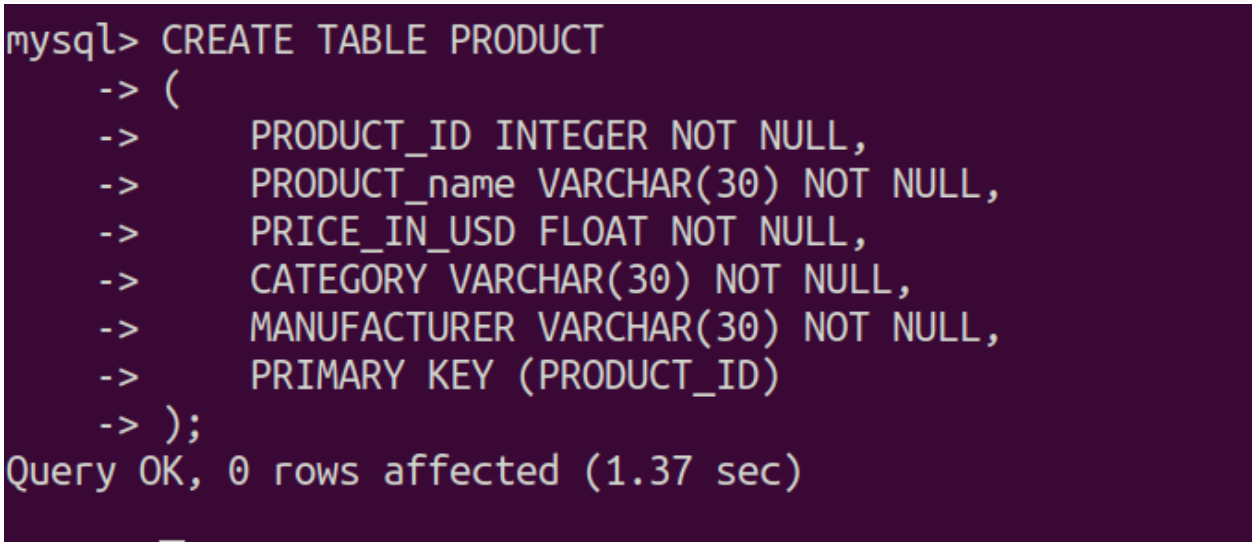
Database Lab Take Home Assignment - 4
Roll No. 214161008

1. **Construct a table with following details given below:**
   Product (Pid, Pname, Price, Category, Manufacturer
   Purchase (ProdId, buyerName, date, price)
   Pid: is primary key for the product table.

PRODUCT Table Creation

```
CREATE TABLE PRODUCT
(
   PRODUCT_ID INTEGER NOT NULL,
   PRODUCT_name VARCHAR(30) NOT NULL,
   PRICE_IN_USD FLOAT NOT NULL,
   CATEGORY VARCHAR(30) NOT NULL,
   MANUFACTURER VARCHAR(30) NOT NULL,
   PRIMARY KEY (PRODUCT_ID)
);
```



PURCHASE Table Creation

```
CREATE TABLE PURCHASE
(
   PRODUCT_ID INTEGER NOT NULL,
   BUYER_NAME VARCHAR(30) NOT NULL,
   PURCHASE_DATE DATE NOT NULL,
```

```
   PRICE_IN_USD FLOAT NOT NULL,
   PRIMARY KEY (PRODUCT_ID,BUYER_NAME),
   FOREIGN KEY (PRODUCT_ID) REFERENCES PRODUCT(PRODUCT_ID)
);
```

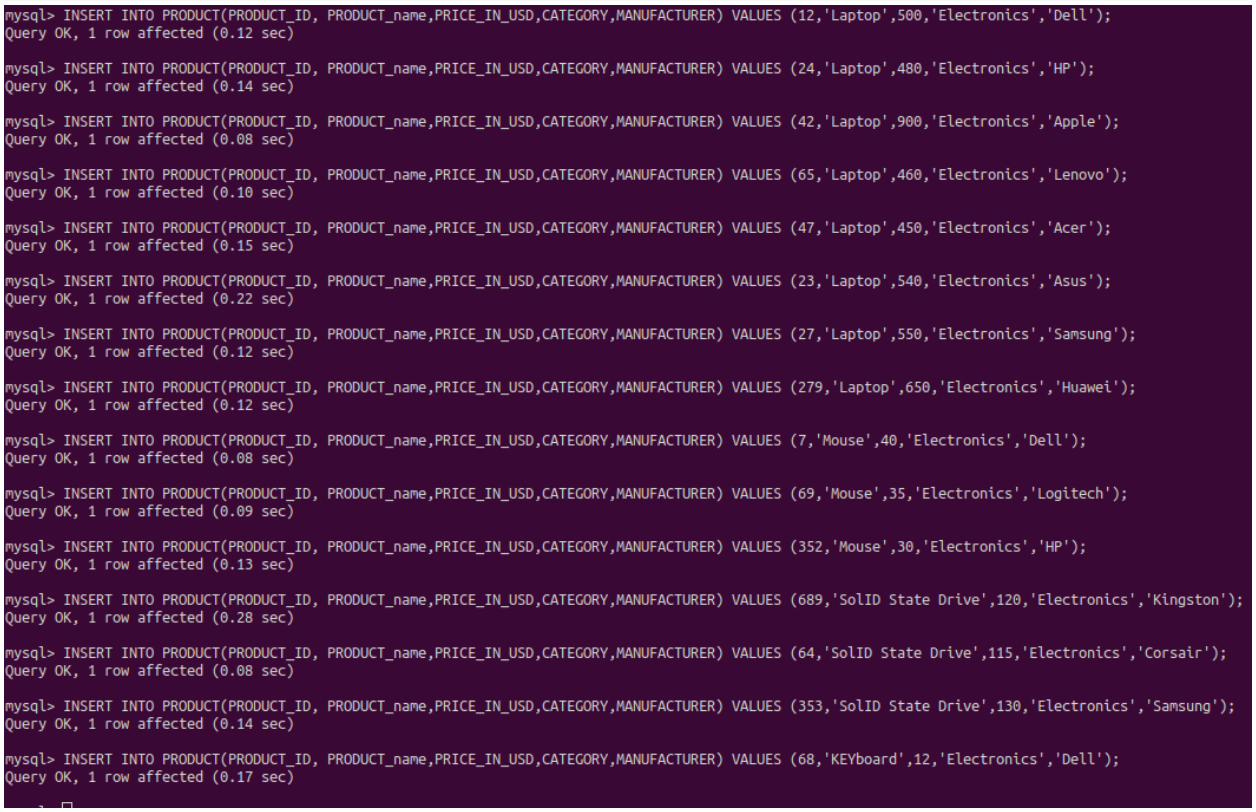
```
mysql> CREATE TABLE PURCHASE
    -> (
    ->     PRODUCT_ID INTEGER NOT NULL,
    ->     BUYER_NAME VARCHAR(30) NOT NULL,
    ->     PURCHASE_DATE DATE NOT NULL,
    ->     PRICE_IN_USD FLOAT NOT NULL,
    ->     PRIMARY KEY (PRODUCT_ID,BUYER_NAME),
    ->     FOREIGN KEY (PRODUCT_ID) REFERENCES PRODUCT(PRODUCT_ID)
    -> );

Query OK, 0 rows affected (1.49 sec)
```

