Create a database named college

```
mysql> create database college;

Query OK, 1 row affected (0.17 sec)
```

Create a table name student in college database with following structure

roll, name, class, marks, age with respective data types and unique constraint on roll, not null on name, marks, check constraint on age check(age>18).

```
mysql> use college;

Database changed

mysql> create table student  (roll int primary key auto_increment,name varchar(20) not null,class int,marks float check (marks>0 && marks<100

),age int check (age>18));

Query OK, 0 rows affected, 1 warning (0.51 sec)

mysql> desc student;

+-------+-------------+------+-----+---------+----------------+

| Field | Type     | Null | Key | Default | Extra      |

+-------+-------------+------+-----+---------+----------------+

| roll  | int         | NO   | PRI | NULL        | auto_increment |

| name  | varchar(20) | NO   |     | NULL  |          |

| class | int         | YES  | | NULL  |          |

| marks | float               | YES  | | NULL  |          |

| age   | int         | YES  | | NULL  |          |

+-------+-------------+------+-----+---------+----------------+

5 rows in set (0.03 sec)
```

Insert at least 5 records in the student table.

```
mysql> insert into student values
(101,'Anurag',11,65,19),(102,'Rajat',12,80,20),(103,'Singha',6,89,24),(104,'Maxtern',8,40,23),(105,'Elv
ish'

,7,32,25);

Query OK, 5 rows affected (0.07 sec)

Records: 5  Duplicates: 0  Warnings: 0

mysql> select *from student;

+------+---------+-------+-------+------+

| roll | name    | class | marks | age  |

+------+---------+-------+-------+------+

|  101 | Anurag  |    11 |    65 |   19 |

|  102 | Rajat   |    12 |    80 |   20 |

|  103 | Singha  |     6 |    89 |   24 |

|  104 | Maxtern |     8 |    40 |   23 |

|  105 | Elvish  |     7 |    32 |   25 |

+------+---------+-------+-------+------+

5 rows in set (0.00 sec)
```

Use of auto_increment in roll number.

```
mysql> insert into student(name,class,marks,age) values ('Munawar',11,65,19);
Query OK, 1 row affected (0.08 sec)

mysql> select *from student;
+------+---------+-------+-------+------+
| roll | name    | class | marks | age  |
+------+---------+-------+-------+------+
|  101 | Anurag  |    11 |    65 |   19 |
|  102 | Rajat   |    12 |    80 |   20 |
|  103 | Singha  |     6 |    89 |   24 |
|  104 | Maxtern |     8 |    40 |   23 |
|  105 | Elvish  |     7 |    32 |   25 |
|  106 | Munawar |    11 |    65 |   19 |
+------+---------+-------+-------+------+
6 rows in set (0.00 sec)
```

Apply the following MySQL clause to this table.

Alter the constraints to any other constraint.

```
mysql> alter table student drop constraint student_chk_2;
Query OK, 0 rows affected (0.14 sec)
Records: 0  Duplicates: 0  Warnings: 0
mysql> alter table student add constraint age_chk check(age>16);
Query OK, 6 rows affected (1.28 sec)
Records: 6  Duplicates: 0  Warnings: 0
mysql> insert into student (name,class,marks,age) values('Anjali',8,34.01,17);
Query OK, 1 row affected (0.10 sec)
mysql> insert into student (name,class,marks,age) values('MC Stan',8,34.01,15);
ERROR 3819 (HY000): Check constraint 'age_chk' is violated.
mysql> select *from student;
+------+---------+-------+-------+------+
| roll | name    | class | marks | age  |
+------+---------+-------+-------+------+
|  101 | Anurag  |    11 |    65 |   19 |
|  102 | Rajat   |    12 |    80 |   20 |
|  103 | Singha  |     6 |    89 |   24 |
|  104 | Maxtern |     8 |    40 |   23 |
|  105 | Elvish  |     7 |    32 |   25 |
|  106 | Munawar |    11 |    65 |   19 |
|  107 | Anjali  |     8 | 34.01 |   17 |
+------+---------+-------+-------+------+
7 rows in set (0.00 sec)
```

