.in",69000,11),
(2213,"TANYA NANDA","tanya.nanda@mail.jiit.ac.in",67500,11),
(2215,"YASH SEHGAL","yash.sehgal@mail.jiit.ac.in",68500,11),
(2217,"N K SINGH","nk.singh@mail.jiit.ac.in",72000,11),
(2218,"HITESH JAIN","hitesh,jain@mail.jiit.ac.in",68000,12),
(1922,"JUGAL MITTAL","jugal.mittal@mail.jiit.ac.in",67500,12),
(1819,"RAMA GUPTA","rama.gupta@mail.jiit.ac.in",71000,12),
(1822,"PRAGYA MISHRA","pragya.mishra@mail.jiit.ac.in",66000,12);

CREATE TABLE HOD (
  did INT,
  fid INT,
  PRIMARY KEY (did , fid),
  FOREIGN KEY (did)
     REFERENCES Department (did),
  FOREIGN KEY (fid)
     REFERENCES Faculty (fid) );
-- DATA INSERTION
INSERT INTO HOD VALUES  (11,1923), (12,1819);
CREATE TABLE Fac_Subj (
```

```
    fid INT,
    scode VARCHAR(15),
    PRIMARY KEY (fid , scode),
    FOREIGN KEY (fid)
        REFERENCES Faculty (fid),
    FOREIGN KEY (scode)
        REFERENCES Subject (scode) );

 -- DATA INSERTION
INSERT INTO Fac_Subj VALUES
(1923,"15B11CI212"),(1923,"15B11CI313"),(1823,"15B17CI411"),(2212,"15B17CI411"),
(2213,"15B11CI212"),(2215,"15B17CI411"),(2215,"15B11CI313"),(2215,"15B11CI212"),
(2217,"15B11CI313"),(2217,"15B17CI411"),(2218,"15B11CI212"),(1922,"15B17CI411"),
(1922,"15B11CI212"),(1819,"15B17CI411"),(1822,"15B11CI212"),(1822,"15B17CI411");

CREATE TABLE Time_Table (
    day VARCHAR(11),
    start_time TIME,
    duration INT,
    bid VARCHAR(4),
    scode VARCHAR(15),
    fid INT,
    PRIMARY KEY (day , start_time , bid),
    FOREIGN KEY (bid)
        REFERENCES Batch (bid),
    FOREIGN KEY (scode)
        REFERENCES Subject (scode),
    FOREIGN KEY (fid)
        REFERENCES Faculty (fid) );
 --DATA INSERTION
INSERT INTO TIME_TABLE VALUES
```

("MONDAY","09:00",1,"B13","15B11CI212","1923"),("MONDAY","13:00",1,"B13","15B11CI313","2215"),("MONDAY","13:00",1,"B1","15B11CI313","2215"),

("MONDAY","15:00",2,"B7","15B17CI411","1823"),("TUESDAY","10:00",1,"B1","15B11CI212","2213"),("TUESDAY","11:00",1,"B13","15B11CI212","1922"),

("TUESDAY","12:00",1,"B7","15B11CI313","2217"),("TUESDAY","14:00",2,"B1","15B11CI313","1923"),("TUESDAY","16:00",1,"B1","15B17CI411","2212"),

("WEDNESDAY","9:00",1,"B7","15B11CI313","2217"),("WEDNESDAY","12:00",1,"B1","15B11CI212","2213"),("WEDNESDAY","15:00",1,"B13","15B11CI313","2217"),

("THURSDAY","11:00",1,"B1","15B17CI411","1819"),("THURSDAY","14:00",1,"B13","15B17CI411","1823"),("THURSDAY","15:00",1,"B7","15B11CI212","1922"),

("FRIDAY","9:00",1,"B1","15B11CI212","2213"),("FRIDAY","11:00",1,"B7","15B17CI411","1823"),("FRIDAY","12:00",1,"B7","15B11CI313","1923"),

("FRIDAY","15:00",2,"B13","15B11CI313","2215"),("FRIDAY","16:00",2,"B1","15B11CI212","2218"),("FRIDAY","16:00",2,"B13","15B11CI212","2218"),

("FRIDAY","16:00",1,"B7","15B11CI313","2215"),("SATURDAY","10:00",2,"B13","15B11CI313","2217"),("SATURDAY","13:00",1,"B1","15B11CI313","2215"),

("SATURDAY","14:00",1,"B1","15B17CI411","1819"),("SATURDAY","14:00",2,"B7","15B11CI212","1922");

--DATA AT A GLANCE

SELECT * FROM STUDENT;

SELECT * FROM BATCH;

SELECT * FROM ENROLLED;

SELECT * FROM SUBJECT;

SELECT * FROM DEPARTMENT;

SELECT * FROM FACULTY;

SELECT * FROM HOD;

SELECT * FROM FAC_SUBJ;

SELECT * FROM TIME_TABLE;

```
MariaDB [dbw_project]> --DATA AT A GLANCE
MariaDB [dbw_project]> SELECT * FROM STUDENT;
+----------+------------------+------------+---------------------------+------------+
| enroll   | name             | dob        | email                     | mob_num    |
+----------+------------------+------------+---------------------------+------------+
| 19103005 | VAIBHAV TIWARI   | 2001-03-12 | vaibhavt@gmail.com        | 9455237465 |
| 19103015 | PAWAN SONI       | 2000-10-06 | pawansoni@gmail.com       | 9632786512 |
| 19103018 | RISHI BANGAR     | 2002-12-24 | rishbangar@gmail.com      | 9566905400 |
| 19103020 | ANIL KUMAR       | 2000-07-19 | anil_k@gmail.com          | 9627651010 |
| 19103024 | NIDHI JAIN       | 2000-03-10 | nidhijn@gmail.com         | 9899647123 |
| 19103029 | MONICA JAIN      | 2001-10-19 | monica@gmail.com          | 1212121212 |
| 19103211 | TANISHQ VATS     | 2000-02-16 | tanishq07@gmail.com       | 9899449308 |
| 19103214 | RAGHAV BANSAL    | 2000-10-13 | r.raghav@gmail.com        | 9899107648 |
| 19103221 | STUTI BHARDWAJ   | 2000-03-11 | stutiii@gmail.com         | 8798449658 |
| 19103223 | ABHINAV VERMA    | 2001-04-06 | avverma@gmail.com         | 9898989898 |
| 19103227 | DIYA SINGH       | 2001-02-28 | diya_sing@gmail.com       | 9568912893 |
| 19103228 | VIHAAN MEHRA     | 2000-03-11 | vihaanmeh@gmail.com       | 8798669898 |
| 19803003 | KHUSHBOO KUMARI  | 2001-11-14 | kumarikhushboo@gmail.com  | 9834567878 |
| 19803007 | YOGESH RAJ       | 2000-08-01 | yog.raj@gmail.com         | 8880382675 |
| 19803008 | KANISTHA         | 2001-11-14 | kanistha@gmail.com        | 7823456578 |
| 19803011 | KANISHKA KHULLAR | 2001-11-14 | khullarkanishka@gmail.com | 7878651298 |
| 19803013 | ATUL TIWARI      | 2000-01-01 | atultiw@gmail.com         | 9080342675 |
| 19803016 | PANKAJ SHARMA    | 2002-05-12 | pankaj__@gmail.com        | 9780032161 |
| 19803017 | RAVI GUPTA       | 2001-11-05 | ravi.gupta@gmail.com      | 9780512676 |
| 19803019 | EKANSH SHARMA    | 2000-11-03 | 1kansh@gmail.com          | 9980352775 |
| 19803021 | PRANAV GUPTA     | 2001-11-14 | guptapranav@gmail.com     | 7878787878 |
+----------+------------------+------------+---------------------------+------------+
21 rows in set (0.001 sec)

