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Experiment No. 2

Aim: Practicing MySql Fuctions.

Theory:

Aggregate functions in SQL

In database management an aggregate function is a function where the values of multiple rows are grouped together as input on certain criteria to form a single value of more significant meaning.

Various Aggregate Functions

1) Count()

2) Sum()

3) Avg()

4) Min()

5) Max()

Now let us understand each Aggregate function with a example:

Id	Name	Salary
1	A	80
2	B	40
3	C	60
4	D	70
5	E	60
6	F	Null

Count():

Count(*): Returns total number of records .i.e 6.
Count(salary): Return number of Non Null values over the column salary. i.e 5.
Count(Distinct Salary): Return number of distinct Non Null values over the column salary .i.e 4

Sum():

sum(salary): Sum all Non Null values of Column salary i.e., 310
sum(Distinct salary): Sum of all distinct Non-Null values i.e., 250.

Avg():

Avg(salary) = Sum(salary) / count(salary) = 310/5
Avg(Distinct salary) = sum(Distinct salary) / Count(Distinct Salary) = 250/4

Min():

Min(salary): Minimum value in the salary column except NULL i.e., 40.
Max(salary): Maximum value in the salary i.e., 80.

Date & Time Functions

Functions	Description
ADDDATE()	MySQL ADDDATE() adds a time value with a date.
ADDTIME()	In MySQL the ADDTIME() returns a time or datetime after adding a time value with a time or datetime.
CONVERT_TZ()	In MySQL the CONVERT_TZ() returns a resulting value after converting a datetime value from a time zone specified as the second argument to the time zone specified as the third argument.
CURDATE()	In MySQL the CURDATE() returns the current date in 'YYYY-MM-DD' format or 'YYYYMMDD' format depending on whether numeric or string is used in the function.
CURRENT_DATE()	In MySQL the CURRENT_DATE returns the current date in 'YYYY-MM-DD' format or YYYYMMDD format depending on whether numeric or string is used in the function.
CURRENT_TIME()	In MySQL the CURRENT_TIME() returns the current time in 'HH:MM:SS' format or HHMMSS.uuuuuu format depending on whether numeric or string is used in the function.
CURRENT_TIMESTAMP()	In MySQL the CURRENT_TIEMSTAMP returns the current date and time in 'YYYY-MM-DD HH:MM:SS' format or YYYYMMDDHHMMSS.uuuuuu format depending on whether numeric or string is used in the function.
CURTIME()	In MySQL the CURTIME() returns the value of current time in 'HH:MM:SS' format or HHMMSS.uuuuuu format depending on whether numeric or string is used in the function.
DATE_ADD()	MySQL DATE_ADD() adds time values (as intervals) to a date value. The ADDDATE() is the synonym of DATE_ADD().

DATE_FORMAT()	MySQL DATE_FORMAT() formats a date as specified in the argument. A list of format specifiers given bellow may be used to format a date.
DATE_SUB()	MySql date_sub() function subtract a time value (as interval) from a date.
DATE()	MySQL DATE() takes the date part out from a datetime expression.
DATEDIFF()	MySQL DATEDIFF() returns the number of days between two dates or datetimes.
DAY()	MySQL DAY() returns the day of the month for a specified date.
DAYNAME()	MySQL DAYNAME() returns the name of the week day of a date specified in the argument.
DAY OF MONTH()	MySQL DAYOFMONTH() returns the day of the month for a given date.
DAY OF WEEK()	MySQL DAYOFWEEK() returns the week day number (1 for Sunday,2 for Monday …… 7 for Saturday) for a date specified as an argument.
DAY OF YEAR()	MySQL DAYOFYEAR() returns day of the year for a date. The return value is within the range of 1 to 366.
EXTRACT()	MySQL EXTRACT() extracts a part of a given date.
FROM_DAYS()	MySQL FROM_DAYS() returns a date against a datevalue.
FROM_UNIXTIME()	MySQL FROM_UNIXTIME() returns a date /datetime from a version of unix_timestamp.
GET_FORMAT()	MySQL GET_FORMAT() converts a date or time or datetime in a formatted manner as specified in the argument.
HOUR()	MySQL HOUR() returns the hour of a time.
LAST_DAY()	MySQL LAST_DAY() returns the last day of the corresponding month for a date or datetime value.
LOCALTIME()	MySQL LOCALTIME returns the value of current date and time in 'YYYY-MM-DD HH:MM:SS' format or