Drop all the Constraints

```
mysql> alter table student drop constraint student_chk_1;
Query OK, 0 rows affected (0.10 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table student drop constraint age_chk;
Query OK, 0 rows affected (0.13 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

Aggregate Functions:

SUM(),

```
mysql> select sum(marks)from student;
+-------------------+
| sum(marks)     |
+-------------------+
| 439.0199966430664 |
+-------------------+
1 row in set (0.01 sec)
```

AVG(),

```
mysql> select avg(marks)from student;
+------------------+
| avg(marks)      |
+------------------+
| 54.8774995803833 |
+------------------+
1 row in set (0.00 sec)
```

COUNT(),

```
mysql> select count(*)from student;
+----------+
| count(*) |
+----------+
|        8 |
+----------+
1 row in set (0.00 sec)
```

MAX(),

```
mysql> select roll,name,class,age,marks from student where marks=(select max(marks) from
student);
+------+--------+-------+------+-------+
| roll | name   | class | age  | marks |
+------+--------+-------+------+-------+
|  103 | Singha |     6 |   24 |    89 |
+------+--------+-------+------+-------+
1 row in set (0.00 sec)
```

MIN(),

```
mysql> select roll,name,class,age,marks from student where marks=(select min(marks) from
student);
+------+--------+-------+------+-------+
| roll | name   | class | age  | marks |
+------+--------+-------+------+-------+
|  105 | Elvish |     7 |   25 |    32 |
+------+--------+-------+------+-------+
1 row in set (0.00 sec)
```

1. get the total number of students in the student table.

```
mysql> select count(roll)from student;
+-------------+
| count(roll) |
+-------------+
|           8 |
+-------------+
1 row in set (0.00 sec)
```

2. Show the sum of marks of all students.

```
mysql> select sum(marks)from student;
+-------------------+
| sum(marks)     |
+-------------------+
| 439.0199966430664 |
+-------------------+
1 row in set (0.01 sec)
```

3. Display the student who has got maximum marks

```
mysql> select roll,name,class,age,marks from student where marks=(select max(marks) from
student);
+------+--------+-------+------+-------+
| roll | name   | class | age  | marks |
+------+--------+-------+------+-------+
|  103 | Singha |           6 |   24 |           89 |
+------+--------+-------+------+-------+
1 row in set (0.00 sec)
```

4. Display the student who has got minimum marks

```
mysql> select roll,name,class,age,marks from student where marks=(select min(marks) from student);

+------+--------+-------+------+-------+

| roll | name   | class | age  | marks |

+------+--------+-------+------+-------+

|  105 | Elvish |             7 |   25 |          32 |

+------+--------+-------+------+-------+

1 row in set (0.00 sec)
```

5. Show the avg of marks of all students.

```
mysql> select avg(marks)from student;

+------------------+

| avg(marks)       |

+------------------+

| 54.8774995803833 |

+------------------+

1 row in set (0.00 sec)
```

6. Display min and max age of students.

Max:

```
mysql> select roll,name,class,age,marks from student where age=(select max(age) from student);

+------+--------+-------+------+-------+

| roll | name   | class | age  | marks |

+------+--------+-------+------+-------+

|  105 | Elvish |             7 |   25 |          32 |

+------+--------+-------+------+-------+

1 row in set (0.00 sec)
```

Min:

```
 mysql> select roll,name,class,age,marks from student where age=(select min(age) from student);
+------+---------+-------+------+-------+
| roll | name    | class | age  | marks |
+------+---------+-------+------+-------+
|  123 | MC Stan |     8 |   15 | 34.01 |
+------+---------+-------+------+-------+
1 row in set (0.00 sec)
```

Try Group by and Having clauses as explained in the session.

```
mysql> select count(class)from student group by class;
+--------------+
| count(class) |
+--------------+
|            2 |
|            2 |
|            1 |
|            4 |
|            1 |
+--------------+
5 rows in set (0.02 sec)
```

```
mysql> select count(class), class from student group by class;
+--------------+-------+
| count(class) | class |
+--------------+-------+
|            2 |       11 |
|            2 |       12 |
|            1 |       6 |
|            4 |       8 |
|            1 |       7 |
+--------------+-------+
5 rows in set (0.00 sec)
```

Using Like, Distinct, Order By, Between...And

Comparing Nulls, Using IN/Not-In