MariaDB [dbw_project]> SELECT * FROM BATCH;
+-----+----------+-----------+
| bid | strength | cr_enroll |
+-----+----------+-----------+
| B1  |        6 |  19103029 |
| B13 |        9 |  19803021 |
| B7  |        6 |  19103223 |
+-----+----------+-----------+
3 rows in set (0.000 sec)
```

```
MariaDB [dbw_project]> SELECT * FROM ENROLLED;
+----------+-----+
| enroll   | bid |
+----------+-----+
| 19103005 | B1  |
| 19103015 | B1  |
| 19103018 | B1  |
| 19103020 | B1  |
| 19103024 | B1  |
| 19103029 | B1  |
| 19103211 | B7  |
| 19103214 | B7  |
| 19103221 | B7  |
| 19103223 | B7  |
| 19103227 | B7  |
| 19103228 | B7  |
| 19803003 | B13 |
| 19803007 | B13 |
| 19803008 | B13 |
| 19803011 | B13 |
| 19803013 | B13 |
| 19803016 | B13 |
| 19803017 | B13 |
| 19803019 | B13 |
| 19803021 | B13 |
+----------+-----+
21 rows in set (0.000 sec)
MariaDB [dbw_project]> SELECT * FROM SUBJECT;
+------------+-------+
| scode      | sname |
+------------+-------+
| 15B11CI212 | DBMS  |
| 15B11CI313 | COA   |
| 15B17CI411 | SDF-2 |
+------------+-------+
3 rows in set (0.000 sec)
MariaDB [dbw_project]> SELECT * FROM DEPARTMENT;
+-----+-------+
| did | dname |
+-----+-------+
|  11 | CSE   |
|  12 | IT    |
+-----+-------+
2 rows in set (0.000 sec)
```

```
MariaDB [dbw_project]> SELECT * FROM FACULTY;
+------+----------------+--------------------------------+--------+------+
| fid  | fname          | email                          | salary | did  |
+------+----------------+--------------------------------+--------+------+
| 1819 | RAMA GUPTA     | rama.gupta@mail.jiit.ac.in     |  71000 |   12 |
| 1822 | PRAGYA MISHRA  | pragya.mishra@mail.jiit.ac.in  |  66000 |   12 |
| 1823 | PARUL AGGARWAL | parul.aggarwal@mail.jiit.ac.in |  68000 |   11 |
| 1922 | JUGAL MITTAL   | jugal.mittal@mail.jiit.ac.in   |  67500 |   12 |
| 1923 | ANKITA WADHWA  | ankita.wadhwa@mail.jiit.ac.in  |  70000 |   11 |
| 2212 | EKANT JOSHI    | ekant.joshi@mail.jiit.ac.in    |  69000 |   11 |
| 2213 | TANYA NANDA    | tanya.nanda@mail.jiit.ac.in    |  67500 |   11 |
| 2215 | YASH SEHGAL    | yash.sehgal@mail.jiit.ac.in    |  68500 |   11 |
| 2217 | N K SINGH      | nk.singh@mail.jiit.ac.in       |  72000 |   11 |
| 2218 | HITESH JAIN    | hitesh,jain@mail.jiit.ac.in    |  68000 |   12 |
+------+----------------+--------------------------------+--------+------+
10 rows in set (0.000 sec)
MariaDB [dbw_project]> SELECT * FROM HOD;
+-----+------+
| did | fid  |
+-----+------+
|  11 | 1923 |
|  12 | 1819 |
+-----+------+
2 rows in set (0.000 sec)
MariaDB [dbw_project]> SELECT * FROM FAC_SUBJ;
+------+------------+
| fid  | scode      |
+------+------------+
| 1819 | 15B17CI411 |
| 1822 | 15B11CI212 |
| 1822 | 15B17CI411 |
| 1823 | 15B17CI411 |
| 1922 | 15B11CI212 |
| 1922 | 15B17CI411 |
| 1923 | 15B11CI212 |
| 1923 | 15B11CI313 |
| 2212 | 15B17CI411 |
| 2213 | 15B11CI212 |
| 2215 | 15B11CI212 |
| 2215 | 15B11CI313 |
| 2215 | 15B17CI411 |
| 2217 | 15B11CI313 |
| 2217 | 15B17CI411 |
| 2218 | 15B11CI212 |
+------+------------+
16 rows in set (0.000 sec)
```

```
MariaDB [dbw_project]> SELECT * FROM TIME_TABLE;
+-----------+------------+----------+-----+------------+------+
| day       | start_time | duration | bid | scode      | fid  |
+-----------+------------+----------+-----+------------+------+
| FRIDAY    | 09:00:00   |        1 | B1  | 15B11CI212 | 2213 |
| FRIDAY    | 11:00:00   |        1 | B7  | 15B17CI411 | 1823 |
| FRIDAY    | 12:00:00   |        1 | B7  | 15B11CI313 | 1923 |
| FRIDAY    | 15:00:00   |        2 | B13 | 15B11CI313 | 2215 |
| FRIDAY    | 16:00:00   |        2 | B1  | 15B11CI212 | 2218 |
| FRIDAY    | 16:00:00   |        2 | B13 | 15B11CI212 | 2218 |
| FRIDAY    | 16:00:00   |        1 | B7  | 15B11CI313 | 2215 |
| MONDAY    | 09:00:00   |        1 | B13 | 15B11CI212 | 1923 |
| MONDAY    | 13:00:00   |        1 | B1  | 15B11CI313 | 2215 |
| MONDAY    | 13:00:00   |        1 | B13 | 15B11CI313 | 2215 |
| MONDAY    | 15:00:00   |        2 | B7  | 15B17CI411 | 1823 |
| SATURDAY  | 10:00:00   |        2 | B13 | 15B11CI313 | 2217 |
| SATURDAY  | 13:00:00   |        1 | B1  | 15B11CI313 | 2215 |
| SATURDAY  | 14:00:00   |        1 | B1  | 15B17CI411 | 1819 |
| SATURDAY  | 14:00:00   |        2 | B7  | 15B11CI212 | 1922 |
| THURSDAY  | 11:00:00   |        1 | B1  | 15B17CI411 | 1819 |
| THURSDAY  | 14:00:00   |        1 | B13 | 15B17CI411 | 1823 |
| THURSDAY  | 15:00:00   |        1 | B7  | 15B11CI212 | 1922 |
| TUESDAY   | 10:00:00   |        1 | B1  | 15B11CI212 | 2213 |
| TUESDAY   | 11:00:00   |        1 | B13 | 15B11CI212 | 1922 |
| TUESDAY   | 12:00:00   |        1 | B7  | 15B11CI313 | 2217 |
| TUESDAY   | 14:00:00   |        2 | B1  | 15B11CI313 | 1923 |
| TUESDAY   | 16:00:00   |        1 | B1  | 15B17CI411 | 2212 |
| WEDNESDAY | 09:00:00   |        1 | B7  | 15B11CI313 | 2217 |
| WEDNESDAY | 12:00:00   |        1 | B1  | 15B11CI212 | 2213 |
| WEDNESDAY | 15:00:00   |        1 | B13 | 15B11CI313 | 2217 |
+-----------+------------+----------+-----+------------+------+
26 rows in set (0.000 sec)
```

QUERIES

-- 2. Find all the faculties who have taught a given student.