INSERTION INTO PRODUCT Table

```
INSERT INTO PRODUCT(PRODUCT_ID,
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES
(12,'Laptop',500,'Electronics','Dell');
INSERT INTO PRODUCT(PRODUCT_ID,
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES
(24,'Laptop',480,'Electronics','HP');
INSERT INTO PRODUCT(PRODUCT_ID,
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES
(42,'Laptop',900,'Electronics','Apple');
INSERT INTO PRODUCT(PRODUCT_ID,
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES
(65,'Laptop',460,'Electronics','Lenovo');
INSERT INTO PRODUCT(PRODUCT_ID,
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES
(47,'Laptop',450,'Electronics','Acer');
INSERT INTO PRODUCT(PRODUCT_ID,
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES
(23,'Laptop',540,'Electronics','Asus');
INSERT INTO PRODUCT(PRODUCT_ID,
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES
(27,'Laptop',550,'Electronics','Samsung');
INSERT INTO PRODUCT(PRODUCT_ID,
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES
(279,'Laptop',650,'Electronics','Huawei');
INSERT INTO PRODUCT(PRODUCT_ID,
```

```
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES
(7,'Mouse',40,'Electronics','Dell');
INSERT INTO PRODUCT(PRODUCT_ID,
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES
(69,'Mouse',35,'Electronics','Logitech');
INSERT INTO PRODUCT(PRODUCT_ID,
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES
(352,'Mouse',30,'Electronics','HP');
INSERT INTO PRODUCT(PRODUCT_ID,
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES (689,'SolID State
Drive',120,'Electronics','Kingston');
INSERT INTO PRODUCT(PRODUCT_ID,
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES (64,'SolID State
Drive',115,'Electronics','Corsair');
INSERT INTO PRODUCT(PRODUCT_ID,
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES (353,'SolID State
Drive',130,'Electronics','Samsung');
INSERT INTO PRODUCT(PRODUCT_ID,
PRODUCT_name,PRICE_IN_USD,CATEGORY,MANUFACTURER) VALUES
(68,'KEYboard',12,'Electronics','Dell');
```



INSERTION INTO PURCHASE Table

```
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(65,'Kamal',DATE('2012-12-17'),460);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(7,'Gaurav',DATE('2012-12-11'),24);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(65,'Neeraj',DATE('2018-12-27'),460);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(7,'Abhinav',DATE('2014-10-18'),12);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(68,'Gaurang',DATE('2019-01-02'),80);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(27,'Kamlesh',DATE('2011-08-22'),550);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(42,'Budhar',DATE('2015-10-17'),900);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(27,'Mann',DATE('2013-04-19'),460);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(47,'Udghosh',DATE('2012-04-05'),309);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(42,'Vinay',DATE('2013-04-19'),900);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(279,'Rakesh',DATE('2014-10-18'),460);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(27,'Niranjan',DATE('2014-10-18'),550);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(65,'Kuldeep',DATE('2012-04-05'),460);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(352,'Rajeev',DATE('2019-01-02'),82);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(689,'Atmanand',DATE('2013-04-19'),270);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(69,'Jothiprakash',DATE('2011-08-22'),650);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(65,'Shubham',DATE('2013-04-19'),460);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(23,'Rishabh',DATE('2012-12-17'),540);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(12,'Rohan',DATE('2019-01-27'),60);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(64,'Akash',DATE('2018-12-27'),460);
INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES
(353,'Amit',DATE('2013-04-19'),120.4);
```

```
mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (65,'Kamal',DATE('2012-12-17'),460);
Query OK, 1 row affected (0.18 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (7,'Gaurav',DATE('2012-12-11'),24);
Query OK, 1 row affected (0.16 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (65,'Neeraj',DATE('2018-12-27'),460);
Query OK, 1 row affected (0.16 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (7,'Abhinav',DATE('2014-10-18'),12);
Query OK, 1 row affected (0.08 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (68,'Gaurang',DATE('2019-01-02'),80);
Query OK, 1 row affected (0.10 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (27,'Kamlesh',DATE('2011-08-22'),550);
Query OK, 1 row affected (0.18 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (42,'Budhar',DATE('2015-10-17'),900);
Query OK, 1 row affected (0.32 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (27,'Mann',DATE('2013-04-19'),460);
Query OK, 1 row affected (0.10 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (47,'Udghosh',DATE('2012-04-05'),309);
Query OK, 1 row affected (0.14 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (42,'Vinay',DATE('2013-04-19'),900);
Query OK, 1 row affected (0.12 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (279,'Rakesh',DATE('2014-10-18'),460);
Query OK, 1 row affected (0.17 sec)
```

```
mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (27,'Niranjan',DATE('2014-10-18'),550);
Query OK, 1 row affected (0.09 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (65,'Kuldeep',DATE('2012-04-05'),460);
Query OK, 1 row affected (0.10 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (352,'Rajeev',DATE('2019-01-02'),82);
Query OK, 1 row affected (0.16 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (689,'Atmanand',DATE('2013-04-19'),270);
Query OK, 1 row affected (0.14 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (69,'Jothiprakash',DATE('2011-08-22'),650);
Query OK, 1 row affected (0.08 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (65,'Shubham',DATE('2013-04-19'),460);
Query OK, 1 row affected (0.13 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (23,'Rishabh',DATE('2012-12-17'),540);
Query OK, 1 row affected (0.09 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (12,'Rohan',DATE('2019-01-27'),60);
Query OK, 1 row affected (0.10 sec)

mysql> INSERT INTO PURCHASE(PRODUCT_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (64,'Akash',DATE('2018-12-27'),460);
Query OK, 1 row affected (0.10 sec)

Query OK, 1 row affected (0.09 sec)_ID, BUYER_NAME,PURCHASE_DATE,PRICE_IN_USD) VALUES (353,'Amit',DATE('2013-04-19'),120.4);

mysql>
```

DATA IN PRODUCT Table

```
SELECT * FROM PRODUCT;
```

```
mysql> SELECT * FROM PRODUCT;
+------------+-------------------+--------------+-------------+--------------+
| PRODUCT_ID | PRODUCT_name      | PRICE_IN_USD | CATEGORY    | MANUFACTURER |
+------------+-------------------+--------------+-------------+--------------+
|          7 | Mouse             |           40 | Electronics | Dell         |
|         12 | Laptop            |          500 | Electronics | Dell         |
|         23 | Laptop            |          540 | Electronics | Asus         |
|         24 | Laptop            |          480 | Electronics | HP           |
|         27 | Laptop            |          550 | Electronics | Samsung      |
|         42 | Laptop            |          900 | Electronics | Apple        |
|         47 | Laptop            |          450 | Electronics | Acer         |
|         64 | SolID State Drive |          115 | Electronics | Corsair      |
|         65 | Laptop            |          460 | Electronics | Lenovo       |
|         68 | KEYboard          |           12 | Electronics | Dell         |
|         69 | Mouse             |           35 | Electronics | Logitech     |
|        279 | Laptop            |          650 | Electronics | Huawei       |
|        352 | Mouse             |           30 | Electronics | HP           |
|        353 | SolID State Drive |          130 | Electronics | Samsung      |
|        689 | SolID State Drive |          120 | Electronics | Kingston     |
+------------+-------------------+--------------+-------------+--------------+
15 rows in set (0.00 sec)
```

