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Experiment No.	**3**
Aim	**Data retrieval using simple SQL commands and Aggregate Functions**
Problem Statement	String Operations like%, like_, where with (<, >, <=, >=, <>), AND, OR, NOT IN, IN, BETWEEN **Cartesian Product with 2 or more than 2 tables should be used.** SUM, COUNT, MAX, MIN, AVG, GROUP BY and group by having clause.
Commands	

```
mysql> select * from Donor;
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
| id  | firstname | lastname  | contact    | email                     | bloodgroup | Age  | healthstatus |
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
| 101 | Sujal     | Dingankar | 7798802841 | sujal.dingankar@spit.ac.in | O+         |   20 | Healthy      |
| 102 | Shreeya   | Nemade    | 7698231082 | shreeya.nemade@spit.ac.in  | A+         |   19 | Healthy      |
| 103 | Harsha    | Surwase   | 5612798561 | harsha.surwase@spit.ac.in  | B+         |   21 | Healthy      |
| 104 | Avi       | Patil     | 1234598745 | avinash.patil@spit.ac.in   | AB+        |   18 | Healthy      |
| 105 | Shruti    | Bhuvad    | 455612345  | shruti.bhuvad@spit.ac.in   | A+         |   22 | Healthy      |
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
5 rows in set (0.00 sec)
```

This is Donor Table.

```
mysql> select * from Donor where email like '%dingankar%';
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
| id  | firstname | lastname  | contact    | email                     | bloodgroup | Age  | healthstatus |
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
| 101 | Sujal     | Dingankar | 7798802841 | sujal.dingankar@spit.ac.in | O+         |   20 | Healthy      |
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
1 row in set (0.00 sec)
```

The above SQL command will retrieve records where the 'email' attribute contains the value 'dingankar' anywhere within it.

```
mysql> select * from Donor where age >= 20;
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
| id  | firstname | lastname  | contact    | email                     | bloodgroup | Age  | healthstatus |
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
| 101 | Sujal     | Dingankar | 7798802841 | sujal.dingankar@spit.ac.in | O+         |   20 | Healthy      |
| 103 | Harsha    | Surwase   | 5612798561 | harsha.surwase@spit.ac.in  | B+         |   21 | Healthy      |
| 105 | Shruti    | Bhuvad    | 455612345  | shruti.bhuvad@spit.ac.in   | A+         |   22 | Healthy      |
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
3 rows in set (0.00 sec)
```

This command will retrieve records where age is greater than or equal to 20.

```
mysql> select * from Donor where age <= 20 AND contact NOT LIKE '%0';
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
| id  | firstname | lastname  | contact    | email                     | bloodgroup | Age  | healthstatus |
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
| 101 | Sujal     | Dingankar | 7798802841 | sujal.dingankar@spit.ac.in | O+         |   20 | Healthy      |
| 102 | Shreeya   | Nemade    | 7698231082 | shreeya.nemade@spit.ac.in  | A+         |   19 | Healthy      |
| 104 | Avi       | Patil     | 1234598745 | avinash.patil@spit.ac.in   | AB+        |   18 | Healthy      |
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
3 rows in set (0.00 sec)
```

This command retrieve records where age is equal or less than 20 and their contact no not ends with 0.

```
mysql> select * from Donor where bloodgroup like '_+';
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
| id  | firstname | lastname  | contact    | email                     | bloodgroup | Age  | healthstatus |
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
| 101 | Sujal     | Dingankar | 7798802841 | sujal.dingankar@spit.ac.in | O+         |   20 | Healthy      |
| 102 | Shreeya   | Nemade    | 7698231082 | shreeya.nemade@spit.ac.in  | A+         |   19 | Healthy      |
| 103 | Harsha    | Surwase   | 5612798561 | harsha.surwase@spit.ac.in  | B+         |   21 | Healthy      |
| 105 | Shruti    | Bhuvad    | 455612345  | shruti.bhuvad@spit.ac.in   | A+         |   22 | Healthy      |
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
4 rows in set (0.00 sec)
```

