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DATA BASE ASSIGNMENT 01  
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# Question # 01

Running employee.sql script file on mysql console using:

SOURCE C:\Users\HP\Desktop\employee.sql

```
mysql> SOURCE C:\Users\HP\Desktop\employee.sql
Query OK, 0 rows affected, 1 warning (0.00 sec)

Query OK, 1 row affected (0.00 sec)

Database changed
+-----+
| INFO |
+-----+
| CREATING DATABASE STRUCTURE |
+-----+
1 row in set (0.30 sec)

Query OK, 0 rows affected, 6 warnings (0.01 sec)

Query OK, 0 rows affected (0.01 sec)

+-----+
| INFO |
+-----+
| storage engine: InnoDB |
+-----+
1 row in set (0.01 sec)

Query OK, 0 rows affected (0.47 sec)

Query OK, 0 rows affected (0.18 sec)

Query OK, 0 rows affected (0.13 sec)

Query OK, 0 rows affected (0.12 sec)

Query OK, 0 rows affected (0.11 sec)

Query OK, 0 rows affected (0.11 sec)
```

Running load\_data.sql script file on mysql console using:

SOURCE C:\Users\HP\Desktop\load\_data.sql

```
mysql> SOURCE C:\Users\HP\Desktop\load_data.sql
+-----+
| INFO |
+-----+
| LOADING departments |
+-----+
1 row in set (0.00 sec)

Query OK, 9 rows affected (0.14 sec)
Records: 9 Duplicates: 0 Warnings: 0

+-----+
| INFO |
+-----+
| LOADING employees |
+-----+
1 row in set (0.00 sec)

Query OK, 17944 rows affected (0.92 sec)
Records: 17944 Duplicates: 0 Warnings: 0

Query OK, 17938 rows affected (0.47 sec)
Records: 17938 Duplicates: 0 Warnings: 0

Query OK, 17953 rows affected (0.41 sec)
Records: 17953 Duplicates: 0 Warnings: 0

Query OK, 17947 rows affected (0.42 sec)
Records: 17947 Duplicates: 0 Warnings: 0

Query OK, 17948 rows affected (0.43 sec)
Records: 17948 Duplicates: 0 Warnings: 0

Query OK, 17648 rows affected (0.40 sec)
Records: 17648 Duplicates: 0 Warnings: 0

Query OK, 17642 rows affected (0.47 sec)
Records: 17642 Duplicates: 0 Warnings: 0

Query OK, 17638 rows affected (0.35 sec)
Records: 17638 Duplicates: 0 Warnings: 0

Query OK, 17653 rows affected (0.38 sec)

Query OK, 16209 rows affected (0.40 sec)
Records: 16209 Duplicates: 0 Warnings: 0

+-----+
| INFO |
+-----+
| LOADING dept_emp |
+-----+
1 row in set (0.00 sec)

Query OK, 1000 rows affected (0.10 sec)
Records: 1000 Duplicates: 0 Warnings: 0

+-----+
| INFO |
+-----+
| LOADING dept_manager |
+-----+
1 row in set (0.00 sec)

Query OK, 24 rows affected (0.02 sec)
Records: 24 Duplicates: 0 Warnings: 0

+-----+
| INFO |
+-----+
| LOADING titles |
+-----+
1 row in set (0.00 sec)

Query OK, 1000 rows affected (0.10 sec)
Records: 1000 Duplicates: 0 Warnings: 0

+-----+
| INFO |
+-----+
| LOADING salaries |
+-----+
1 row in set (0.00 sec)

Query OK, 1499 rows affected (0.09 sec)
Records: 1499 Duplicates: 0 Warnings: 0
```

## 1. Find all the employees that contains at least one vowel in their last name.

```
select * from employees where last_name like 'a%' or last_name like 'e%' or last_name like 'i%' or last_name like 'o%' or last_name like 'u%' or last_name like '%a%' or last_name like '%e%' or last_name like '%i%' or last_name like '%o%' or last_name like '%u%' or last_name like '%a' or last_name like '%e' or last_name like '%i' or last_name like '%o' or last_name like '%u';
```