DATA INTO PURCHASE Table

```
SELECT * FROM PURCHASE;
```

```
mysql> SELECT * FROM PURCHASE;
+------------+--------------+---------------+--------------+
| PRODUCT_ID | BUYER_NAME   | PURCHASE_DATE | PRICE_IN_USD |
+------------+--------------+---------------+--------------+
|          7 | Abhinav      | 2014-10-18    |           12 |
|          7 | Gaurav       | 2012-12-11    |           24 |
|         12 | Rohan        | 2019-01-27    |           60 |
|         23 | Rishabh      | 2012-12-17    |          540 |
|         27 | Kamlesh      | 2011-08-22    |          550 |
|         27 | Mann         | 2013-04-19    |          460 |
|         27 | Niranjan     | 2014-10-18    |          550 |
|         42 | Budhar       | 2015-10-17    |          900 |
|         42 | Vinay        | 2013-04-19    |          900 |
|         47 | Udghosh      | 2012-04-05    |          309 |
|         64 | Akash        | 2018-12-27    |          460 |
|         65 | Kamal        | 2012-12-17    |          460 |
|         65 | Kuldeep      | 2012-04-05    |          460 |
|         65 | Neeraj       | 2018-12-27    |          460 |
|         65 | Shubham      | 2013-04-19    |          460 |
|         68 | Gaurang      | 2019-01-02    |           80 |
|         69 | Jothiprakash | 2011-08-22    |          650 |
|        279 | Rakesh       | 2014-10-18    |          460 |
|        352 | Rajeev       | 2019-01-02    |           82 |
|        353 | Amit         | 2013-04-19    |        120.4 |
|        689 | Atmanand     | 2013-04-19    |          270 |
+------------+--------------+---------------+--------------+
21 rows in set (0.00 sec)

mysql>
```

I. Write a stored procedures which outputs the date on which maximum number of products was purchased.

```
DELIMITER //
CREATE PROCEDURE MAX_PRODUCT_PURCHASING_DATE(OUT PURCHASING_DATE DATE)
BEGIN
   SELECT PURCHASE_DATE INTO PURCHASING_DATE
   FROM PURCHASE
   GROUP BY PURCHASE_DATE
   ORDER BY COUNT(PRODUCT_ID) DESC
   LIMIT 1;

   SELECT PURCHASING_DATE;
END;
```

```
//
DELIMITER ;
```

```
mysql> DELIMITER //
mysql> CREATE PROCEDURE MAX_PRODUCT_PURCHASING_DATE(OUT PURCHASING_DATE DATE)
    -> BEGIN
    ->     SELECT PURCHASE_DATE INTO PURCHASING_DATE
    ->     FROM PURCHASE
    ->     GROUP BY PURCHASE_DATE
    ->     ORDER BY COUNT(PRODUCT_ID) DESC
    ->     LIMIT 1;
    ->
    ->     SELECT PURCHASING_DATE;
    -> END;
    -> //
Query OK, 0 rows affected (0.18 sec)

mysql> DELIMITER ;
```

```
CALL MAX_PRODUCT_PURCHASING_DATE(@PURCHASING_DATE);
```

```
mysql> CALL MAX_PRODUCT_PURCHASING_DATE(@PURCHASING_DATE);
+-----------------+
| PURCHASING_DATE |
+-----------------+
| 2013-04-19      |
+-----------------+
1 row in set (0.01 sec)

Query OK, 0 rows affected (0.01 sec)

mysql>
```

II. Write a stored procedure which returns the number of products by a given date.

```
DELIMITER //
CREATE PROCEDURE PRODUCTS_PURCHASED_ON(IN PURCHASING_DATE DATE)
BEGIN
   DECLARE PRODUCTS_PURCHASED INTEGER DEFAULT 0;
   SELECT COUNT(PRODUCT_ID) INTO PRODUCTS_PURCHASED
   FROM PURCHASE
   WHERE PURCHASE_DATE = PURCHASING_DATE
   GROUP BY PURCHASE_DATE
   ORDER BY COUNT(PRODUCT_ID);

   SELECT PRODUCTS_PURCHASED;
END;
```

```
//
DELIMITER ;
```

```
mysql> DELIMITER //
mysql> CREATE PROCEDURE PRODUCTS_PURCHASED_ON(IN PURCHASING_DATE DATE)
    -> BEGIN
    ->     DECLARE PRODUCTS_PURCHASED INTEGER DEFAULT 0;
    ->     SELECT COUNT(PRODUCT_ID) INTO PRODUCTS_PURCHASED
    ->     FROM PURCHASE
    ->     WHERE PURCHASE_DATE = PURCHASING_DATE
    ->     GROUP BY PURCHASE_DATE
    ->     ORDER BY COUNT(PRODUCT_ID);
    ->
    ->     SELECT PRODUCTS_PURCHASED;
    -> END;
    -> //
Query OK, 0 rows affected (0.29 sec)

mysql> DELIMITER ;
```

```
CALL PRODUCTS_PURCHASED_ON('2013-04-19');
```

```
mysql> CALL PRODUCTS_PURCHASED_ON('2013-04-19');
+--------------------+
| PRODUCTS_PURCHASED |
+--------------------+
|                  5 |
+--------------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql>
```

III. Write a store procedure which takes prodId of a product as input and check the price and print ‘GREATER THAN 100’, ‘EQUAL to 100’ or ‘LESS THAN 100’ after comparing the price

```
DELIMITER //
CREATE PROCEDURE COMPARE_TO_100(IN ID INTEGER)
BEGIN
   DECLARE PRICE INTEGER DEFAULT 0;
   DECLARE RESULT VARCHAR(50) DEFAULT '';
```

```
    SELECT PRICE_IN_USD INTO PRICE
    FROM PRODUCT
    WHERE PRODUCT_ID = ID;

    IF PRICE = 0 THEN
        SET RESULT = 'PRODUCT NOT FOUND';
    ELSEIF PRICE > 100 THEN
        SET RESULT = 'GREATER THAN 100';
    ELSEIF PRICE = 100 THEN
        SET RESULT = 'EQUAL to 100';
    ELSEIF PRICE < 100 THEN
        SET RESULT = 'LESS THAN 100';
    END IF;
    SELECT CONCAT('COMPARED TO 100 : ', RESULT);
END;
//
DELIMITER ;
```

```
mysql> DELIMITER //
mysql> CREATE PROCEDURE COMPARE_TO_100(IN ID INTEGER)
    -> BEGIN
    ->     DECLARE PRICE INTEGER DEFAULT 0;
    ->     DECLARE RESULT VARCHAR(50) DEFAULT '';
    ->
    ->     SELECT PRICE_IN_USD INTO PRICE
    ->     FROM PRODUCT
    ->     WHERE PRODUCT_ID = ID;
    ->
    ->     IF PRICE = 0 THEN
    ->         SET RESULT = 'PRODUCT NOT FOUND';
    ->     ELSEIF PRICE > 100 THEN
    ->         SET RESULT = 'GREATER THAN 100';
    ->     ELSEIF PRICE = 100 THEN
    ->         SET RESULT = 'EQUAL to 100';
    ->     ELSEIF PRICE < 100 THEN
    ->         SET RESULT = 'LESS THAN 100';
    ->     END IF;
    ->     SELECT CONCAT('COMPARED TO 100 : ', RESULT);
    -> END;
    -> //
Query OK, 0 rows affected (0.23 sec)

mysql> DELIMITER ;
mysql>
```

```
CALL COMPARE_TO_100(64);
```

```
mysql> CALL COMPARE_TO_100(64);
+--------------------------------------+
| CONCAT('COMPARED TO 100 : ', RESULT) |
+--------------------------------------+
| COMPARED TO 100 : GREATER THAN 100   |
+--------------------------------------+
1 row in set (0.01 sec)

Query OK, 0 rows affected (0.01 sec)

mysql>
```