```
DELIMITER //
CREATE PROCEDURE Find_All_Fac(IN SNAME VARCHAR(50))
BEGIN
SELECT * FROM FACULTY F WHERE F.FID IN
(SELECT DISTINCT T.FID FROM TIME_TABLE T WHERE T.BID IN
(SELECT E.BID FROM ENROLLED E, student s1 WHERE E.ENROLL=s1.enroll and
s1.name=SNAME));
END //
DELIMITER ;
CALL Find_All_Fac('PRANAV GUPTA');
```

```
MariaDB [dbw_project]> -- 2. Find all the faculties who have taught a given student.
MariaDB [dbw_project]> DELIMITER //
MariaDB [dbw_project]> CREATE PROCEDURE Find_All_Fac(IN SNAME VARCHAR(50))
    -> BEGIN
    -> SELECT * FROM FACULTY F WHERE F.FID IN
    -> (SELECT DISTINCT T.FID FROM TIME_TABLE T WHERE T.BID IN
    -> (SELECT E.BID FROM ENROLLED E, student s1 WHERE E.ENROLL=s1.enroll and
    -> s1.name=SNAME));
    -> END //
Query OK, 0 rows affected (0.237 sec)

MariaDB [dbw_project]> DELIMITER ;
MariaDB [dbw_project]> CALL Find_All_Fac("PRANAV GUPTA");

+------+----------------+--------------------------------+--------+------+
| fid  | fname          | email                          | salary | did  |
+------+----------------+--------------------------------+--------+------+
| 1823 | PARUL AGGARWAL | parul.aggarwal@mail.jiit.ac.in |  68000 |   11 |
| 1922 | JUGAL MITTAL   | jugal.mittal@mail.jiit.ac.in   |  67500 |   12 |
```

```
| 1923 | ANKITA WADHWA  | ankita.wadhwa@mail.jiit.ac.in  |  70000 |   11 |
| 2215 | YASH SEHGAL    | yash.sehgal@mail.jiit.ac.in    |  68500 |   11 |
| 2217 | N K SINGH      | nk.singh@mail.jiit.ac.in       |  72000 |   11 |
| 2218 | HITESH JAIN    | hitesh,jain@mail.jiit.ac.in    |  68000 |   12 |
+------+----------------+--------------------------------+--------+------+
6 rows in set (0.001 sec)

Query OK, 0 rows affected (0.057 sec)
```

-- 3 Find all the faculties in a dept with corresponding hod and dept id and faculties inside a department must be concatenated with a comma;

```
DELIMITER //
CREATE PROCEDURE QUERY3()
BEGIN
SELECT f1.did,d1.dname,f2.fname as HOD,GROUP_CONCAT(f1.fname) as 'faculties'
FROM faculty f1 ,faculty f2, hod h1 ,department d1 where f1.did = d1.did
and h1.did = f1.did and h1.fid = f2.fid
 group by f1.did ;

END //
DELIMITER ;
CALL QUERY3();
```

```
MariaDB [dbw_project]> -- 3 Find all the faculties in a dept with corresponding hod and dept id and faculties
inside a dept must be concatenated with a comma;
MariaDB [dbw_project]> DELIMITER //
MariaDB [dbw_project]> CREATE PROCEDURE QUERY3()
    -> BEGIN
    -> SELECT f1.did,d1.dname,f2.fname as HOD,GROUP_CONCAT(f1.fname) as 'faculties'
    -> FROM faculty f1 ,faculty f2, hod h1 ,department d1 where f1.did = d1.did
    -> and h1.did = f1.did and h1.fid = f2.fid
    ->  group by f1.did ;
    ->
    -> END //
Query OK, 0 rows affected (0.175 sec)

MariaDB [dbw_project]> DELIMITER ;
MariaDB [dbw_project]> CALL QUERY3();
```

```
+------+-------+---------------+-----------------------------------------------------------------------------------+
| did  | dname | HOD           | faculties                                                                         |
+------+-------+---------------+-----------------------------------------------------------------------------------+
|   11 | CSE   | ANKITA WADHWA | YASH SEHGAL,N K SINGH,PARUL AGGARWAL,ANKITA WADHWA,EKANT JOSHI,TANYA NANDA |
|   12 | IT    | RAMA GUPTA    | HITESH JAIN,RAMA GUPTA,PRAGYA MISHRA,JUGAL MITTAL                         |
+------+-------+---------------+-----------------------------------------------------------------------------------+
2 rows in set (0.036 sec)

Query OK, 0 rows affected (0.057 sec)
```

-- 4 Find the number of students who study subject S on day D at time T

DELIMITER //

CREATE PROCEDURE Query4 (IN scode VARCHAR(15), IN day VARCHAR(11), IN stime TIME)

BEGIN

SELECT SUM(B.strength) AS No_Of_Students FROM Batch B WHERE B.bid IN (SELECT DISTINCT (T.bid) FROM Time_Table T, Batch B, Subject S WHERE T.scode = scode AND T.day = day AND T.start_time = stime);

END //

DELIMITER ;

CALL QUERY4('15B11CI212', 'Friday', '16:00');

```
MariaDB [dbw_project]> -- 4 Find the number of students who study subject S on day D at time T
MariaDB [dbw_project]>
MariaDB [dbw_project]> DELIMITER //
MariaDB [dbw_project]> CREATE PROCEDURE Query4 (IN scode VARCHAR(15), IN day VARCHAR(11), IN stime TIME)
    -> BEGIN
    -> SELECT SUM(B.strength) AS No_Of_Students FROM Batch B WHERE B.bid IN (SELECT DISTINCT (T.bid) FROM
Time_Table T, Batch B, Subject S WHERE T.scode = scode AND T.day = day AND T.start_time = stime);
    -> END //
Query OK, 0 rows affected (0.153 sec)

MariaDB [dbw_project]> DELIMITER ;
MariaDB [dbw_project]> CALL QUERY4('15B11CI212', 'Friday', '16:00');
+----------------+
| No_Of_Students |
+----------------+
|             15 |
```

```
+-----------------+
1 row in set (0.064 sec)

Query OK, 0 rows affected (0.084 sec)
```

-- 5 List the batches who study the same subject classes in the same slot.