499984	1959-08-31	Kaijung	Rodham	M	1985-09-11
499985	1964-12-26	Gila	Lukaszewicz	M	1997-02-11
499986	1952-07-22	Nathan	Ranta	F	1985-08-11
499987	1961-09-05	Rimli	Dusink	F	1998-09-20
499988	1962-09-28	Bangqing	Kleiser	F	1986-06-06
499989	1954-05-26	Keiichiro	Lindqvist	M	1993-10-28
499990	1963-11-03	Khaled	Kohling	M	1985-10-10
499991	1962-02-26	Pohua	Sichman	F	1989-01-12
499992	1960-10-12	Siamak	Salverda	F	1987-05-10
499993	1963-06-04	DeForest	Mullainathan	M	1997-04-07
499994	1952-02-26	Navin	Argence	F	1990-04-24
499995	1958-09-24	Dekang	Lichtner	F	1993-01-12
499996	1953-03-07	Zito	Baaz	M	1990-09-27
499997	1961-08-03	Berhard	Lenart	M	1986-04-21
499998	1956-09-05	Patricia	Breugel	M	1993-10-13
499999	1958-05-01	Sachin	Tsukuda	M	1997-11-30

-----+-----+-----+-----+-----+-----+  
299876 rows in set (0.23 sec)

## 2. Write a Query to display the number of Male (M) and Female(F) employees in the employee database.

```
select gender, count(gender) from employees group by gender;
```

```
mysql> select gender, count(gender) from employees group by gender;
```

gender	count(gender)
M	179973
F	120051

-----+-----+  
2 rows in set (0.32 sec)

## 3. Display the TOTAL SALARY drawn by employees having emp number (10001,401829).

```
select emp_no, sum(salary) as TOTAL_SALARY from salaries group by emp_no having emp_no in(10001,401829);
```

```
mysql> select emp_no, sum(salary) as TOTAL_SALARY from salaries group by emp_no having emp_no in(10001,401829);
```

emp_no	TOTAL_SALARY
10001	1281612
401829	441457

-----+-----+  
2 rows in set (0.00 sec)

#### 4. Display the employee number, first name, last name, and salary of the lowest paid employee.

select emp\_no, first\_name, last\_name, salary from employees natural join salaries having min(salary);

```
mysql> select emp_no, first_name, last_name, salary from employees natural join salaries having min(salary);
+-----+-----+-----+-----+
| emp_no | first_name | last_name | salary |
+-----+-----+-----+-----+
| 10001 | Georgi | Facello | 60117 |
+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

#### 5. Write a Query to find all the employees that have worked in at least 2 departments. Show their emp number, first name, last\_name and the number of departments they work in.

select emp\_no, first\_name, last\_name, count(distinct(dept\_no)) as no\_of\_dep from employees natural join dept\_emp group by emp\_no having count(distinct(dept\_no)) >= 2;

```
mysql> select emp_no, first_name, last_name, count(distinct(dept_no)) as no_of_dep from employees natural join dept_emp group by emp_no having count(distinct(dept_no)) >= 2;
+-----+-----+-----+-----+
| emp_no | first_name | last_name | no_of_dep |
+-----+-----+-----+-----+
| 10010 | Duangkaew | Piveteau | 2 |
| 10018 | Kazuhide | Peha | 2 |
| 10029 | Otmar | Herbst | 2 |
| 10040 | Weiwei | Meriste | 2 |
| 10050 | Yinghua | Dredge | 2 |
| 10060 | Breanna | Billingsley | 2 |
| 10070 | Reuven | Garigliano | 2 |
| 10080 | Premal | Baek | 2 |
| 10088 | Jungsoo | Syzycki | 2 |
| 10098 | Sreekrishna | Servieres | 2 |
| 10108 | Lunjin | Givson | 2 |
| 10116 | Dayanand | Czap | 2 |
| 10124 | Geraldo | Marwedel | 2 |
| 10134 | Diederik | Siprelle | 2 |
| 10144 | Marla | Brendel | 2 |
| 10155 | Adas | Nastansky | 2 |
| 10164 | Jagoda | Braunmuhl | 2 |
| 10172 | Shigeo | Matzen | 2 |
| 10182 | Moriyoshi | Mervin | 2 |
| 10192 | Mohua | Falck | 2 |
| 10200 | Vidya | Awdeh | 2 |
| 10209 | Yolla | Ellozy | 2 |
| 10219 | Genta | Kolvik | 2 |
| 10228 | Karoline | Cesaneni | 2 |
| 10238 | Mototsugu | Gire | 2 |
| 10249 | Marie | Boreale | 2 |
| 10259 | Susanna | Vesel | 2 |
| 10268 | Nishit | Siochi | 2 |
| 10279 | Barton | Jumpertz | 2 |
```

#### 6. Display the employee number, first name, last name, and salary of the second and third highest paid employee.

select emp\_no, first\_name, last\_name, salary from employees natural join salaries order by salary desc limit 1,2;