	YYYYMMDDHHMMSS.uuuuuu format depending on the context (numeric or string) of the function.
LOCALTIMESTAMP()	MySQL LOCALTIMESTAMP returns the value of current date and time in 'YYYY-MM-DD HH:MM:SS' format or YYYYMMDDHHMMSS.uuuuuu format depending on the context (numeric or string) of the function.
MAKEDATE()	MySQL MAKEDATE() returns a date by taking a value of a year and a number of days. The number of days must be greater than 0 otherwise a NULL will be returned.
MAKETIME()	MySQL MAKETIME() makes and returns a time value from a given hour, minute and seconds.
MICROSECOND()	MySQL MICROSECOND() returns microseconds from the time or datetime expression.
MINUTE()	MySQL MINUTE() returns a minute from a time or datetime value.
MONTH()	MySQL MONTH() returns the month for the date within a range of 1 to 12 (January to December).
MONTHNAME()	MySQL MONTHNAME() returns the full name of the month for a given date.
NOW()	MySQL NOW() returns the value of current date and time in 'YYYY-MM-DD HH:MM:SS' format or YYYYMMDDHHMMSS.uuuuuu format depending on the context (numeric or string) of the function.
PERIOD_ADD()	MySQL PERIOD_ADD() adds a number of months with a period and returns the value in the format YYYYMM OR YYMM. Remember that the format YYYYMM and YYMM are not date values.
PERIOD_DIFF()	MySQL PERIOD_DIFF() returns the difference between two periods.
QUARTER()	MySQL QUARTER() returns the quarter of the year for a date.
SEC_TO_TIME()	MySQL SEC_TO_TIME() returns a time value by converting the seconds specified in the argument.

SECOND()	MySQL SECOND() returns the second for a time.
STR_TO_DATE()	MySQL STR_TO_DATE() returns a datetime value by taking a string and a specific format string as arguments.
SUBDATE()	MySQL SUBDATAE() subtracts a time value (as interval) from a given date.
SUBTIME()	MySQL SUBTIME() subtracts one datetime value from another.
SYSDATE()	MySQL SYSDATE() returns the current date and time in YYYY-MM-DD HH:MM:SS or YYYYMMDDHHMMSS.uuuuuu format depending on the context of the function.
TIME_FORMAT()	MySQL TIME_FORMAT() converts a time in a formatted string using the format specifiers.
TIME_TO_SEC()	MySQL TIME_TO_SEC() converts a time value in to seconds.
TIME()	MySQL TIME() extracts the time part of a time or datetime expression as string format.
TIMEDIFF()	MySQL TIMEDIFF() returns the differences between two time or datetime expressions.
TIMESTAMP()	MySQL TIMESTAMP() returns a datetime value against a date or datetime expression.
TIMESTAMPADD()	MySQL TIMESTAMPADD() adds time value with a date or datetime value.
TIMESTAMPDIFF()	MySQL the TIMESTAMPDIFF() returns a value after subtracting a datetime expression from another.
TO_DAYS()	MySQL TO_DAYS() returns number of days between a given date and year 0.
UNIX_TIMESTAMP()	MySQL UNIX_TIMESTAMP() returns a Unix timestamp in seconds since '1970-01-01 00:00:00' UTC as an unsigned integer if no arguments are passed with UNIT_TIMESTAMP().
UTC_DATE()	MySQL UTC_DATE returns the current UTC (Coordinated Universal Time) date as a value in 'YYYY-MM-DD' or YYYYMMDD format depending on the

	context of the function i.e. in a string or numeric context.
UTC_TIME()	MySQL UTC_TIME returns the current UTC time as a value in 'HH:MM:SS' or HHMMSS format depending on the context of the function i.e. in a string or numeric context.
UTC_TIMESTAMP()	In MySQL the UTC_TIMESTAMP returns the current UTC date and time as a value in 'YYYY-MM-DD HH:MM:SS' or YYYYMMDDHHMMSS.uuuuuu format depending on the usage of the function i.e. in a string or numeric context.
WEEK()	MySQL WEEK() returns the week number for a given date.
WEEKDAY()	MySQL WEEKDAY() returns the index of the day in a week for a given date (0 for Monday, 1 for Tuesday and .....6 for Sunday).
WEEK OF YEAR()	MySQL WEEKOFYEAR() returns the calender week (as a number) of a given date.
YEAR()	MySQL YEAR() returns the year for a given date.
YEARWEEK()	MySQL YEARWEEK() returns year and week number for a given date.

