EXPERIMENT 3

Aim: To study and perform constraints, Group By, Order By and Having Clauses.

Software Used: MySQL

Theory:

Constraint:

Constraints are specific rules for data in a table. They can be specified when the table is created or by using ALTER TABLE statement.

```
CREATE TABLE EMP(EMP_NO INT(100),NAME VARCHAR(60),SALARY DECIMAL(10,2), AGE INT(100) NOT NULL);
```

Figure: SQL Query to create a table with a NOT NULL constraint

For the experiment, the following tables were designed to perform GROUP BY, ORDER BY and HAVING clause operations.

```
INSERT INTO EMP(EMP_NO,NAME,SALARY,AGE) VALUES ('1','TUSHAR','50000','20'),
('2','ASHISH','50000','20'),('1','DHRUV','50000','20'),('4','SID','50000','20'),
('5','SHREYAS','50000','20');
```

EMP_NO	NAME	SALARY	AGE
1	TUSHAR	50000.00	20
2	ASHISH	50000.00	20
1	DHRUV	50000.00	20
4	SID	50000.00	20
5	SHREYAS	50000.00	20

Figure: Employee Table

```
INSERT INTO student (name, year, subject) VALUES ('T', 1, 'Mathematics'), ('A', 2,
'English'), ('D', 3, 'Science'), ('Y', 1, 'History'), ('S', 2, 'Art'), ('M', 3,
'Computer Science');
```

name	year	subject
T	1	Mathematics
A	2	English
D	3	Science
Y	1	History
S	2	Art
M	3	Computer Science

Figure: Student

Group By:

The GROUP BY statement groups rows that have the same values as summary rows. They are often used with aggregate functions to group the result set by one or more columns.

```
SELECT SUBJECT, YEAR, Count(*) FROM Student GROUP BY SUBJECT, YEAR;
```

Figure: SQL Query to perform Group By clause

SUBJECT	YEAR	COUNT(*)
Art	2	1
Computer Science	3	1
English	2	1
History	1	1
Mathematics	1	1
Science	3	1

Figure: Group By Clause Result

Order By:

The Order By clause in SQL, is used to sort fetched data in either ascending or descending according to one or more columns.

```
SELECT * FROM student ORDER BY year;
```

Figure: SQL Query to perform Order By clause

name	year ▲ 1	subject
T	1	Mathematics
Y	1	History
A	2	English
S	2	Art
D	3	Science
M	3	Computer Science

Figure: SQL Query to perform Order By clause

Having:

The HAVING clause was added to SQL because the WHERE keyword cannot be used with aggregate functions.

```
SELECT Name, SALARY From emp HAVING sum(SALARY)>50000;
```

Figure: SQL Query to perform Having clause

Name	SALARY
TUSHAR	50000.00

Figure: SQL Query to perform Having clause

Conclusion: Constraints, Order By and Having Clauses were studied and performed.