```
mysql> select emp_no, first_name, last_name, salary from employees natural join salaries order by salary desc limit 1,2;
```

emp_no	first_name	last_name	salary
201777	Wonhee	Perl	110796
401801	Subhash	Baek	110589

2 rows in set (0.00 sec)

## 7. Write a Query to display employee first name, last name and the department in which he/she worked.

select emp\_no, first\_name, last\_name, dept\_no, dept\_name from employees natural join dept\_emp natural join departments;

```
mysql> select emp_no, first_name, last_name, dept_no, dept_name from employees natural join dept_emp natural join departments;
```

emp_no	first_name	last_name	dept_no	dept_name
10011	Mary	Sluis	d009	Customer Service
10038	Huan	Lortz	d009	Customer Service
10049	Basil	Tramer	d009	Customer Service
10060	Breannda	Billingsley	d009	Customer Service
10088	Jungsoo	Syrzycki	d009	Customer Service
10098	Sreekrishna	Servieres	d009	Customer Service
10112	Yuichiro	Swick	d009	Customer Service
10115	Chikara	Rissland	d009	Customer Service
10126	Kayoko	Valtorta	d009	Customer Service
10128	Babette	Lamba	d009	Customer Service
10137	Maren	Hutton	d009	Customer Service
10154	Abdulah	Thibadeau	d009	Customer Service
10164	Jagoda	Braunmuhl	d009	Customer Service
10176	Brendon	Lenart	d009	Customer Service
10183	Mechthild	Bonifati	d009	Customer Service
10184	Mihalis	Lowrie	d009	Customer Service
10210	Yuping	Alpin	d009	Customer Service

## 8. Display the employee number, first name, last name, and salary of the third highest payed employee.

select emp\_no, first\_name, last\_name, salary from employees natural join salaries order by salary desc limit 2,1;

```
mysql> select emp_no, first_name, last_name, salary from employees natural join salaries order by salary desc limit 2,1;
```

emp_no	first_name	last_name	salary
401801	Subhash	Baek	110589

1 row in set (0.00 sec)

## 9. Have you noticed an optional clause (ON DELETE CASCADE) in the script employee.sql for Foreign key declaration. Elaborate this clause.

**CASCADE:** Delete row from parent and delete matching rows in child, and so on in cascading manner.  
**SET NULL:** Delete row from parent and set FK column(s) in child to NULL. Only valid if FK columns are NOT NULL.

**SET DEFAULT:** Delete row from parent and set each component of FK in child to specified default. Only valid if DEFAULT specified for FK columns.

**NO ACTION:** Reject delete from parent. Default.

## 10. Delete every employee who was hired after 31st December 1999.

```
select * from employees where hire_date > '1999-12-31';
```

```
mysql> select * from employees where hire_date > '1999-12-31';
```

emp_no	birth_date	first_name	last_name	gender	hire_date
47291	1960-09-09	Ulf	Flexer	M	2000-01-12
60134	1964-04-21	Seshu	Rathonyi	F	2000-01-02
72329	1953-02-09	Randi	Luit	F	2000-01-02
108201	1955-04-14	Mariangiola	Boreale	M	2000-01-01
205048	1960-09-12	Ennio	Alblas	F	2000-01-06
222965	1959-08-07	Volkmar	Perko	F	2000-01-13
226633	1958-06-10	Xuejun	Benzmuller	F	2000-01-04
227544	1954-11-17	Shahab	Demeyer	M	2000-01-08
422990	1953-04-09	Jaana	Verspoor	F	2000-01-11
424445	1953-04-27	Jeong	Boreale	M	2000-01-03
428377	1957-05-09	Yucai	Gerlach	M	2000-01-23
463807	1964-06-12	Bikash	Covnot	M	2000-01-28
499553	1954-05-06	Hideyuki	Delgrande	F	2000-01-22

```
13 rows in set (0.46 sec)
```

## 11. Update the employee number (10004) title to Project Manager.