Function	Purpose
ASCII (*character_expression*)	Returns the ASCII code value of the leftmost character of a character expression.
CHAR (integer_expression)	Converts an int ASCII code to a character. integer_expression: Is an integer from 0 through 255. NULL is returned if the integer expression is not in this range.
NCHAR (integer_expression)	Return a unicode character representing a number passed as a parameter.
LEFT(string, length)	Returns the left most characters of a string.Specifies the string from which to obtain the left-most characters.
RIGHT(string, length)	Returns the right most characters of a string.Specifies the number of characters to obtain.
LTRIM(character_expression)	Returns a character expression after it removes leading blanks.
RTRIM(character_expression)	Returns a character string after truncating all trailing blanks.

Function Name	Description
SUBSTRING	This function returns a part of a string from a larger string
REVERSE	This function takes each character of a string and outputs that character in the reverse order
REPLACE	This functions replaces all the instances of a provided input string within a specified string with the new provided input string
LTRIM	This function remove all the leading white spaces/blanks
RTRIM	This function remove all the training white spaces/blanks
LOWER	This function returns a provided string in lower case
UPPER	This function returns a provided string in upper case
LEN	This function returns the number of characters in a string expression excluding any blanks after the last character
DATALENGTH	This function return number of bytes used by the string
LEFT	This function returns part of the string beginning at the specified number of characters from the left
RIGHT	This function returns part of the string beginning at the specified number of characters from the right
CONCAT	This function concatenates a variable list of string values into a larger string
ASCII	This function takes the left most character of a string and return the ASCII code of that character
CHAR	This function converts an integer value to a character value
CHARINDEX	This function returns starting position of a string within another string
PATINDEX	Is similar to CHARINDEX function, except that PATINDEX allows the use of wildcards when specifying the string for which to search
REPLICATE	This function repeats an input character a designated number of times
SPACE	This function return a string of repeated blank spaces based on the integer value you designate for the input parameter
STUFF	This function deletes a specified length of characters and inserts a designated string at the specified starting point
UNICODE	This function returns Unicode integer value for the first character of a string
NCHAR	This function takes an integer value designating a Unicode character and convert it to its character equivalent

Output:

Aggregate Functions:

```
mysql> insert into Client_master values("C00001" , "Ivan Bayross" , "Bombay", 400054 , "Maharashtra" , "15000");
Query OK, 1 row affected (0.02 sec)

mysql> insert into Client_master values("C00002" , "Vandana Saitwal" , "Madras", 780001 , "Tamil Nadu" , "0");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Client_master values("C00003" , "Pramada Jaguste" , "Bombay", 400057 , "Maharashtra" , "5000");
Query OK, 1 row affected (0.00 sec)

mysql> insert into Client_master values("C00004" , "Basu Navindgi" , "Bombay", 400056 , "Maharashtra" , "0");
Query OK, 1 row affected (0.01 sec)

mysql>  insert into Client_master values("C00005" , "Ravi Sreedharan" , "Delhi", 100001 , " " , "2000");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Client_master values("C00006" , "Rukmini" , "Bombay", 400050 , "Maharashtra ", "0");
Query OK, 1 row affected (0.01 sec)

mysql> select * from Client_master;
+-----------+-----------------+--------+---------+--------------+----------+
| client_no | name            | city   | pincode | state        | bal_due  |
+-----------+-----------------+--------+---------+--------------+----------+
| C00001    | Ivan Bayross    | Bombay |  400054 | Maharashtra  | 15000.00 |
| C00002    | Vandana Saitwal | Madras |  780001 | Tamil Nadu   |     0.00 |
| C00003    | Pramada Jaguste | Bombay |  400057 | Maharashtra  |  5000.00 |
| C00004    | Basu Navindgi   | Bombay |  400056 | Maharashtra  |     0.00 |
| C00005    | Ravi Sreedharan | Delhi  |  100001 |              |  2000.00 |
| C00006    | Rukmini         | Bombay |  400050 | Maharashtra  |     0.00 |
+-----------+-----------------+--------+---------+--------------+----------+
6 rows in set (0.00 sec)
```

1)Average

```
mysql> SELECT AVG(bal_due) AS Averagebal_due FROM Client_master;
+-----------------+
| Averagebal_due |
+-----------------+
|    3666.666667 |
+-----------------+
1 row in set (0.01 sec)
```

2)Sum

```
mysql> SELECT SUM(bal_due) AS SUMbal_due FROM Client_master;
+-------------+
| SUMbal_due |
+-------------+
|   22000.00 |
+-------------+
1 row in set (0.01 sec)
```