```
SELECT
    T.day,
    T.start_time,
    T.scode,
    GROUP_CONCAT(DISTINCT T.bid) AS Batches
FROM
    Time_Table T,
    Batch B,
    Subject S
GROUP BY T.day , T.start_time , T.scode;
```

```
MariaDB [dbw_project]> -- 5 List the batches who study the same subject classes in the same slot.
MariaDB [dbw_project]>
MariaDB [dbw_project]> SELECT
    ->     T.day,
    ->     T.start_time,
    ->     T.scode,
    ->     GROUP_CONCAT(DISTINCT T.bid) AS Batches
    -> FROM
    ->     Time_Table T,
    ->     Batch B,
    ->     Subject S
    -> GROUP BY T.day , T.start_time , T.scode;
+-----------+------------+------------+---------+
| day       | start_time | scode      | Batches |
+-----------+------------+------------+---------+
| FRIDAY    | 09:00:00   | 15B11CI212 | B1      |
| FRIDAY    | 11:00:00   | 15B17CI411 | B7      |
| FRIDAY    | 12:00:00   | 15B11CI313 | B7      |
| FRIDAY    | 15:00:00   | 15B11CI313 | B13     |
```

```
| FRIDAY    | 16:00:00   | 15B11CI212 | B1,B13  |
| FRIDAY    | 16:00:00   | 15B11CI313 | B7      |
| MONDAY    | 09:00:00   | 15B11CI212 | B13     |
| MONDAY    | 13:00:00   | 15B11CI313 | B1,B13  |
| MONDAY    | 15:00:00   | 15B17CI411 | B7      |
| SATURDAY  | 10:00:00   | 15B11CI313 | B13     |
| SATURDAY  | 13:00:00   | 15B11CI313 | B1      |
| SATURDAY  | 14:00:00   | 15B11CI212 | B7      |
| SATURDAY  | 14:00:00   | 15B17CI411 | B1      |
| THURSDAY  | 11:00:00   | 15B17CI411 | B1      |
| THURSDAY  | 14:00:00   | 15B17CI411 | B13     |
| THURSDAY  | 15:00:00   | 15B11CI212 | B7      |
| TUESDAY   | 10:00:00   | 15B11CI212 | B1      |
| TUESDAY   | 11:00:00   | 15B11CI212 | B13     |
| TUESDAY   | 12:00:00   | 15B11CI313 | B7      |
| TUESDAY   | 14:00:00   | 15B11CI313 | B1      |
| TUESDAY   | 16:00:00   | 15B17CI411 | B1      |
| WEDNESDAY | 09:00:00   | 15B11CI313 | B7      |
| WEDNESDAY | 12:00:00   | 15B11CI212 | B1      |
| WEDNESDAY | 15:00:00   | 15B11CI313 | B13     |
+-----------+------------+------------+---------+
24 rows in set (0.002 sec)
```

-- 6 Find all the subjects in which a student is enrolled

```
DELIMITER //
CREATE PROCEDURE Query6(IN stuName VARCHAR(50))
BEGIN
(SELECT DISTINCT T1.scode, Sub.sname FROM Enrolled E, Student S1, Subject Sub, Time_Table T1 WHERE S1.enroll = E.enroll AND S1.name = stuName AND T1.bid = E.bid AND T1.scode = Sub.scode);
END //
DELIMITER ;
CALL QUERY6('KHUSHBOO KUMARI');
```

```
MariaDB [dbw_project]> -- 6 Find all the subjects in which a student is enrolled
MariaDB [dbw_project]>
MariaDB [dbw_project]> DELIMITER //
MariaDB [dbw_project]> CREATE PROCEDURE Query6(IN stuName VARCHAR(50))
```

```
    -> BEGIN
    -> (SELECT DISTINCT T1.scode, Sub.sname FROM Enrolled E, Student S1, Subject Sub, Time_Table T1 WHERE
S1.enroll = E.enroll AND S1.name = stuName AND T1.bid = E.bid AND T1.scode = Sub.scode);
    -> END //
Query OK, 0 rows affected (0.237 sec)


MariaDB [dbw_project]> DELIMITER ;
MariaDB [dbw_project]> CALL QUERY6('KHUSHBOO KUMARI');
+------------+-------+
| scode      | sname |
+------------+-------+
| 15B11CI212 | DBMS  |
| 15B11CI313 | COA   |
| 15B17CI411 | SDF-2 |
+------------+-------+
3 rows in set (0.003 sec)

Query OK, 0 rows affected (0.039 sec)
```

-- 7. Find the name of CR for each batch.

```
SELECT DISTINCT
   B.bid, S.name
FROM
   Student S,
   Batch B
WHERE
   S.enroll = B.cr_enroll;
```

```
MariaDB [dbw_project]> -- 7. Find the name of CR for each batch.
MariaDB [dbw_project]>
MariaDB [dbw_project]> SELECT DISTINCT
    ->     B.bid, S.name
    -> FROM
    ->     Student S,
    ->     Batch B
    -> WHERE
```

```
    ->     S.enroll = B.cr_enroll;
+-----+---------------+
| bid | name          |
+-----+---------------+
| B1  | MONICA JAIN   |
| B7  | ABHINAV VERMA |
| B13 | PRANAV GUPTA  |
+-----+---------------+
3 rows in set (0.000 sec)
```

-- 8. Deduce the time table of all the faculties (PLSQL)

```
DROP PROCEDURE IF EXISTS get_schedule ;
DROP PROCEDURE IF EXISTS get_fac_schedule;

delimiter //
CREATE PROCEDURE get_schedule(IN f INT )
BEGIN
DECLARE fac_id INT ;
DECLARE s_time TIME;
DECLARE dur INT;
DECLARE dy VARCHAR(11);
DECLARE batch VARCHAR(4);
DECLARE sid VARCHAR(15);
DECLARE fac_schedule_list VARCHAR(1000) DEFAULT '';
DECLARE FINISHED1 BOOLEAN DEFAULT FALSE;
DECLARE CUR2 CURSOR FOR SELECT * FROM time_table;
DECLARE CONTINUE HANDLER FOR NOT FOUND SET FINISHED1 = TRUE;
DROP TABLE IF EXISTS fac_time_table;
CREATE TABLE fac_time_table (
```

```
    faculty_id INT,
    day VARCHAR(11),
    start_time TIME,
    duration INT,
    batch VARCHAR(4),
    sub_id VARCHAR(15),
    PRIMARY KEY (start_time , batch , day)
);
OPEN CUR2;
LOOP2 : LOOP
FETCH CUR2 INTO   dy, s_time , dur, batch ,sid , fac_id;
IF FINISHED1 THEN
LEAVE LOOP2;
END IF;
IF fac_id=f THEN
insert into fac_time_table values(f,dy,s_time,dur,batch,sid);
END IF;
END LOOP LOOP2;
CLOSE CUR2;
select * from fac_time_table;
end //

delimiter //
CREATE PROCEDURE get_fac_schedule()
BEGIN
DECLARE fac_id INT ;
DECLARE FINISHED1 BOOLEAN DEFAULT FALSE;
DECLARE CUR1 CURSOR FOR SELECT fid FROM faculty;
DECLARE CONTINUE HANDLER FOR NOT FOUND SET FINISHED1 = TRUE;
```

OPEN CUR1;

LOOP1 : LOOP

FETCH CUR1 INTO fac_id;

IF FINISHED1 THEN

LEAVE LOOP1;

END IF;

CALL get_schedule(fac_id);

END LOOP LOOP1;

CLOSE CUR1;

END //

DELIMITER ;

CALL get_fac_schedule();