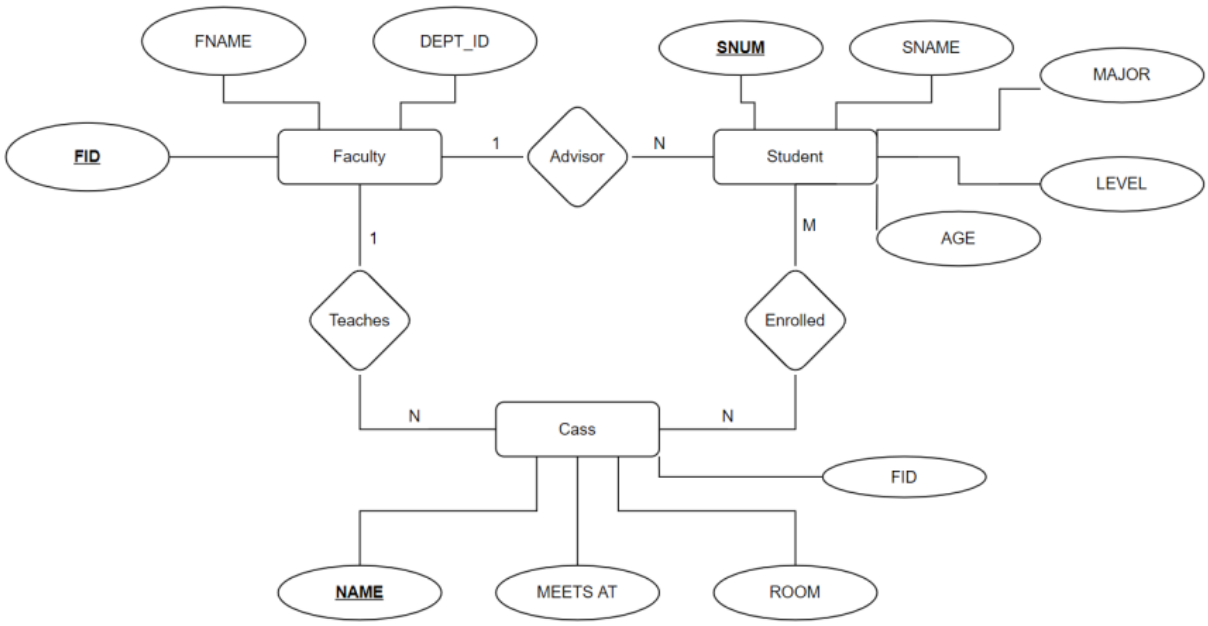
```
CALL COMPARE_TO_100(0);
```

```
mysql> CALL COMPARE_TO_100(0);
+--------------------------------------+
| CONCAT('COMPARED TO 100 : ', RESULT) |
+--------------------------------------+
| COMPARED TO 100 : PRODUCT NOT FOUND  |
+--------------------------------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql>
```

2. Consider the following ER Diagram.



FACULTY Table Creation

```
CREATE TABLE  FACULTY
(
   FACULTY_ID INTEGER NOT NULL,
   FACULTY_NAME VARCHAR(30) NOT NULL,
   DEPARTMENT_ID INTEGER NOT NULL,
   PRIMARY KEY (FACULTY_ID)
);
```

```
mysql> CREATE TABLE  FACULTY
    -> (
    ->      FACULTY_ID INTEGER NOT NULL,
    ->      FACULTY_NAME VARCHAR(30) NOT NULL,
    ->      DEPARTMENT_ID INTEGER NOT NULL,
    ->      PRIMARY KEY (FACULTY_ID)
    -> );
Query OK, 0 rows affected (0.78 sec)
```

STUDENT Table Creation

```
CREATE TABLE STUDENT
```

```
(
   STUDENT_ID INTEGER NOT NULL,
   STUDENT_NAME VARCHAR(30) NOT NULL,
   MAJOR VARCHAR(20) NOT NULL,
   STUDENT_LEVEL VARCHAR(30) NOT NULL,
   AGE INTEGER NOT NULL,
   FACULTY_ID INTEGER,
   PRIMARY KEY (STUDENT_ID),
   CHECK ( AGE>14 and  AGE<28),
   FOREIGN KEY (FACULTY_ID) REFERENCES FACULTY(FACULTY_ID)
);
```

```
mysql> CREATE TABLE STUDENT
    -> (
    ->     STUDENT_ID INTEGER NOT NULL,
    ->     STUDENT_NAME VARCHAR(30) NOT NULL,
    ->     MAJOR VARCHAR(20) NOT NULL,
    ->     STUDENT_LEVEL VARCHAR(30) NOT NULL,
    ->     AGE INTEGER NOT NULL,
    ->     FACULTY_ID INTEGER,
    ->     PRIMARY KEY (STUDENT_ID),
    ->     CHECK ( AGE>14 and  AGE<28),
    ->     FOREIGN KEY (FACULTY_ID) REFERENCES FACULTY(FACULTY_ID)
    -> );
Query OK, 0 rows affected (2.35 sec)
```

CLASS Table Creation

```
CREATE TABLE CLASS
(
   CLASS_NAME VARCHAR(30) NOT NULL,
   MEETS_AT time NOT NULL,
   ROOM VARCHAR(5) NOT NULL,
   FACULTY_ID INTEGER ,
   PRIMARY KEY (CLASS_NAME),
   FOREIGN KEY (FACULTY_ID) REFERENCES FACULTY(FACULTY_ID)
);
```

```
mysql> CREATE TABLE CLASS
    -> (
    ->     CLASS_NAME VARCHAR(30) NOT NULL,
    ->     MEETS_AT time NOT NULL,
    ->     ROOM VARCHAR(5) NOT NULL,
    ->     FACULTY_ID INTEGER ,
    ->     PRIMARY KEY (CLASS_NAME),
    ->     FOREIGN KEY (FACULTY_ID) REFERENCES FACULTY(FACULTY_ID)
    -> );
Query OK, 0 rows affected (1.47 sec)
```

ENROLLED Table Creation

```
CREATE TABLE ENROLLED
(
   STUDENT_ID INTEGER NOT NULL,
   CLASS_NAME VARCHAR(30) NOT NULL,
   PRIMARY KEY (STUDENT_ID,CLASS_NAME),
   FOREIGN KEY (STUDENT_ID) REFERENCES STUDENT(STUDENT_ID),
   FOREIGN KEY (CLASS_NAME) REFERENCES CLASS(CLASS_NAME)
);
```

```
mysql> CREATE TABLE ENROLLED
    -> (
    ->     STUDENT_ID INTEGER NOT NULL,
    ->     CLASS_NAME VARCHAR(30) NOT NULL,
    ->     PRIMARY KEY (STUDENT_ID,CLASS_NAME),
    ->     FOREIGN KEY (STUDENT_ID) REFERENCES STUDENT(STUDENT_ID),
    ->     FOREIGN KEY (CLASS_NAME) REFERENCES CLASS(CLASS_NAME)
    -> );
Query OK, 0 rows affected (0.78 sec)
```

