

CREATING THE DATABASE AND TABLES

First, create the database 'School':

```
mysql> create database School;  
Query OK, 1 row affected (0.14 sec)
```

Then, use the database bank to creating tables inside it

```
mysql> use School;  
Database changed
```

- **Create table 'School'**

```
mysql> create table School(school_id int, school_name varchar(26),  
school_pincode int, school_contact int, school_type varchar(10));  
Query OK, 0 rows affected (0.58 sec)
```

- **Create table 'Teachers'**

```
mysql> create table Teachers(teacher_id int, teacher_name varchar(26),  
teacher_contact int, teacher_subject varchar(20), stud_id varchar(12),  
subj_id varchar(7));  
Query OK, 0 rows affected (1.45 sec)
```

- **Create table 'Students'**

```
create table Students(student_id varchar(12), student_name varchar(26),  
student_contact int, student_dob date, sub_id varchar(7));  
Query OK, 0 rows affected (0.49 sec)
```

- **Create table 'Subjects'**

```
mysql> create table Subjects(subject_id varchar(7), subject_name  
varchar(20), subject_credits int, subject_type varchar(5), teach_id int);  
Query OK, 0 rows affected (0.77 sec)
```

- **Create table 'Examination'**

```
mysql> create table Examination(exam_id int, exam_hall varchar(5),  
exam_date date, stud_attendance float, subj_id varchar(7), stud_id  
varchar(7));  
Query OK, 0 rows affected (0.59 sec)
```

All the tables have been successfully created. Now, the data needs to be inserted:

INSERTING RECORDS

- Inserting records into **School** table

```
mysql> insert into School values(12345, 'Presidency School', 560064,
987654321, 'private');
Query OK, 1 row affected (0.28 sec)
mysql> insert into School values(23456, 'Government High School', 560046,
876543219, 'government');
Query OK, 1 row affected (0.06 sec)
mysql> insert into School values(34567, 'Navodaya School', 560026,
765432198, 'government');
Query OK, 1 row affected (0.18 sec)
mysql> insert into School values(45678, 'Cordial School', 560062,
654321987, 'private');
Query OK, 1 row affected (0.09 sec)
mysql> insert into School values(56789, 'Kendriya Vidyalaya', 560056,
543219876, 'government');
Query OK, 1 row affected (0.10 sec)
```

- Inserting records into **Teachers** table

```
mysql> insert into Teachers values(2312, 'Vinay', 988776654, 'Mathematics',
'20211CSE0408', 'MAT1001' );
Query OK, 1 row affected (0.09 sec)
mysql> insert into Teachers values(3423, 'Jayashree', 877665543, 'Science',
'20211CSE0421', 'SCI1001' );
Query OK, 1 row affected (0.12 sec)
mysql> insert into Teachers values(4534, 'Ravikumar', 766554321, 'English',
'20211CSE0413', 'ENG1001' );
Query OK, 1 row affected (0.06 sec)
mysql> insert into Teachers values(5645, 'Parvathi', 655443322, 'Hindi',
'20211CSE0422', 'HIN1001' );
Query OK, 1 row affected (0.18 sec)
mysql> insert into Teachers values(6756, 'Ramesh', 544332219, 'Social',
'20211CSE0430', 'SOC1001' );
Query OK, 1 row affected (0.07 sec)
```

- Inserting records into **Students** table

```
mysql> insert into Students values('20211CSE0408', 'Harshini', 986532871,
'2003-12-11', 'MAT1001');
Query OK, 1 row affected (0.06 sec)
mysql> insert into Students values('20211CSE0413', 'Sushma', 865328719,
'2002-04-24', 'ENG1001');
Query OK, 1 row affected (0.12 sec)
mysql> insert into Students values('20211CSE0421', 'Sinchana', 653287198,
'2004-06-28', 'SCI1001');
Query OK, 1 row affected (0.08 sec)
mysql> insert into Students values('20211CSE0422', 'Kushal', 532871985,
'2003-06-02', 'HIN1001');
Query OK, 1 row affected (0.10 sec)
mysql> insert into Students values('20211CSE0421', 'Venkat', 532871985,
'2003-08-20', 'SOC1001');
```

Query OK, 1 row affected (0.15 sec)

- Inserting records into **Subjects** table

```
mysql> insert into Subjects values('ENG1001','English',3,'core',4534);
Query OK, 1 row affected (0.12 sec)
mysql> insert into Subjects values('HIN1001','Hindi',2,'open',5645);
Query OK, 1 row affected (0.14 sec)
mysql> insert into Subjects values('SOC1001','Social',4,'core',6756);
Query OK, 1 row affected (0.08 sec)
mysql> insert into Subjects values('MAT1001','Mathematics',4,'core',2312);
Query OK, 1 row affected (0.87 sec)
mysql> insert into Subjects values('SCI1001','Science',4,'core',3423);
Query OK, 1 row affected (0.92 sec)
```

- Inserting records into **Examination** table

Let's insert the values into Examination table after adding some constraints.