```
MariaDB [dbw_project]> -- 8. Deduce the time table of all the faculties (PLSQL)
MariaDB [dbw_project]> DROP PROCEDURE IF EXISTS get_schedule ;
Query OK, 0 rows affected (0.183 sec)

MariaDB [dbw_project]> DROP PROCEDURE IF EXISTS get_fac_schedule;
Query OK, 0 rows affected (0.130 sec)

MariaDB [dbw_project]>
MariaDB [dbw_project]> delimiter //
MariaDB [dbw_project]> CREATE PROCEDURE get_schedule(IN f INT )
    -> BEGIN
    -> DECLARE fac_id INT ;
    -> DECLARE s_time TIME;
    -> DECLARE dur INT;
    -> DECLARE dy VARCHAR(11);
    -> DECLARE batch VARCHAR(4);
    -> DECLARE sid VARCHAR(15);
    -> DECLARE fac_schedule_list VARCHAR(1000) DEFAULT '';
    -> DECLARE FINISHED1 BOOLEAN DEFAULT FALSE;
    -> DECLARE CUR2 CURSOR FOR SELECT * FROM time_table;
    -> DECLARE CONTINUE HANDLER FOR NOT FOUND SET FINISHED1 = TRUE;
    -> DROP TABLE IF EXISTS fac_time_table;
    -> CREATE TABLE fac_time_table (
    ->     faculty_id INT,
    ->     day VARCHAR(11),
```

```
    ->     start_time TIME,
    ->     duration INT,
    ->     batch VARCHAR(4),
    ->     sub_id VARCHAR(15),
    ->     PRIMARY KEY (start_time , batch , day)
    -> );
    -> OPEN CUR2;
    -> LOOP2 : LOOP
    -> FETCH CUR2 INTO   dy, s_time , dur, batch ,sid , fac_id;
    -> IF FINISHED1 THEN
    -> LEAVE LOOP2;
    -> END IF;
    -> IF fac_id=f THEN
    -> insert into fac_time_table values(f,dy,s_time,dur,batch,sid);
    -> END IF;
    -> END LOOP LOOP2;
    -> CLOSE CUR2;
    -> select * from fac_time_table;
    -> end //
Query OK, 0 rows affected (0.145 sec)

MariaDB [dbw_project]>
MariaDB [dbw_project]> delimiter //
MariaDB [dbw_project]> CREATE PROCEDURE get_fac_schedule()
    -> BEGIN
    -> DECLARE fac_id INT ;
    -> DECLARE FINISHED1 BOOLEAN DEFAULT FALSE;
    -> DECLARE CUR1 CURSOR FOR SELECT fid FROM faculty;
    -> DECLARE CONTINUE HANDLER FOR NOT FOUND SET FINISHED1 = TRUE;
    -> OPEN CUR1;
    -> LOOP1 : LOOP
    -> FETCH CUR1 INTO fac_id;
    -> IF FINISHED1 THEN
    -> LEAVE LOOP1;
    -> END IF;
    -> CALL get_schedule(fac_id);
    -> END LOOP LOOP1;
    -> CLOSE CUR1;
    -> END //
Query OK, 0 rows affected (0.128 sec)

MariaDB [dbw_project]> DELIMITER ;
MariaDB [dbw_project]> CALL get_fac_schedule();
```

```
+------------+----------+------------+----------+-------+------------+
| faculty_id | day      | start_time | duration | batch | sub_id     |
+------------+----------+------------+----------+-------+------------+
|       1823 | FRIDAY   | 11:00:00   |        1 | B7    | 15B17CI411 |
|       1823 | THURSDAY | 14:00:00   |        1 | B13   | 15B17CI411 |
|       1823 | MONDAY   | 15:00:00   |        2 | B7    | 15B17CI411 |
+------------+----------+------------+----------+-------+------------+
3 rows in set (0.604 sec)

+------------+---------+------------+----------+-------+------------+
| faculty_id | day     | start_time | duration | batch | sub_id     |
+------------+---------+------------+----------+-------+------------+
|       1923 | MONDAY  | 09:00:00   |        1 | B13   | 15B11CI212 |
|       1923 | FRIDAY  | 12:00:00   |        1 | B7    | 15B11CI313 |
|       1923 | TUESDAY | 14:00:00   |        2 | B1    | 15B11CI313 |
+------------+---------+------------+----------+-------+------------+
3 rows in set (1.238 sec)

+------------+---------+------------+----------+-------+------------+
| faculty_id | day     | start_time | duration | batch | sub_id     |
+------------+---------+------------+----------+-------+------------+
|       2212 | TUESDAY | 16:00:00   |        1 | B1    | 15B17CI411 |
+------------+---------+------------+----------+-------+------------+
1 row in set (1.682 sec)

+------------+-----------+------------+----------+-------+------------+
| faculty_id | day       | start_time | duration | batch | sub_id     |
+------------+-----------+------------+----------+-------+------------+
|       2213 | FRIDAY    | 09:00:00   |        1 | B1    | 15B11CI212 |
|       2213 | TUESDAY   | 10:00:00   |        1 | B1    | 15B11CI212 |
|       2213 | WEDNESDAY | 12:00:00   |        1 | B1    | 15B11CI212 |
+------------+-----------+------------+----------+-------+------------+
3 rows in set (2.537 sec)



+------------+----------+------------+----------+-------+------------+
| faculty_id | day      | start_time | duration | batch | sub_id     |
+------------+----------+------------+----------+-------+------------+
|       2215 | MONDAY   | 13:00:00   |        1 | B1    | 15B11CI313 |
|       2215 | SATURDAY | 13:00:00   |        1 | B1    | 15B11CI313 |
|       2215 | MONDAY   | 13:00:00   |        1 | B13   | 15B11CI313 |
|       2215 | FRIDAY   | 15:00:00   |        2 | B13   | 15B11CI313 |
```

```
|       2215 | FRIDAY    | 16:00:00   |        1 | B7    | 15B11CI313 |
+------------+-----------+------------+----------+-------+------------+
5 rows in set (3.160 sec)

+------------+-----------+------------+----------+-------+------------+
| faculty_id | day       | start_time | duration | batch | sub_id     |
+------------+-----------+------------+----------+-------+------------+
|       2217 | WEDNESDAY | 09:00:00   |        1 | B7    | 15B11CI313 |
|       2217 | SATURDAY  | 10:00:00   |        2 | B13   | 15B11CI313 |
|       2217 | TUESDAY   | 12:00:00   |        1 | B7    | 15B11CI313 |
|       2217 | WEDNESDAY | 15:00:00   |        1 | B13   | 15B11CI313 |
+------------+-----------+------------+----------+-------+------------+
4 rows in set (3.793 sec)

+------------+----------+------------+----------+-------+------------+
| faculty_id | day      | start_time | duration | batch | sub_id     |
+------------+----------+------------+----------+-------+------------+
|       1819 | THURSDAY | 11:00:00   |        1 | B1    | 15B17CI411 |
|       1819 | SATURDAY | 14:00:00   |        1 | B1    | 15B17CI411 |
+------------+----------+------------+----------+-------+------------+
2 rows in set (4.560 sec)