INSERTION IN FACULTY Table

```
INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (1,'Piyush
Rai',231);
INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (3,'Manik
Chakraborthy',56);
INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (2,'PV
Subba Reddy',142);
INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values
(5,'Subramanyam',472);
INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (4,'Big
```

```
Sur',214);
INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (6,'Amey
Karkare',112);
INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values
(7,'Ramakrishnudu',321);
INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (8,'Rama
Rao',123);
INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (9,'Palash
Gosh',86);
INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (10,'Andrew
NG',694);
```

```
mysql> INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (1,'Piyush Rai',231);
Query OK, 1 row affected (0.10 sec)

mysql> INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (3,'Manik Chakraborthy',56);
Query OK, 1 row affected (0.12 sec)

mysql> INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (2,'PV Subba Reddy',142);
Query OK, 1 row affected (0.12 sec)

mysql> INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (5,'Subramanyam',472);
Query OK, 1 row affected (0.13 sec)

mysql> INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (4,'Big Sur',214);
Query OK, 1 row affected (0.14 sec)

mysql> INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (6,'Amey Karkare',112);
Query OK, 1 row affected (0.10 sec)

mysql> INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (7,'Ramakrishnudu',321);
Query OK, 1 row affected (0.15 sec)

mysql> INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (8,'Rama Rao',123);
Query OK, 1 row affected (0.20 sec)

mysql> INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (9,'Palash Gosh',86);
Query OK, 1 row affected (0.16 sec)

mysql> INSERT INTO FACULTY(FACULTY_ID, FACULTY_NAME, DEPARTMENT_ID) values (10,'Andrew NG',694);
Query OK, 1 row affected (0.14 sec)
```

INSERTION IN STUDENT Table

```
INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE,
FACULTY_ID) values (1,'Avinash','Mechanical','JR',17,4);
INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE,
FACULTY_ID) values (2,'Nemendra','Computer Science','SOPH',18,null);
INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE,
FACULTY_ID) values (3,'Ankur','Electronics','JR',18,5);
INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE,
FACULTY_ID) values (4,'Mayank','History','SOPH',20,1);
INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE,
FACULTY_ID) values (5,'NEERAJ','Accounting','SR',21,4);
INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE,
```

```
FACULTY_ID) values (6,'Shubham','Zoology','SOPH',19,3);
INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE,
FACULTY_ID) values (7,'Sukhdev','Biotechnology','JR',17,1);
INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE,
FACULTY_ID) values (8,'Kamal','Mathematics','JR',16,2);
INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE,
FACULTY_ID) values (9,'Ashutosh','Astronomy','SR',22,null);
```

```
mysql> INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE, FACULTY_ID) values (1,'Avinash','Mechanical','JR',17,4)
;
Query OK, 1 row affected (0.16 sec)

mysql> INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE, FACULTY_ID) values (2,'Nemendra','Computer Science','SO
PH',18,null);
Query OK, 1 row affected (0.12 sec)

mysql> INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE, FACULTY_ID) values (3,'Ankur','Electronics','JR',18,5);
Query OK, 1 row affected (0.17 sec)

mysql> INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE, FACULTY_ID) values (4,'Mayank','History','SOPH',20,1);
Query OK, 1 row affected (0.11 sec)

mysql> INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE, FACULTY_ID) values (5,'NEERAJ','Accounting','SR',21,4);
Query OK, 1 row affected (0.16 sec)

mysql> INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE, FACULTY_ID) values (6,'Shubham','Zoology','SOPH',19,3);
Query OK, 1 row affected (0.08 sec)

mysql> INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE, FACULTY_ID) values (7,'Sukhdev','Biotechnology','JR',17
,1);
Query OK, 1 row affected (0.09 sec)

mysql> INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE, FACULTY_ID) values (8,'Kamal','Mathematics','JR',16,2);
Query OK, 1 row affected (0.23 sec)

mysql> INSERT INTO STUDENT (STUDENT_ID, STUDENT_NAME, MAJOR, STUDENT_LEVEL, AGE, FACULTY_ID) values (9,'Ashutosh','Astronomy','SR',22,nu
ll);
Query OK, 1 row affected (0.13 sec)
```

INSERTION IN CLASS Table

```
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values
('Thermodynamics','08:00:00','R128',1);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values
('Database','10:00:00','F220',5);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values
('Algorithms','08:00:00','C102',7);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values
('Mathematics','09:00:00','I028',8);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Operating
System','08:00:00','C102',3);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Social
Popular Movements','08:30:00','I028',8);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Deep
Learning','09:30:00','I028',9);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values
('Statistics','11:30:00','R128',5);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Automata
```

```
Theory','09:00:00','C102',1);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Fluid
Mechanics','10:00:00','I028',5);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Economic
History','09:30:00','C102',3);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Power
Electronics','09:00:00','R128',2);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('State and
Power','10:00:00','F220',1);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Compiler
Design','10:00:00','F220',8);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Data
Structures','11:00:00','C102',7);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values
('Physics','08:00:00','F220',7);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values
('Communications','12:00:00','I028',4);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values
('Biomolecules','10:00:00','C102',1);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values
('Biochemistry','08:00:00','R128',6);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values
('Ecology','09:30:00','F220',7);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values
('Psychology','11:00:00','C102',5);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values
('Programming','01:00:00','R128',3);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Integrated
Circuits','10:30:00','F220',4);
INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Business
Management','01:00:00','I028',7);
```

```
mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Thermodynamics','08:00:00','R128',1);
Query OK, 1 row affected (0.43 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Database','10:00:00','F220',5);
Query OK, 1 row affected (0.19 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Algorithms','08:00:00','C102',7);
Query OK, 1 row affected (0.12 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Mathematics','09:00:00','I028',8);
Query OK, 1 row affected (0.18 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Operating System','08:00:00','C102',3);
Query OK, 1 row affected (0.14 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Social Popular Movements','08:30:00','I028',8);
Query OK, 1 row affected (0.07 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Deep Learning','09:30:00','I028',9);
Query OK, 1 row affected (0.14 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Statistics','11:30:00','R128',5);
Query OK, 1 row affected (0.41 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Automata Theory','09:00:00','C102',1);
Query OK, 1 row affected (0.18 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Fluid Mechanics','10:00:00','I028',5);
Query OK, 1 row affected (0.10 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Economic History','09:30:00','C102',3);
Query OK, 1 row affected (0.14 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Power Electronics','09:00:00','R128',2);
Query OK, 1 row affected (0.09 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('State and Power','10:00:00','F220',1);
Query OK, 1 row affected (0.26 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Compiler Design','10:00:00','F220',8);
Query OK, 1 row affected (0.11 sec)
```

```
mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Data Structures','11:00:00','C102',7);
Query OK, 1 row affected (0.13 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Physics','08:00:00','F220',7);
Query OK, 1 row affected (0.11 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Communications','12:00:00','I028',4);
Query OK, 1 row affected (0.11 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Biomolecules','10:00:00','C102',1);
Query OK, 1 row affected (0.21 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Biochemistry','08:00:00','R128',6);
Query OK, 1 row affected (0.13 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Ecology','09:30:00','F220',7);
Query OK, 1 row affected (0.15 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Psychology','11:00:00','C102',5);
Query OK, 1 row affected (0.10 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Programming','01:00:00','R128',3);
Query OK, 1 row affected (0.18 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Integrated Circuits','10:30:00','F220',4);
Query OK, 1 row affected (0.12 sec)

mysql> INSERT INTO CLASS (CLASS_NAME, MEETS_AT, ROOM, FACULTY_ID) values ('Business Management','01:00:00','I028',7);
Query OK, 1 row affected (0.16 sec)
```