```
update titles set title='Project Manager' where emp_no = 10004;
```

```
mysql> select * from titles where emp_no=10004;
```

emp_no	title	from_date	to_date
10004	Engineer	1986-12-01	1995-12-01
10004	Senior Engineer	1995-12-01	9999-01-01

```
2 rows in set (0.28 sec)
```

```
mysql> update titles set title='Project Manager' where emp_no = 10004;
Query OK, 2 rows affected (0.42 sec)
Rows matched: 2  Changed: 2  Warnings: 0
```

```
mysql> select * from titles where emp_no=10004;
```

emp_no	title	from_date	to_date
10004	Project Manager	1986-12-01	1995-12-01
10004	Project Manager	1995-12-01	9999-01-01

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

## 12. Modify the column dept\_name characteristics in the department table by changing the string characteristics from varchar(40) to varchar(60).

```
alter table departments modify dept_name varchar(60);
```

```
mysql> alter table departments modify dept_name varchar(60);
Query OK, 0 rows affected (0.92 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

## 13. Rename the salary attribute to payslip in the salary table.

```
ALTER TABLE salaries CHANGE COLUMN salary payslip int(11);
```

```
mysql> ALTER TABLE salaries CHANGE COLUMN salary payslip int(11);
Query OK, 0 rows affected (0.75 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from salaries;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| emp_no     | int(11)   | NO   | PRI | NULL    |       |
| payslip    | int(11)   | YES  |     | NULL    |       |
| from_date  | date      | NO   | PRI | NULL    |       |
| to_date    | date      | NO   |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.02 sec)
```

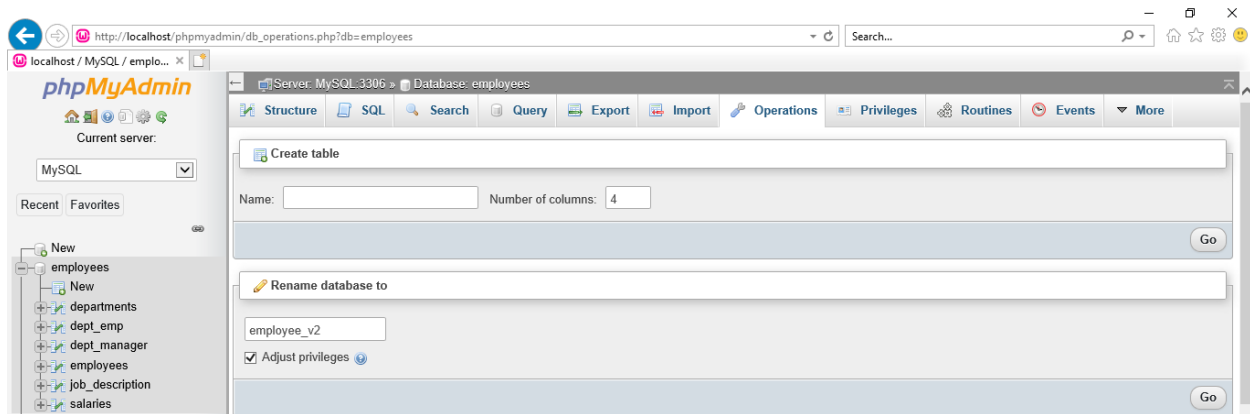
## 14. Rename the table titles to job\_description.

```
rename table titles to job_description;
```