Empty set (5.285 sec)
+------------+----------+------------+----------+-------+------------+
| faculty_id | day      | start_time | duration | batch | sub_id     |
+------------+----------+------------+----------+-------+------------+
|       1922 | TUESDAY  | 11:00:00   |        1 | B13   | 15B11CI212 |
|       1922 | SATURDAY | 14:00:00   |        2 | B7    | 15B11CI212 |
|       1922 | THURSDAY | 15:00:00   |        1 | B7    | 15B11CI212 |
+------------+----------+------------+----------+-------+------------+
3 rows in set (5.949 sec)









+------------+--------+------------+----------+-------+------------+
| faculty_id | day    | start_time | duration | batch | sub_id     |
+------------+--------+------------+----------+-------+------------+
|       2218 | FRIDAY | 16:00:00   |        2 | B1    | 15B11CI212 |
|       2218 | FRIDAY | 16:00:00   |        2 | B13   | 15B11CI212 |
+------------+--------+------------+----------+-------+------------+
2 rows in set (6.515 sec)
```

```
Query OK, 26 rows affected (6.527 sec)
```

-- 9 Suppose, a student left the college, then remove his info from all the tables so that there is no referential integrity left.(PLSQL)

```
drop procedure if exists trigger_details;
DELIMITER //
create procedure trigger_details(in sid int)
begin
delete from enrolled where enroll=sid;
update batch set cr_enroll=null where cr_enroll=sid;
end //
DELIMITER ;
drop trigger if exists solve_constraint_error;
DELIMITER //
CREATE TRIGGER solve_constraint_error  BEFORE delete ON student FOR EACH ROW
BEGIN
CALL TRIGGER_DETAILS(old.enroll);
END //
DELIMITER ;

SELECT * FROM student;
DELETE FROM student
WHERE enroll = 19103024;
SELECT * FROM student;
SELECT * FROM batch;
DELETE FROM student
WHERE enroll = 19103029;
SELECT * FROM student;
```

SELECT * FROM batch;

-- Student(Enroll INT , DOB DATE , Name VARCHAR(20) , Mob_Num BIGINT, Email VARCHAR(30));

-- Batch(BID : VARCHAR(4) , Strength : INT, CR_Enroll INT);

-- ENROLLED(ENROLL INT, BID VARCHAR(4));

-- SUBJECT(SCODE VARCHAR(15) , SNAME VARCHAR(30))

-- DEPARTMENT(DID INT , DNAME VARCHAR(30))

-- FACULTY (FID INT ,FNAME VARCHAR(20) , EMAIL VARCHAR(30), SALARY REAL,DID INT);

-- HOD(DID INT , FID INT);

-- FAC_SUBJ(FID INT, SCODE VARCHAR(15));

-- TIME_TABLE (DAY VARCHAR(11), START_Time TIME , DURATION INT , BID VARCHAR(4), SCODE VARCHAR(15), FID INT)

```
MariaDB [dbw_project]> -- 9 Suppose, a student left the college, then remove his info from all the tables so
that there is no referential integrity left.(PLSQL)
MariaDB [dbw_project]>
MariaDB [dbw_project]> drop procedure if exists trigger_details;
Query OK, 0 rows affected (0.161 sec)

MariaDB [dbw_project]> DELIMITER //
MariaDB [dbw_project]> create procedure trigger_details(in sid int)
    -> begin
    -> delete from enrolled where enroll=sid;
    -> update batch set cr_enroll=null where cr_enroll=sid;
    -> end //
Query OK, 0 rows affected (0.155 sec)

MariaDB [dbw_project]> DELIMITER ;
MariaDB [dbw_project]> drop trigger if exists solve_constraint_error;
Query OK, 0 rows affected (0.021 sec)

MariaDB [dbw_project]> DELIMITER //
MariaDB [dbw_project]> CREATE TRIGGER solve_constraint_error  BEFORE delete ON student FOR EACH ROW
    -> BEGIN
    -> CALL TRIGGER_DETAILS(old.enroll);
    -> END //
Query OK, 0 rows affected (0.093 sec)
```

```
MariaDB [dbw_project]> DELIMITER ;
MariaDB [dbw_project]>
MariaDB [dbw_project]> SELECT * FROM student;
+----------+------------------+------------+---------------------------+------------+
| enroll   | name             | dob        | email                     | mob_num    |
+----------+------------------+------------+---------------------------+------------+
| 19103005 | VAIBHAV TIWARI   | 2001-03-12 | vaibhavt@gmail.com        | 9455237465 |
| 19103015 | PAWAN SONI       | 2000-10-06 | pawansoni@gmail.com       | 9632786512 |
| 19103018 | RISHI BANGAR     | 2002-12-24 | rishbangar@gmail.com      | 9566905400 |
| 19103020 | ANIL KUMAR       | 2000-07-19 | anil_k@gmail.com          | 9627651010 |
| 19103024 | NIDHI JAIN       | 2000-03-10 | nidhijn@gmail.com         | 9899647123 |
| 19103029 | MONICA JAIN      | 2001-10-19 | monica@gmail.com          | 1212121212 |
| 19103211 | TANISHQ VATS     | 2000-02-16 | tanishq07@gmail.com       | 9899449308 |
| 19103214 | RAGHAV BANSAL    | 2000-10-13 | r.raghav@gmail.com        | 9899107648 |
| 19103221 | STUTI BHARDWAJ   | 2000-03-11 | stutiii@gmail.com         | 8798449658 |
| 19103223 | ABHINAV VERMA    | 2001-04-06 | avverma@gmail.com         | 9898989898 |
| 19103227 | DIYA SINGH       | 2001-02-28 | diya_sing@gmail.com       | 9568912893 |
| 19103228 | VIHAAN MEHRA     | 2000-03-11 | vihaanmeh@gmail.com       | 8798669898 |
| 19803003 | KHUSHBOO KUMARI  | 2001-11-14 | kumarikhushboo@gmail.com  | 9834567878 |
| 19803007 | YOGESH RAJ       | 2000-08-01 | yog.raj@gmail.com         | 8880382675 |
| 19803008 | KANISTHA         | 2001-11-14 | kanistha@gmail.com        | 7823456578 |
| 19803011 | KANISHKA KHULLAR | 2001-11-14 | khullarkanishka@gmail.com | 7878651298 |
| 19803013 | ATUL TIWARI      | 2000-01-01 | atultiw@gmail.com         | 9080342675 |
| 19803016 | PANKAJ SHARMA    | 2002-05-12 | pankaj__@gmail.com        | 9780032161 |
| 19803017 | RAVI GUPTA       | 2001-11-05 | ravi.gupta@gmail.com      | 9780512676 |
| 19803019 | EKANSH SHARMA    | 2000-11-03 | 1kansh@gmail.com          | 9980352775 |
| 19803021 | PRANAV GUPTA     | 2001-11-14 | guptapranav@gmail.com     | 7878787878 |
+----------+------------------+------------+---------------------------+------------+
21 rows in set (0.035 sec)