INSERTION IN ENROLLED Table

```
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (1,'Thermodynamics');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Automata Theory');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (1,'Fluid Mechanics');
```

```
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Database');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Algorithms');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (3,'Statistics');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (4,'Social Popular
Movements');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (1,'Mathematics');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Mathematics');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Operating System');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (4,'Economic History');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Deep Learning');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (3,'Power Electronics');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (4,'State and Power');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (1,'Deep Learning');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Compiler Design');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (3,'Data Structures');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (3,'Integrated Circuits');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Data Structures');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (4,'Physics');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (6,'Biomolecules');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (7,'Deep Learning');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (6,'Biochemistry');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (5,'Communications');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (5,'Business Management');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (6,'Mathematics');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (8,'Deep Learning');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (7,'Mathematics');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (6,'Ecology');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (4,'Deep Learning');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (1,'Programming');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (5,'Statistics');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (8,'Physics');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (3,'Programming');
INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (5,'Mathematics');
```

```
mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (1,'Thermodynamics');
Query OK, 1 row affected (0.23 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Automata Theory');
Query OK, 1 row affected (0.25 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (1,'Fluid Mechanics');
Query OK, 1 row affected (0.10 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Database');
Query OK, 1 row affected (0.13 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Algorithms');
Query OK, 1 row affected (0.10 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (3,'Statistics');
Query OK, 1 row affected (0.18 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (4,'Social Popular Movements');
Query OK, 1 row affected (0.13 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (1,'Mathematics');
Query OK, 1 row affected (0.28 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Mathematics');
Query OK, 1 row affected (0.23 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Operating System');
Query OK, 1 row affected (0.13 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (4,'Economic History');
Query OK, 1 row affected (0.14 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Deep Learning');
Query OK, 1 row affected (0.16 sec)
```

```
mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (3,'Power Electronics');
Query OK, 1 row affected (0.16 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (4,'State and Power');
Query OK, 1 row affected (0.09 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (1,'Deep Learning');
Query OK, 1 row affected (0.11 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Compiler Design');
Query OK, 1 row affected (0.16 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (3,'Data Structures');
Query OK, 1 row affected (0.13 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (3,'Integrated Circuits');
Query OK, 1 row affected (0.15 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (2,'Data Structures');
Query OK, 1 row affected (0.15 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (4,'Physics');
Query OK, 1 row affected (0.11 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (6,'Biomolecules');
Query OK, 1 row affected (0.16 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (7,'Deep Learning');
Query OK, 1 row affected (0.14 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (6,'Biochemistry');
Query OK, 1 row affected (0.10 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (5,'Communications');
```

```
mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (5,'Business Management');
Query OK, 1 row affected (0.11 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (6,'Mathematics');
Query OK, 1 row affected (0.18 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (8,'Deep Learning');
Query OK, 1 row affected (0.11 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (7,'Mathematics');
Query OK, 1 row affected (0.10 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (6,'Ecology');
Query OK, 1 row affected (0.18 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (4,'Deep Learning');
Query OK, 1 row affected (0.12 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (1,'Programming');
Query OK, 1 row affected (0.10 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (5,'Statistics');
Query OK, 1 row affected (0.09 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (8,'Physics');
Query OK, 1 row affected (0.16 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (3,'Programming');
Query OK, 1 row affected (0.11 sec)

mysql> INSERT INTO ENROLLED (STUDENT_ID,CLASS_NAME) values (5,'Mathematics');
Query OK, 1 row affected (0.16 sec)

mysql>
```

DATA IN FACULTY Table

```
SELECT * FROM FACULTY;
```

```
mysql> SELECT * FROM FACULTY;
+------------+---------------------+---------------+
| FACULTY_ID | FACULTY_NAME        | DEPARTMENT_ID |
+------------+---------------------+---------------+
|          1 | Piyush Rai          |           231 |
|          2 | PV Subba Reddy      |           142 |
|          3 | Manik Chakraborthy  |            56 |
|          4 | Big Sur             |           214 |
|          5 | Subramanyam         |           472 |
|          6 | Amey Karkare        |           112 |
|          7 | Ramakrishnudu       |           321 |
|          8 | Rama Rao            |           123 |
|          9 | Palash Gosh         |            86 |
|         10 | Andrew NG           |           694 |
+------------+---------------------+---------------+
10 rows in set (0.00 sec)
```

DATA IN STUDENT Table

```
SELECT * FROM STUDENT;
```

```
mysql> SELECT * FROM STUDENT;
+------------+--------------+------------------+---------------+-----+------------+
| STUDENT_ID | STUDENT_NAME | MAJOR            | STUDENT_LEVEL | AGE | FACULTY_ID |
+------------+--------------+------------------+---------------+-----+------------+
|          1 | Avinash      | Mechanical       | JR            |  17 |          4 |
|          2 | Nemendra     | Computer Science | SOPH          |  18 |       NULL |
|          3 | Ankur        | Electronics      | JR            |  18 |          5 |
|          4 | Mayank       | History          | SOPH          |  20 |          1 |
|          5 | NEERAJ       | Accounting       | SR            |  21 |          4 |
|          6 | Shubham      | Zoology          | SOPH          |  19 |          3 |
|          7 | Sukhdev      | Biotechnology    | JR            |  17 |          1 |
|          8 | Kamal        | Mathematics      | JR            |  16 |          2 |
|          9 | Ashutosh     | Astronomy        | SR            |  22 |       NULL |
+------------+--------------+------------------+---------------+-----+------------+
9 rows in set (0.00 sec)
```

DATA IN CLASS Table

```
SELECT * FROM CLASS;
```

```
mysql> SELECT * FROM CLASS;
+--------------------------+----------+------+------------+
| CLASS_NAME               | MEETS_AT | ROOM | FACULTY_ID |
+--------------------------+----------+------+------------+
| Algorithms               | 08:00:00 | C102 |          7 |
| Automata Theory          | 09:00:00 | C102 |          1 |
| Biochemistry             | 08:00:00 | R128 |          6 |
| Biomolecules             | 10:00:00 | C102 |          1 |
| Business Management      | 01:00:00 | I028 |          7 |
| Communications           | 12:00:00 | I028 |          4 |
| Compiler Design          | 10:00:00 | F220 |          8 |
| Data Structures          | 11:00:00 | C102 |          7 |
| Database                 | 10:00:00 | F220 |          5 |
| Deep Learning            | 09:30:00 | I028 |          9 |
| Ecology                  | 09:30:00 | F220 |          7 |
| Economic History         | 09:30:00 | C102 |          3 |
| Fluid Mechanics          | 10:00:00 | I028 |          5 |
| Integrated Circuits      | 10:30:00 | F220 |          4 |
| Mathematics              | 09:00:00 | I028 |          8 |
| Operating System         | 08:00:00 | C102 |          3 |
| Physics                  | 08:00:00 | F220 |          7 |
| Power Electronics        | 09:00:00 | R128 |          2 |
| Programming              | 01:00:00 | R128 |          3 |
| Psychology               | 11:00:00 | C102 |          5 |
| Social Popular Movements | 08:30:00 | I028 |          8 |
| State and Power          | 10:00:00 | F220 |          1 |
| Statistics               | 11:30:00 | R128 |          5 |
| Thermodynamics           | 08:00:00 | R128 |          1 |
+--------------------------+----------+------+------------+
24 rows in set (0.00 sec)
```