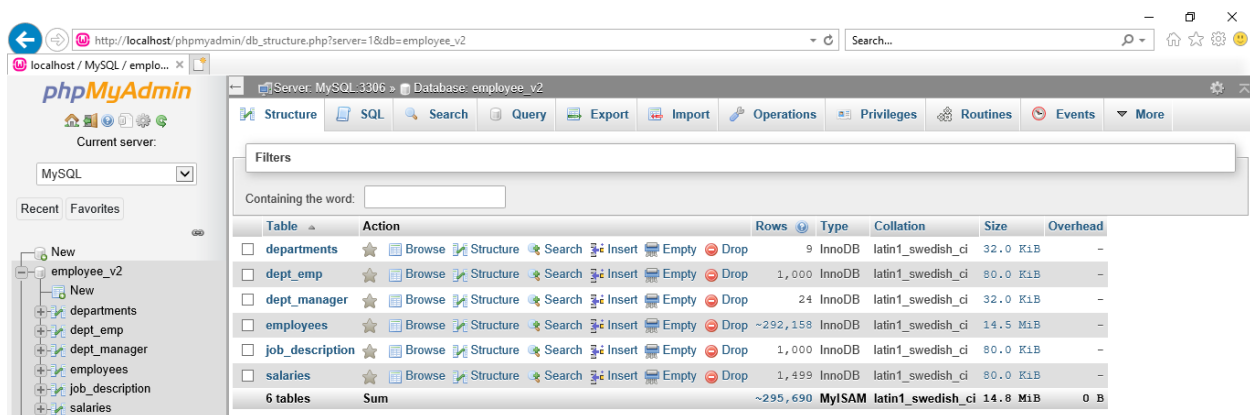
```
mysql> show tables;
+-----+
| Tables_in_employees |
+-----+
| departments          |
| dept_emp              |
| dept_manager          |
| employees             |
| job_description       |
| salaries              |
+-----+
6 rows in set (0.00 sec)
```

## 15. Rename database employees to employee\_v2 and then delete the database.

Renaming database employees to employee\_v2 using PhpMyAdmin:



Database name has been changed



Deleting the database:

DROP DATABASE employee\_v2;



```
mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| employee_v2 |
| myit |
| mysql |
| newm |
| park |
| park2 |
| performance_schema |
| school_system |
| sys |
| themepark_lab |
+-----+
11 rows in set (0.00 sec)

mysql> DROP DATABASE employee_v2;
Query OK, 6 rows affected (0.92 sec)

mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| myit |
| mysql |
| newm |
| park |
| park2 |
| performance_schema |
| school_system |
| sys |
| themepark_lab |
+-----+
10 rows in set (0.00 sec)
```

## Question # 2:

### 1. Create a database named school\_system.

```
create database school_system;
```

```
mysql> create database school_system;
Query OK, 1 row affected (0.00 sec)

mysql> _
```

### 2. Create all the tables with primary and foreign key constraints as shown in figure 2

## Table (Groups):

```
CREATE TABLE Groups(  
    group_id numeric(5) primary key,  
    name varchar(10) not null);
```

```
mysql> CREATE TABLE Groups(  
    -> group_id numeric(5) primary key,  
    -> name varchar(10) not null);  
Query OK, 0 rows affected (0.47 sec)  
  
mysql> describe Groups;  
+-----+-----+-----+-----+-----+-----+  
| Field      | Type          | Null | Key | Default | Extra |  
+-----+-----+-----+-----+-----+-----+  
| group_id   | decimal(5,0)  | NO   | PRI | NULL    |       |  
| name       | varchar(10)   | NO   |     | NULL    |       |  
+-----+-----+-----+-----+-----+-----+  
2 rows in set (0.00 sec)
```

## Table (Teachers):

```
CREATE TABLE Teachers(  
    teacher_id numeric(5) primary key,  
    first_name varchar(10) not null,  
    last_name varchar(10) not null);
```

```
mysql> CREATE TABLE Teachers(  
    -> teacher_id numeric(5) primary key,  
    -> first_name varchar(10) not null,  
    -> last_name varchar(10) not null);  
Query OK, 0 rows affected (0.44 sec)  
  
mysql> describe Teachers;  
+-----+-----+-----+-----+-----+-----+  
| Field        | Type          | Null | Key | Default | Extra |  
+-----+-----+-----+-----+-----+-----+  
| teacher_id   | decimal(5,0)  | NO   | PRI | NULL    |       |  
| first_name    | varchar(10)   | NO   |     | NULL    |       |  
| last_name     | varchar(10)   | NO   |     | NULL    |       |  
+-----+-----+-----+-----+-----+-----+  
3 rows in set (0.00 sec)
```