3)Min

```
mysql> SELECT MIN(bal_due) AS MINbal_due FROM Client_master;
+------------+
| MINbal_due |
+------------+
|       0.00 |
+------------+
1 row in set (0.01 sec)
```

4)Max

```
mysql> SELECT MAX(bal_due) AS MAXbal_due FROM Client_master;
+------------+
| MAXbal_due |
+------------+
|   15000.00 |
+------------+
1 row in set (0.00 sec)
```

5)Count

```
mysql> SELECT count(bal_due) AS countbal_due FROM Client_master;
+--------------+
| countbal_due |
+--------------+
|            6 |
+--------------+
1 row in set (0.00 sec)
```

Date Time Function/ String Operation

1)Now()

```
mysql> select Now();
+---------------------+
| Now()               |
+---------------------+
| 2020-02-15 21:02:10 |
+---------------------+
1 row in set (0.00 sec)
```

2)Curtime()

```
mysql> select curtime();
+-----------+
| curtime() |
+-----------+
| 21:02:30  |
+-----------+
1 row in set (0.00 sec)
```

3)Curdate()

```
mysql> select curdate();
+------------+
| curdate()  |
+------------+
| 2020-02-15 |
+------------+
1 row in set (0.00 sec)
```

4)Adddate()

```
mysql> SELECT ADDDATE("2020-06-15", INTERVAL 10 DAY);
+-----------------------------------------+
| ADDDATE("2020-06-15", INTERVAL 10 DAY) |
+-----------------------------------------+
| 2020-06-25                              |
+-----------------------------------------+
1 row in set (0.00 sec)
```

5)Addtime()

```
mysql> SELECT ADDTIME("2017-06-15 09:34:21", "2");
+--------------------------------------+
| ADDTIME("2017-06-15 09:34:21", "2") |
+--------------------------------------+
| 2017-06-15 09:34:23                  |
+--------------------------------------+
1 row in set (0.00 sec)
```

6)Current_timestamp()

```
mysql> SELECT CURRENT_TIMESTAMP();
+---------------------+
| CURRENT_TIMESTAMP() |
+---------------------+
| 2020-02-15 21:21:54 |
+---------------------+
1 row in set (0.00 sec)
```

7)Select Day()

```
mysql> SELECT DAY("2017-06-15");
+-------------------+
| DAY("2017-06-15") |
+-------------------+
|                15 |
+-------------------+
1 row in set (0.01 sec)
```

8)Select Month()

```
mysql> SELECT Month("2017-06-15");
+---------------------+
| Month("2017-06-15") |
+---------------------+
|                   6 |
+---------------------+
1 row in set (0.00 sec)
```

9)Select year()

```
mysql> SELECT year("2017-06-15");
+---------------------+
| year("2017-06-15") |
+---------------------+
|                2017 |
+---------------------+
1 row in set (0.01 sec)
```

10)Select Last_day()

```
mysql> SELECT LAST_DAY("2020-06-15");
+-------------------------+
| LAST_DAY("2020-06-15") |
+-------------------------+
| 2020-06-30              |
+-------------------------+
1 row in set (0.00 sec)
```

String operations:

```
mysql> insert into Client_master values("C00001" , "Ivan Bayross" , "Bombay", 400054 , "Maharashtra" , "15000");
Query OK, 1 row affected (0.02 sec)

mysql> insert into Client_master values("C00002" , "Vandana Saitwal" , "Madras", 780001 , "Tamil Nadu" , "0");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Client_master values("C00003" , "Pramada Jaguste" , "Bombay", 400057 , "Maharashtra" , "5000");
Query OK, 1 row affected (0.00 sec)

mysql> insert into Client_master values("C00004" , "Basu Navindgi" , "Bombay", 400056 , "Maharashtra" , "0");
Query OK, 1 row affected (0.01 sec)

mysql>  insert into Client_master values("C00005" , "Ravi Sreedharan" , "Delhi", 100001 , " " , "2000");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Client_master values("C00006" , "Rukmini" , "Bombay", 400050 , "Maharashtra ", "0");
Query OK, 1 row affected (0.01 sec)

mysql> select * from Client_master;
+-----------+-----------------+--------+---------+--------------+----------+
| client_no | name            | city   | pincode | state        | bal_due  |
+-----------+-----------------+--------+---------+--------------+----------+
| C00001    | Ivan Bayross    | Bombay |  400054 | Maharashtra  | 15000.00 |
| C00002    | Vandana Saitwal | Madras |  780001 | Tamil Nadu   |     0.00 |
| C00003    | Pramada Jaguste | Bombay |  400057 | Maharashtra  |  5000.00 |
| C00004    | Basu Navindgi   | Bombay |  400056 | Maharashtra  |     0.00 |
| C00005    | Ravi Sreedharan | Delhi  |  100001 |              |  2000.00 |
| C00006    | Rukmini         | Bombay |  400050 | Maharashtra  |     0.00 |
+-----------+-----------------+--------+---------+--------------+----------+
6 rows in set (0.00 sec)
```