MariaDB [dbw_project]> DELETE FROM student
    -> WHERE enroll = 19103024;
Query OK, 1 row affected (0.095 sec)

MariaDB [dbw_project]> SELECT * FROM student;
+----------+------------------+------------+---------------------------+------------+
| enroll   | name             | dob        | email                     | mob_num    |
+----------+------------------+------------+---------------------------+------------+
| 19103005 | VAIBHAV TIWARI   | 2001-03-12 | vaibhavt@gmail.com        | 9455237465 |
| 19103015 | PAWAN SONI       | 2000-10-06 | pawansoni@gmail.com       | 9632786512 |
| 19103018 | RISHI BANGAR     | 2002-12-24 | rishbangar@gmail.com      | 9566905400 |
| 19103020 | ANIL KUMAR       | 2000-07-19 | anil_k@gmail.com          | 9627651010 |
| 19103029 | MONICA JAIN      | 2001-10-19 | monica@gmail.com          | 1212121212 |
```

```
| 19103211 | TANISHQ VATS     | 2000-02-16 | tanishq07@gmail.com       | 9899449308 |
| 19103214 | RAGHAV BANSAL    | 2000-10-13 | r.raghav@gmail.com        | 9899107648 |
| 19103221 | STUTI BHARDWAJ   | 2000-03-11 | stutiii@gmail.com         | 8798449658 |
| 19103223 | ABHINAV VERMA    | 2001-04-06 | avverma@gmail.com         | 9898989898 |
| 19103227 | DIYA SINGH       | 2001-02-28 | diya_sing@gmail.com       | 9568912893 |
| 19103228 | VIHAAN MEHRA     | 2000-03-11 | vihaanmeh@gmail.com       | 8798669898 |
| 19803003 | KHUSHBOO KUMARI  | 2001-11-14 | kumarikhushboo@gmail.com  | 9834567878 |
| 19803007 | YOGESH RAJ       | 2000-08-01 | yog.raj@gmail.com         | 8880382675 |
| 19803008 | KANISTHA         | 2001-11-14 | kanistha@gmail.com        | 7823456578 |
| 19803011 | KANISHKA KHULLAR | 2001-11-14 | khullarkanishka@gmail.com | 7878651298 |
| 19803013 | ATUL TIWARI      | 2000-01-01 | atultiw@gmail.com         | 9080342675 |
| 19803016 | PANKAJ SHARMA    | 2002-05-12 | pankaj__@gmail.com        | 9780032161 |
| 19803017 | RAVI GUPTA       | 2001-11-05 | ravi.gupta@gmail.com      | 9780512676 |
| 19803019 | EKANSH SHARMA    | 2000-11-03 | 1kansh@gmail.com          | 9980352775 |
| 19803021 | PRANAV GUPTA     | 2001-11-14 | guptapranav@gmail.com     | 7878787878 |
+----------+------------------+------------+---------------------------+------------+
20 rows in set (0.001 sec)

MariaDB [dbw_project]> SELECT * FROM batch;
+-----+----------+-----------+
| bid | strength | cr_enroll |
+-----+----------+-----------+
| B1  |        6 |  19103029 |
| B13 |        9 |  19803021 |
| B7  |        6 |  19103223 |
+-----+----------+-----------+
3 rows in set (0.030 sec)

MariaDB [dbw_project]> DELETE FROM student
    -> WHERE enroll = 19103029;
Query OK, 1 row affected (0.101 sec)

MariaDB [dbw_project]> SELECT * FROM student;
+----------+------------------+------------+---------------------------+------------+
| enroll   | name             | dob        | email                     | mob_num    |
+----------+------------------+------------+---------------------------+------------+
| 19103005 | VAIBHAV TIWARI   | 2001-03-12 | vaibhavt@gmail.com        | 9455237465 |
| 19103015 | PAWAN SONI       | 2000-10-06 | pawansoni@gmail.com       | 9632786512 |
| 19103018 | RISHI BANGAR     | 2002-12-24 | rishbangar@gmail.com      | 9566905400 |
| 19103020 | ANIL KUMAR       | 2000-07-19 | anil_k@gmail.com          | 9627651010 |
| 19103211 | TANISHQ VATS     | 2000-02-16 | tanishq07@gmail.com       | 9899449308 |
| 19103214 | RAGHAV BANSAL    | 2000-10-13 | r.raghav@gmail.com        | 9899107648 |
| 19103221 | STUTI BHARDWAJ   | 2000-03-11 | stutiii@gmail.com         | 8798449658 |
```

```
| 19103223 | ABHINAV VERMA    | 2001-04-06 | avverma@gmail.com         | 9898989898 |
| 19103227 | DIYA SINGH       | 2001-02-28 | diya_sing@gmail.com       | 9568912893 |
| 19103228 | VIHAAN MEHRA     | 2000-03-11 | vihaanmeh@gmail.com       | 8798669898 |
| 19803003 | KHUSHBOO KUMARI  | 2001-11-14 | kumarikhushboo@gmail.com  | 9834567878 |
| 19803007 | YOGESH RAJ       | 2000-08-01 | yog.raj@gmail.com         | 8880382675 |
| 19803008 | KANISTHA         | 2001-11-14 | kanistha@gmail.com        | 7823456578 |
| 19803011 | KANISHKA KHULLAR | 2001-11-14 | khullarkanishka@gmail.com | 7878651298 |
| 19803013 | ATUL TIWARI      | 2000-01-01 | atultiw@gmail.com         | 9080342675 |
| 19803016 | PANKAJ SHARMA    | 2002-05-12 | pankaj__@gmail.com        | 9780032161 |
| 19803017 | RAVI GUPTA       | 2001-11-05 | ravi.gupta@gmail.com      | 9780512676 |
| 19803019 | EKANSH SHARMA    | 2000-11-03 | 1kansh@gmail.com          | 9980352775 |
| 19803021 | PRANAV GUPTA     | 2001-11-14 | guptapranav@gmail.com     | 7878787878 |
+----------+------------------+------------+---------------------------+------------+
19 rows in set (0.053 sec)

MariaDB [dbw_project]> SELECT * FROM batch;
+-----+----------+-----------+
| bid | strength | cr_enroll |
+-----+----------+-----------+
| B1  |        6 |      NULL |
| B13 |        9 |  19803021 |
| B7  |        6 |  19103223 |
+-----+----------+-----------+
3 rows in set (0.000 sec)
```

-- 10 Update strength of the batch after batch updation of students

```
DELIMITER ;
drop procedure if exists update_trigger_details;
delimiter //
create procedure update_trigger_details(in sid int,in obid varchar(4),in nbid varchar(4))
begin
update batch set strength=strength-1 where bid=obid;
update batch set strength=strength+1 where bid=nbid;
end //
DELIMITER ;
drop trigger if exists update_batch ;
```

DELIMITER //

CREATE TRIGGER update_batch after update ON enrolled FOR EACH ROW

BEGIN

CALL update_TRIGGER_DETAILS(old.enroll,old.bid,new.bid);

END //

DELIMITER ;

SELECT * FROM batch;

UPDATE enrolled SET bid = 'B7' WHERE enroll = 19803007;

SELECT * FROM batch;