DATA IN ENROLLED Table

```
SELECT * FROM ENROLLED;
```

```
mysql> SELECT * FROM ENROLLED;
+------------+--------------------------+
| STUDENT_ID | CLASS_NAME               |
+------------+--------------------------+
|          2 | Algorithms               |
|          2 | Automata Theory          |
|          6 | Biochemistry             |
|          6 | biomolecules             |
|          5 | Business Management      |
|          5 | Communications           |
|          2 | Compiler Design          |
|          2 | Data Structures          |
|          3 | Data Structures          |
|          2 | Database                 |
|          1 | Deep Learning            |
|          2 | Deep Learning            |
|          4 | Deep Learning            |
|          7 | Deep Learning            |
|          8 | Deep Learning            |
|          6 | Ecology                  |
|          4 | Economic History         |
|          1 | Fluid Mechanics          |
|          3 | Integrated Circuits      |
|          1 | Mathematics              |
|          2 | Mathematics              |
|          5 | Mathematics              |
|          6 | Mathematics              |
|          7 | Mathematics              |
|          2 | Operating System         |
|          4 | Physics                  |
|          8 | Physics                  |
|          3 | Power Electronics        |
|          1 | Programming              |
|          3 | Programming              |
|          4 | Social Popular Movements |
|          4 | State and Power          |
|          3 | Statistics               |
|          5 | Statistics               |
|          1 | Thermodynamics           |
+------------+--------------------------+
35 rows in set (0.00 sec)
```

I. Write a stored procedure which takes student_level as input and return the average age of the students of the particular level.

```
DELIMITER //
CREATE PROCEDURE AVG_AGE(IN LEVEL VARCHAR(5), OUT AVERAGE_AGE FLOAT)
BEGIN
   SELECT AVG(AGE) INTO AVERAGE_AGE
   FROM STUDENT
   WHERE STUDENT_LEVEL = LEVEL;

   SELECT AVERAGE_AGE;
END;
//
DELIMITER ;
```

```
mysql> DELIMITER //
mysql> CREATE PROCEDURE AVG_AGE(IN LEVEL VARCHAR(5), OUT AVERAGE_AGE FLOAT)
    -> BEGIN
    ->     SELECT AVG(AGE) INTO AVERAGE_AGE
    ->     FROM STUDENT
    ->     WHERE STUDENT_LEVEL = LEVEL;
    ->
    ->     SELECT AVERAGE_AGE;
    -> END;
    -> //
Query OK, 0 rows affected (0.20 sec)

mysql> DELIMITER ;
mysql>
```

```
CALL AVG_AGE('JR', @AVERAGE_AGE);
```

```
mysql> CALL AVG_AGE('JR', @AVERAGE_AGE);
+-------------+
| AVERAGE_AGE |
+-------------+
|          17 |
+-------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)
```

```
CALL AVG_AGE('SR', @AVERAGE_AGE);
```

```
mysql> CALL AVG_AGE('SR', @AVERAGE_AGE);
+-------------+
| AVERAGE_AGE |
+-------------+
|        21.5 |
+-------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)
```

```
CALL AVG_AGE('SOPH', @AVERAGE_AGE);
```

```
mysql> CALL AVG_AGE('SOPH', @AVERAGE_AGE);
+-------------+
| AVERAGE_AGE |
+-------------+
|          19 |
+-------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)
```

II. Write a stored procedure which takes faculty_id as input and return the list of all the students those are taught by faculty faculty_id.

```
DELIMITER //
CREATE PROCEDURE STUDENTS_OF_FACULTY(IN FID INTEGER, OUT STUDENTS_NAME
VARCHAR(30))
BEGIN
   SELECT DISTINCT STUDENT_NAME
   FROM STUDENT S, ENROLLED E, CLASS C
   WHERE S.STUDENT_ID = E.STUDENT_ID AND E.CLASS_NAME = C.CLASS_NAME AND
C.FACULTY_ID = FID;
END;
//
DELIMITER ;
```

```
mysql> DELIMITER //
mysql> CREATE PROCEDURE STUDENTS_OF_FACULTY(IN FID INTEGER, OUT STUDENTS_NAME VARCHAR(30))
    -> BEGIN
    ->     SELECT DISTINCT STUDENT_NAME
    ->     FROM STUDENT S, ENROLLED E, CLASS C
    ->     WHERE S.STUDENT_ID = E.STUDENT_ID AND E.CLASS_NAME = C.CLASS_NAME AND C.FACULTY_ID = FID;
    -> END;
    -> //
Query OK, 0 rows affected (0.23 sec)

mysql> DELIMITER ;
mysql>
```

```
CALL STUDENTS_OF_FACULTY(3);
```

```
mysql> CALL STUDENTS_OF_FACULTY(3, @STUDENTS_NAME);
+--------------+
| STUDENT_NAME |
+--------------+
| Mayank       |
| Nemendra     |
| Avinash      |
| Ankur        |
+--------------+
4 rows in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql>
```

III. Write a stored procedure which return all the class having keyword “ics” in its name and those either meet in room R128 or having 3 or more students enrolled.

```
DELIMITER //
CREATE PROCEDURE SUBJECTS_WITH_GIVEN_RESTRICTION()
BEGIN
   SELECT CLASS_NAME
   FROM CLASS
   WHERE CLASS_NAME LIKE '%ics%' AND
   (
       ROOM = 'R128' OR
       CLASS_NAME IN
       (
           SELECT CLASS_NAME
           FROM ENROLLED E
           GROUP BY CLASS_NAME
           HAVING COUNT(STUDENT_ID) >= 3
       )
   );
END;
```

```
//
DELIMITER ;
```

```
mysql> DELIMITER //
mysql> CREATE PROCEDURE SUBJECTS_WITH_GIVEN_RESTRICTION()
    -> BEGIN
    ->     SELECT CLASS_NAME
    ->     FROM CLASS
    ->     WHERE CLASS_NAME LIKE '%ics%' AND
    ->     (
    ->         ROOM = 'R128' OR
    ->         CLASS_NAME IN
    ->         (
    ->             SELECT CLASS_NAME
    ->             FROM ENROLLED E
    ->             GROUP BY CLASS_NAME
    ->             HAVING COUNT(STUDENT_ID) >= 3
    ->         )
    ->     );
    -> END;
    -> //
Query OK, 0 rows affected (0.20 sec)

mysql> DELIMITER ;
mysql>
```

```
CALL SUBJECTS_WITH_GIVEN_RESTRICTION;
```

```
mysql> CALL SUBJECTS_WITH_GIVEN_RESTRICTION;
+--------------------+
| CLASS_NAME         |
+--------------------+
| Mathematics        |
| Power Electronics  |
| Statistics         |
| Thermodynamics     |
+--------------------+
4 rows in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql>
```