ADDING CONSTRAINTS

- Adding **primary key** and **not null** to **School** table

```
alter table School add constraint pri primary key(school_id);
Query OK, 0 rows affected (2.12 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> alter table School modify school_pincode int not null;
Query OK, 0 rows affected (2.42 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> alter table School modify school_contact int not null;
Query OK, 0 rows affected (1.72 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

- Adding **primary key** and **not null** to **Students** table

```
mysql> alter table Students add constraint pri primary key(student_id);
Query OK, 0 rows affected (2.60 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> alter table Students modify student_contact int not null;
Query OK, 0 rows affected (1.05 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> alter table Students modify sub_id varchar(7) not null;
Query OK, 0 rows affected (1.33 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

- Adding **primary key**, **not null** and **foreign key** to **Subjects** table

```
mysql> alter table Subjects add constraint pri primary key(subject_id);
Query OK, 0 rows affected (1.54 sec)
```

```

Records: 0 Duplicates: 0 Warnings: 0
mysql> alter table Subjects modify subject_type varchar(5) not null;
Query OK, 0 rows affected (2.03 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> alter table Subjects modify subject_name varchar(20) not null;
Query OK, 0 rows affected (1.69 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> alter table Subjects add constraint fk_teach_id foreign
key(teach_id) references Teachers(teacher_id);
Query OK, 3 rows affected (2.03 sec)
Records: 3 Duplicates: 0 Warnings: 0

```

- Adding **primary key, not null** and **foreign key** to **Teachers** table

```

mysql> alter table Teachers add constraint pri primary key(teacher_id);
Query OK, 0 rows affected (2.04 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> alter table Teachers modify teacher_subject varchar(20) not null;
Query OK, 0 rows affected (1.40 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> alter table Teachers add constraint fk_stud_id foreign key(stud_id)
references Students(student_id);
Query OK, 5 rows affected (2.23 sec)
Records: 5 Duplicates: 0 Warnings: 0

```

- Adding **primary key, not null, check constraint** and **foreign key** to **Examination** table

```

mysql> alter table Examination add constraint pri primary key(exam_id);
Query OK, 0 rows affected (1.69 sec)
Records: 0 Duplicates: 0 Warnings: 0
alter table Examination modify exam_date date not null;
Query OK, 0 rows affected (2.01 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> alter table Examination modify exam_hall varchar(5) not null;
Query OK, 0 rows affected (1.91 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> alter table Examination add constraint ck_stud_attendance
check(stud_attendance>75);
Query OK, 0 rows affected (1.72 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> alter table Examination add constraint fk_stud_id foreign
key(stud_id) references Students(student_id);
Query OK, 1 row affected (9.78 sec)
Records: 1 Duplicates: 0 Warnings: 0

```

QUERIES

1. Write a query to sort the students in the exam room according to their exam IDs.

```
mysql> select * from Examination order by stud_id;
+-----+-----+-----+-----+-----+-----+
---+
| exam_id | exam_hall | exam_date | stud_attendance | subj_id | stud_id |
|-----+-----+-----+-----+-----+-----+
---+
| 1234 | PB03 | 2022-05-09 | 100 | MAT1001 | 20211CSE0408 |
| 3412 | PB04 | 2022-05-09 | 95 | ENG1001 | 20211CSE0413 |
| 4132 | PB01 | 2022-05-09 | 100 | SCI1001 | 20211CSE0421 |
| 1324 | PB02 | 2022-05-09 | 97 | HIN1001 | 20211CSE0422 |
| 2413 | PB02 | 2022-05-09 | 85 | SOC1001 | 20211CSE0430 |
+-----+-----+-----+-----+-----+-----+
---+
5 rows in set (0.03 sec)
```

2. Write a query to display the subjects whose credits are not 4.

```
mysql> select * from Subjects where subject_credits!= 4;
+-----+-----+-----+-----+-----+
| subject_id | subject_name | subject_credits | subject_type | teach_id |
+-----+-----+-----+-----+-----+
| ENG1001 | English | 3 | core | 4534 |
| HIN1001 | Hindi | 2 | open | 5645 |
+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

3. Write a query to display the number of students.