## Table (Subjects):

```
CREATE TABLE Subjects(  
    subject_id numeric(5) primary key,  
    title varchar(10) not null);
```

```
mysql> CREATE TABLE Subjects(  
    -> subject_id numeric(5) primary key,  
    -> title varchar(10) not null);  
Query OK, 0 rows affected (0.41 sec)  
  
mysql> describe Subjects;  
+-----+-----+-----+-----+-----+-----+  
| Field      | Type          | Null | Key | Default | Extra |  
+-----+-----+-----+-----+-----+-----+  
| subject_id | decimal(5,0)  | NO   | PRI | NULL    |       |  
| title      | varchar(10)   | NO   |     | NULL    |       |  
+-----+-----+-----+-----+-----+-----+  
2 rows in set (0.00 sec)
```

## Table (Subject\_teacher):

```
CREATE TABLE Subject_teacher(  
    subject_id numeric(5),  
    constraint FK_SUBJECT_TEACHER FOREIGN KEY(subject_id)  
    REFERENCES Subjects(subject_id),  
    teacher_id numeric(5),  
    constraint FK_TEACHER FOREIGN KEY(teacher_id)  
    REFERENCES Teachers(teacher_id),  
    group_id numeric(5),  
    constraint FK_GROUP FOREIGN KEY(group_id)  
    REFERENCES Groups(group_id));
```

```
mysql> CREATE TABLE Subject_teacher(
-> subject_id numeric(5),
-> constraint FK_SUBJECT_TEACHER FOREIGN KEY(subject_id)
-> REFERENCES Subjects(subject_id),
-> teacher_id numeric(5),
-> constraint FK_TEACHER FOREIGN KEY(teacher_id)
-> REFERENCES Teachers(teacher_id),
-> group_id numeric(5),
-> constraint FK_GROUP FOREIGN KEY(group_id)
-> REFERENCES Groups(group_id));
Query OK, 0 rows affected (0.44 sec)
```

```
mysql> describe Subject_teacher;
```

Field	Type	Null	Key	Default	Extra
subject_id	decimal(5,0)	YES	MUL	NULL	
teacher_id	decimal(5,0)	YES	MUL	NULL	
group_id	decimal(5,0)	YES	MUL	NULL	

3 rows in set (0.02 sec)

## Table (Students):

```
CREATE TABLE Students(
```

```
    student_id numeric(5) primary key,
```

```
    first_name varchar(10) not null,
```

```
    last_name varchar(10) not null,
```

```
    group_id numeric(5),
```

```
    constraint FK_GROUP FOREIGN KEY(group_id)
```

```
    REFERENCES Groups(group_id));
```

```
mysql> CREATE TABLE Students(
-> student_id numeric(5) primary key,
-> first_name varchar(10) not null,
-> last_name varchar(10) not null,
-> group_id numeric(5),
-> constraint FK_GROUP FOREIGN KEY(group_id)
-> REFERENCES Groups(group_id));
Query OK, 0 rows affected (0.56 sec)
```

```
mysql> describe Students;
```

Field	Type	Null	Key	Default	Extra
student_id	decimal(5,0)	NO	PRI	NULL	
first_name	varchar(10)	NO		NULL	
last_name	varchar(10)	NO		NULL	
group_id	decimal(5,0)	YES	MUL	NULL	

4 rows in set (0.01 sec)

## Table (Marks):

CREATE TABLE Marks(

marks\_id numeric(5) primary key,

student\_id numeric(5),

constraint FK\_MARKS FOREIGN KEY(student\_id)

REFERENCES Students(student\_id),

subject\_id numeric(5),

constraint FK\_SUBJECT FOREIGN KEY(subject\_id)

REFERENCES Subjects(subject\_id),

date DATE not null,

mark numeric(5) not null);

```
mysql> CREATE TABLE Marks(
-> marks_id numeric(5) primary key,
-> student_id numeric(5),
-> constraint FK_MARKS FOREIGN KEY(student_id)
-> REFERENCES Students(student_id),
-> subject_id numeric(5),
-> constraint FK_SUBJECT FOREIGN KEY(subject_id)
-> REFERENCES Subjects(subject_id),
-> date DATE not null,
-> mark numeric(5) not null);
Query OK, 0 rows affected (0.58 sec)
```

```
mysql> describe Marks;
```

Field	Type	Null	Key	Default	Extra
marks_id	decimal(5,0)	NO	PRI	NULL	
student_id	decimal(5,0)	YES	MUL	NULL	
subject_id	decimal(5,0)	YES	MUL	NULL	
date	date	NO		NULL	
mark	decimal(5,0)	NO		NULL	

5 rows in set (0.00 sec)