IV. Write a stored procedure which return the reduced age of oldest student by 20% who is either a mathematics major or enrolled in a course taught by Teacher id 1.

```
DELIMITER //
```

```
CREATE PROCEDURE MANIPULATED_AGE()
BEGIN
   DECLARE REDUCED_AGE FLOAT DEFAULT 0.0;
   DECLARE ORIGINAL_AGE FLOAT DEFAULT 0.0;
   SELECT DISTINCT MAX(S.AGE) INTO ORIGINAL_AGE
   FROM STUDENT S, ENROLLED E, CLASS C
   WHERE MAJOR = 'Mathematics' OR
   (
       S.STUDENT_ID = E.STUDENT_ID
       AND
       E.CLASS_NAME = C.CLASS_NAME
       AND
       C.FACULTY_ID = 1
   );
   SET REDUCED_AGE = (1-0.2)*ORIGINAL_AGE;
   SELECT REDUCED_AGE;
END;
//
DELIMITER ;
```

```
mysql> DELIMITER //
mysql> CREATE PROCEDURE MANIPULATED_AGE()
    -> BEGIN
    ->     DECLARE REDUCED_AGE FLOAT DEFAULT 0.0;
    ->     DECLARE ORIGINAL_AGE FLOAT DEFAULT 0.0;
    ->     SELECT DISTINCT MAX(S.AGE) INTO ORIGINAL_AGE
    ->     FROM STUDENT S, ENROLLED E, CLASS C
    ->     WHERE MAJOR = 'Mathematics' OR
    ->     (
    ->         S.STUDENT_ID = E.STUDENT_ID
    ->         AND
    ->         E.CLASS_NAME = C.CLASS_NAME
    ->         AND
    ->         C.FACULTY_ID = 1
    ->     );
    ->     SET REDUCED_AGE = (1-0.2)*ORIGINAL_AGE;
    ->     SELECT REDUCED_AGE;
    -> END;
    -> //
Query OK, 0 rows affected (0.21 sec)

mysql> DELIMITER ;
mysql>
```

```
CALL MANIPULATED_AGE;
```

```
mysql> CALL MANIPULATED_AGE;
+-------------+
| REDUCED_AGE |
+-------------+
|          16 |
+-------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql>
```

V. Write a stored procedure having IN and OUT parameter which take the room number as an IN parameter and write the count of all the classes held in a particular room into the OUT parameter.

```
DELIMITER //
CREATE PROCEDURE NUMBER_OF_CLASSES(IN INPUT_ROOM VARCHAR(5), OUT CLASS_COUNT
INTEGER)
BEGIN
   SELECT COUNT(*) INTO CLASS_COUNT
   FROM CLASS
   WHERE ROOM = INPUT_ROOM
   GROUP BY ROOM;

   SELECT CLASS_COUNT;
END;
//
DELIMITER ;
```

```
mysql> DELIMITER //
mysql> CREATE PROCEDURE NUMBER_OF_CLASSES(IN INPUT_ROOM VARCHAR(5), OUT CLASS_COUNT INTEGER)
    -> BEGIN
    ->     SELECT COUNT(*) INTO CLASS_COUNT
    ->     FROM CLASS
    ->     WHERE ROOM = INPUT_ROOM
    ->     GROUP BY ROOM;
    ->
    ->     SELECT CLASS_COUNT;
    -> END;
    -> //
Query OK, 0 rows affected (0.21 sec)

mysql> DELIMITER ;
```

```
CALL NUMBER_OF_CLASSES('C102', @CLASS_COUNT);
CALL NUMBER_OF_CLASSES('R128', @CLASS_COUNT);
CALL NUMBER_OF_CLASSES('I028', @CLASS_COUNT);
```

```
mysql> CALL NUMBER_OF_CLASSES('C102', @CLASS_COUNT);
+-------------+
| CLASS_COUNT |
+-------------+
|           7 |
+-------------+
1 row in set (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

mysql> CALL NUMBER_OF_CLASSES('R128', @CLASS_COUNT);
+-------------+
| CLASS_COUNT |
+-------------+
|           5 |
+-------------+
1 row in set (0.01 sec)

Query OK, 0 rows affected (0.01 sec)

mysql> CALL NUMBER_OF_CLASSES('I028', @CLASS_COUNT);
+-------------+
| CLASS_COUNT |
+-------------+
|           6 |
+-------------+
1 row in set (0.00 sec)
```

3. **Implement the following scenario using LOOPs in stored procedures.Procedure should take 2 IN parameter start and end and 2 OUT parameter. evensum and oddsum and write the total sum of odd integers into the oddsum parameter and total sum of even integers into the even sum parameter.**

```
DELIMITER //
CREATE PROCEDURE SUM_PROC(IN start_value INTEGER, IN end_value INTEGER,OUT
EVENSUM INTEGER,OUT ODDSUM INTEGER)
BEGIN
DECLARE COUNTER INTEGER DEFAULT 0;
```

```
 SET COUNTER = start_value;
 SET EVENSUM = 0;
 SET ODDSUM = 0;
 LOOP_LABEL : LOOP

   IF COUNTER > end_value THEN
     LEAVE LOOP_LABEL;
   END IF;

   IF (COUNTER mod 2) THEN
     SET ODDSUM = ODDSUM + COUNTER;
   ElSE
     SET EVENSUM = EVENSUM + COUNTER;
   END IF;

   SET COUNTER = COUNTER + 1;
   ITERATE LOOP_LABEL;

 END LOOP;
END;
//
DELIMITER ;
```

```
mysql>   DELIMITER //
mysql>   CREATE PROCEDURE SUM_PROC(IN start_value INTEGER, IN end_value INTEGER,OUT EVENSUM INTEGER,OUT ODDSUM INTEGER)
    ->   BEGIN
    ->     DECLARE COUNTER INTEGER DEFAULT 0;
    ->     SET COUNTER = start_value;
    ->     SET EVENSUM = 0;
    ->     SET ODDSUM = 0;
    ->     LOOP_LABEL : LOOP
    ->
    ->       IF COUNTER > end_value THEN
    ->         LEAVE LOOP_LABEL;
    ->       END IF;
    ->
    ->       IF (COUNTER mod 2) THEN
    ->         SET ODDSUM = ODDSUM + COUNTER;
    ->       ElSE
    ->         SET EVENSUM = EVENSUM + COUNTER;
    ->       END IF;
    ->
    ->       SET COUNTER = COUNTER + 1;
    ->       ITERATE LOOP_LABEL;
    ->
    ->     END LOOP;
    ->   END;
    ->   //
Query OK, 0 rows affected (0.23 sec)

mysql>   DELIMITER ;
mysql>
```

```
CALL SUM_PROC(1, 100, @EVENSUM, @ODDSUM);
```

```
mysql> CALL SUM_PROC(1, 100, @EVENSUM, @ODDSUM);
Query OK, 0 rows affected (0.00 sec)
```

```
SELECT @EVENSUM;
```

```
mysql> SELECT @EVENSUM;
+----------+
| @EVENSUM |
+----------+
|     2550 |
+----------+
1 row in set (0.00 sec)
```

```
SELECT @ODDSUM;
```

```
mysql> SELECT @ODDSUM;
+---------+
| @ODDSUM |
+---------+
|    2500 |
+---------+
1 row in set (0.00 sec)
```