```
mysql> select count(*) from Students;
+-----+
| count(*) |
+-----+
| 5 |
+-----+
1 row in set (1.99 sec)
```

4. Write a query to sort the type of school in such a manner that first comes private, and then the government schools.

```
mysql> select * from School order by school_type desc;
+-----+-----+-----+-----+
| school_id | school_name | school_pincode | school_contact |
| school_type |
+-----+-----+-----+-----+
| 12345 | Presidency School | 560064 | 987654321 |
private |
| 45678 | Cordial School | 560062 | 654321987 |
private |
| 23456 | Government High School | 560046 | 876543219 |
government |
| 34567 | Navodaya School | 560026 | 765432198 |
government |
| 56789 | Kendriya Vidyalaya | 560056 | 543219876 |
government |
+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

5. Write a query to create and display teacher and subject they teach with the help of a view.

```
mysql> create view v1 as select teacher_name, subject_name from Teachers
join Subjects on subj_id=subject_id;
Query OK, 0 rows affected (0.68 sec)
```

```
mysql> select * from v1;
+-----+-----+
| teacher_name | subject_name |
+-----+-----+
| Vinay | Mathematics |
| Jayashree | Science |
| Ravikumar | English |
| Parvathi | Hindi |
| Ramesh | Social |
+-----+-----+
5 rows in set (0.04 sec)
```

6. Write a query to display all the student ID and the student IDs which are below '20211CSE0420' using procedure.

```
mysql> delimiter //
mysql> create procedure p1()
-> begin
-> select student_id from Students;
-> select student_id from Students where student_id<'20211CSE0420';
-> end//
Query OK, 0 rows affected (0.75 sec)
mysql> call p1//
+-----+
```

```

| student_id |
+-----+
| 20211CSE0408 |
| 20211CSE0413 |
| 20211CSE0421 |
| 20211CSE0422 |
| 20211CSE0430 |
+-----+
5 rows in set (0.13 sec)

```

```

+-----+
| student_id |
+-----+
| 20211CSE0408 |
| 20211CSE0413 |
+-----+
2 rows in set (0.18 sec)

```

Query OK, 0 rows affected (0.23 sec)

7. Write a query to display the highest and the lowest IDs of the teachers.

```

mysql> select max(teacher_id) as highest, min(teacher_id) as lowest from
Teachers;
+-----+-----+
| highest | lowest |
+-----+-----+
|      6756 |      2312 |
+-----+-----+
1 row in set (0.00 sec)

```

8. Write a query to display the students and their respective teachers' names.

```

mysql> select student_name, teacher_name from Students join Teachers where
student_id=stud_id;
+-----+-----+
| student_name | teacher_name |
+-----+-----+
| Harshini     | Vinay        |
| Sushma       | Ravikumar    |
| Sinchana     | Jayashree    |
| Kushal       | Parvathi     |
| Venkat       | Ramesh       |
+-----+-----+
5 rows in set (0.06 sec)

```

9. Write a query to display the structure of Teachers and Subjects tables to show the imposed keys.

```

mysql> desc Subjects;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+

```

subject_id	varchar(7)	NO	PRI	NULL	
subject_name	varchar(20)	NO		NULL	
subject_credits	int	YES		NULL	
subject_type	varchar(5)	NO		NULL	
teach_id	int	YES	MUL	NULL	

5 rows in set (0.00 sec)

mysql> desc Teachers;

Field	Type	Null	Key	Default	Extra
teacher_id	int	NO	PRI	NULL	
teacher_name	varchar(26)	YES		NULL	
teacher_contact	int	NO		NULL	
teacher_subject	varchar(20)	NO		NULL	
stud_id	varchar(12)	YES	MUL	NULL	
subj_id	varchar(7)	YES		NULL	

6 rows in set (0.00 sec)

10. Write a query to show the violation of check constraint.

```
mysql> insert into Examination values(1232,'PB02','2022-05-10',70,'SCI1001','20211CSE0413');
ERROR 3819 (HY000): Check constraint 'ck_stud_attendance' is violated.
```