```
MariaDB [dbw_project]> -- 10 Update strength of the batch after batch updation of students
MariaDB [dbw_project]>
MariaDB [dbw_project]> DELIMITER ;
MariaDB [dbw_project]> drop procedure if exists update_trigger_details;
Query OK, 0 rows affected (0.140 sec)

MariaDB [dbw_project]> delimiter //
MariaDB [dbw_project]> create procedure update_trigger_details(in sid int,in obid varchar(4),in nbid
varchar(4))
    -> begin
    -> update batch set strength=strength-1 where bid=obid;
    -> update batch set strength=strength+1 where bid=nbid;
    -> end //
Query OK, 0 rows affected (0.142 sec)

MariaDB [dbw_project]> DELIMITER ;
MariaDB [dbw_project]> drop trigger if exists update_batch ;
Query OK, 0 rows affected (0.030 sec)

MariaDB [dbw_project]> DELIMITER //
MariaDB [dbw_project]> CREATE TRIGGER update_batch  after update ON enrolled FOR EACH ROW
    -> BEGIN
    -> CALL update_TRIGGER_DETAILS(old.enroll,old.bid,new.bid);
    -> END //
Query OK, 0 rows affected (0.074 sec)

MariaDB [dbw_project]> DELIMITER ;
MariaDB [dbw_project]>
MariaDB [dbw_project]> SELECT * FROM batch;
```

```
+-----+----------+-----------+
| bid | strength | cr_enroll |
+-----+----------+-----------+
| B1  |        6 |      NULL |
| B13 |        8 |  19803021 |
| B7  |        7 |  19103223 |
+-----+----------+-----------+
3 rows in set (0.001 sec)

MariaDB [dbw_project]> UPDATE enrolled SET bid = 'B7' WHERE enroll = 19803007;
Query OK, 0 rows affected (0.047 sec)
Rows matched: 1  Changed: 0  Warnings: 0

MariaDB [dbw_project]> SELECT * FROM batch;
+-----+----------+-----------+
| bid | strength | cr_enroll |
+-----+----------+-----------+
| B1  |        6 |      NULL |
| B13 |        8 |  19803021 |
| B7  |        7 |  19103223 |
+-----+----------+-----------+
3 rows in set (0.000 sec)
```

--11 FIND THE OFFICIAL MAIL ID OF STUDENTS OF A GIVEN BATCH(ENROLL@MAIL.JIIT.AC.IN)

BATCH(ENROLL@MAIL.JIIT.AC.IN)

```
delimiter //
create PROCEDURE find_official_mail_ids_of_batch(in batch varchar(4))
begin
SELECT
   e.enroll AS Enrollment_no,
   CONCAT(e.enroll, '@mail.jiit.ac.in') AS Official_mail_id
FROM
   enrolled e
WHERE
   e.bid = batch;
```

end //

delimiter ;

```
call find_official_mail_ids_of_batch('B13');
MariaDB [dbw_project]> delimiter //
MariaDB [dbw_project]> create PROCEDURE find_official_mail_ids_of_batch(in batch varchar(4))
    -> begin
    -> SELECT
    ->     e.enroll AS Enrollment_no,
    ->     CONCAT(e.enroll, '@mail.jiit.ac.in') AS Official_mail_id
    -> FROM
    ->     enrolled e
    -> WHERE
    ->     e.bid = batch;
    -> end //
Query OK, 0 rows affected (0.149 sec)

MariaDB [dbw_project]> delimiter ;
MariaDB [dbw_project]> call find_official_mail_ids_of_batch('B13');
+---------------+--------------------------+
| Enrollment_no | Official_mail_id         |
+---------------+--------------------------+
|      19803003 | 19803003@mail.jiit.ac.in |
|      19803008 | 19803008@mail.jiit.ac.in |
|      19803011 | 19803011@mail.jiit.ac.in |
|      19803013 | 19803013@mail.jiit.ac.in |
|      19803016 | 19803016@mail.jiit.ac.in |
|      19803017 | 19803017@mail.jiit.ac.in |
|      19803019 | 19803019@mail.jiit.ac.in |
|      19803021 | 19803021@mail.jiit.ac.in |
+---------------+--------------------------+
8 rows in set (0.077 sec)
```

--12 FIND THE FACULTY WHO HAS MAXIMUM SALARY IN A DEPT.

SELECT

f1.did, f1.fid, f1.salary

FROM

```
    faculty f1
WHERE
    f1.salary >= ALL (SELECT
            f2.salary
        FROM
            faculty f2
        WHERE
            f2.did = f1.did)
GROUP BY f1.did;
```

```
MariaDB [dbw_project]> SELECT
    ->     f1.did, f1.fid, f1.salary
    -> FROM
    ->     faculty f1
    -> WHERE
    ->     f1.salary >= ALL (SELECT
    ->             f2.salary
    ->         FROM
    ->             faculty f2
    ->         WHERE
    ->             f2.did = f1.did)
    -> GROUP BY f1.did;
+------+------+--------+
| did  | fid  | salary |
+------+------+--------+
|   11 | 2217 |  72000 |
|   12 | 1819 |  71000 |
+------+------+--------+
2 rows in set (0.245 sec)
```

--13 FIND FACULTY WHO TEACHES ALL SUBJECTS

```
SELECT
    f.fid
FROM
```

```
    fac_subj f
GROUP BY f.fid
HAVING COUNT(f.scode) = (SELECT
        COUNT(s.scode)
    FROM
        subject s);
```

```
MariaDB [dbw_project]> SELECT
    ->     f.fid
    -> FROM
    ->     fac_subj f
    -> GROUP BY f.fid
    -> HAVING COUNT(f.scode) = (SELECT
    ->         COUNT(s.scode)
    ->     FROM
    ->         subject s);
+------+
| fid  |
+------+
| 2215 |
+------+
1 row in set (0.163 sec)
```

--14 FIND THE OLDEST STUDENT OF EACH BATCH

```
SELECT
    s.name, e.enroll, e.bid
FROM
    enrolled e,
    student s
WHERE
    s.enroll = e.enroll
        AND s.dob <= ALL (SELECT
            s1.dob
        FROM
```

```
        enrolled e1,
        student s1
    WHERE
        e.bid = e1.bid AND s1.enroll = e1.enroll)
GROUP BY e.bid;
```

```
MariaDB [dbw_project]> SELECT
    ->     s.name, e.enroll, e.bid
    -> FROM
    ->     enrolled e,
    ->     student s
    -> WHERE
    ->     s.enroll = e.enroll
    ->         AND s.dob <= ALL (SELECT
    ->             s1.dob
    ->         FROM
    ->             enrolled e1,
    ->             student s1
    ->         WHERE
    ->             e.bid = e1.bid AND s1.enroll = e1.enroll)
    -> GROUP BY e.bid;
+--------------+----------+-----+
| name         | enroll   | bid |
+--------------+----------+-----+
| ANIL KUMAR   | 19103020 | B1  |
| ATUL TIWARI  | 19803013 | B13 |
| TANISHQ VATS | 19103211 | B7  |
+--------------+----------+-----+
3 rows in set (1.397 sec)
```

THE END