This command retrieves records where the blood group has exactly one character followed by a plus sign (+).

```
mysql> select * from Donor where bloodgroup like '_+' OR Age between 18 and 20;
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
| id  | firstname | lastname  | contact    | email                     | bloodgroup | Age  | healthstatus |
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
| 101 | Sujal     | Dingankar | 7798802841 | sujal.dingankar@spit.ac.in | O+         |   20 | Healthy      |
| 102 | Shreeya   | Nemade    | 7698231082 | shreeya.nemade@spit.ac.in  | A+         |   19 | Healthy      |
| 103 | Harsha    | Surwase   | 5612798561 | harsha.surwase@spit.ac.in  | B+         |   21 | Healthy      |
| 104 | Avi       | Patil     | 1234598745 | avinash.patil@spit.ac.in   | AB+        |   18 | Healthy      |
| 105 | Shruti    | Bhuvad    | 455612345  | shruti.bhuvad@spit.ac.in   | A+         |   22 | Healthy      |
+-----+-----------+-----------+------------+---------------------------+------------+------+--------------+
5 rows in set (0.00 sec)
```

This command retrieves records where the blood group consists of exactly one character followed by a plus sign (`+`) or where the age is between 18 and 20, inclusive.

Aggregate Function:

```
mysql> select count(id) AS No_Of_Donor from Donor;
+-------------+
| No_Of_Donor |
+-------------+
|           5 |
+-------------+
1 row in set (0.00 sec)
```

This query return the total no of donors present in the Donor table.

```
mysql> select avg(age) AS avg_Age from Donor;
+---------+
| avg_Age |
+---------+
| 20.0000 |
+---------+
1 row in set (0.00 sec)
```

This query return average age among the records present in the Donor table.

```
mysql> select min(age) AS min_Age from Donor;
+---------+
| min_Age |
+---------+
|      18 |
+---------+
1 row in set (0.00 sec)
```

This query returns minimum age among the records present in the Donor table.

```
mysql> select max(age) AS max_Age from Donor;
+---------+
| max_Age |
+---------+
|      22 |
+---------+
1 row in set (0.00 sec)
```

This query returns maximum age among the records present in the Donor table.

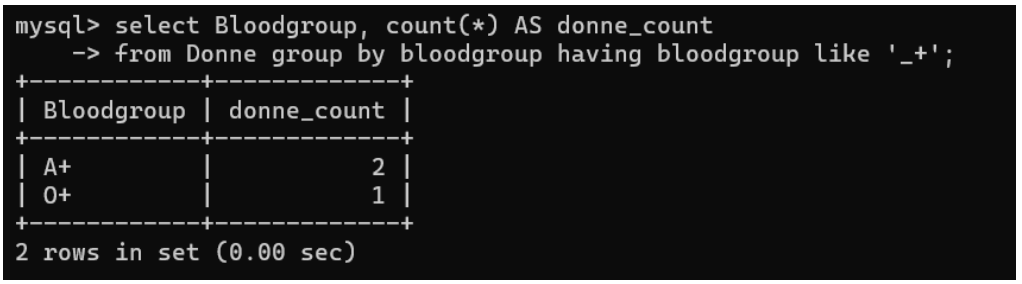
```
mysql> select sum(quantity) AS Total_Blood_Quantity from Blood;
+----------------------+
| Total_Blood_Quantity |
+----------------------+
|                  530 |
+----------------------+
1 row in set (0.00 sec)
```

This query returns Total amount of Blood present in the records in Blood table.

Group By Clause:

```
mysql> select Bloodgroup, count(*) AS donor_count from Donor group by bloodgroup;
+------------+-------------+
| Bloodgroup | donor_count |
+------------+-------------+
| O+         |           1 |
| A+         |           2 |
| B+         |           1 |
| AB+        |           1 |
+------------+-------------+
4 rows in set (0.00 sec)
```

This query returns no of blood donor for particular blood group.

	 This query return no of Donne for blood for particular blood group and also checks the blood group has exactly one character followed by a plus sign (+).
Conclusion	From this experiment I learnt Data Retrival COMMANDS and Aggregate Functions in MySql.