1)bit length()

```
mysql> select bit_length('pincode') from Client_master;
+------------------------+
| bit_length('pincode') |
+------------------------+
|                     56 |
|                     56 |
|                     56 |
|                     56 |
|                     56 |
|                     56 |
+------------------------+
6 rows in set (0.01 sec)
```

2)Ascii()

```
mysql> SELECT name, ASCII(name) AS NumCodeOfFirstChar FROM Client_master;
+-----------------+--------------------+
| name            | NumCodeOfFirstChar |
+-----------------+--------------------+
| Ivan Bayross    |                 73 |
| Vandana Saitwal |                 86 |
| Pramada Jaguste |                 80 |
| Basu Navindgi   |                 66 |
| Ravi Sreedharan |                 82 |
| Rukmini         |                 82 |
+-----------------+--------------------+
6 rows in set (0.01 sec)
```

```
mysql> SELECT city, ASCII(city) AS NumCodeOfFirstChar FROM Client_master;
+--------+--------------------+
| city   | NumCodeOfFirstChar |
+--------+--------------------+
| Bombay |                 66 |
| Madras |                 77 |
| Bombay |                 66 |
| Bombay |                 66 |
| Delhi  |                 68 |
| Bombay |                 66 |
+--------+--------------------+
```

3)Concat()

```
mysql> SELECT CONCAT("welcome ", "to ", "client_master ", "database") AS ConcatenatedString;
+---------------------------------+
| ConcatenatedString              |
+---------------------------------+
| welcome to client_master database |
+---------------------------------+
1 row in set (0.01 sec)
```

4)Lower()

```
mysql> SELECT LOWER("WELCOM TO CLIENT_MASTER DATABASE") AS LowercaseText;
+---------------------------------+
| LowercaseText                   |
+---------------------------------+
| welcom to client_master database |
+---------------------------------+
1 row in set (0.01 sec)
```

5)Repeat()

```
mysql> SELECT REPEAT("Client_master", 3);
+-------------------------------------------+
| REPEAT("Client_master", 3)                |
+-------------------------------------------+
| Client_masterClient_masterClient_master |
+-------------------------------------------+
1 row in set (0.00 sec)
```

6)ExtractString()

```
mysql> SELECT RIGHT("Welcom to Client_master database", 4) AS ExtractString;
+---------------+
| ExtractString |
+---------------+
| base          |
+---------------+
1 row in set (0.01 sec)
```

```
mysql> SELECT RIGHT("Welcom to Client_master database", 2) AS ExtractString;
+---------------+
| ExtractString |
+---------------+
| se            |
+---------------+
1 row in set (0.00 sec)
```

```
mysql> SELECT RIGHT("Welcom to Client_master database", 10) AS ExtractString;
+---------------+
| ExtractString |
+---------------+
| r database    |
+---------------+
1 row in set (0.00 sec)
```

7)Reverse()

```
mysql>  SELECT REVERSE("Client_master");
+--------------------------+
| REVERSE("Client_master") |
+--------------------------+
| retsam_tneilC            |
+--------------------------+
1 row in set (0.00 sec)
```

8)Strcmp()

```
mysql> SELECT STRCMP("Client master", "client_master");
+-----------------------------------------+
| STRCMP("Client master", "client_master") |
+-----------------------------------------+
|                                      -1 |
+-----------------------------------------+
1 row in set (0.00 sec)

mysql> SELECT STRCMP("Client mas", "client_master");
+--------------------------------------+
| STRCMP("Client mas", "client_master") |
+--------------------------------------+
|                                   -1 |
+--------------------------------------+
1 row in set (0.00 sec)
```

9)Substring()

```
mysql> SELECT SUBSTRING("Client master", 5, 3) AS ExtractString;
+---------------+
| ExtractString |
+---------------+
| nt            |
+---------------+
1 row in set (0.00 sec)

mysql> SELECT SUBSTRING("Client master", 5, 7) AS ExtractString;
+---------------+
| ExtractString |
+---------------+
| nt mast       |
+---------------+
1 row in set (0.00 sec)
```

10)Trim()

```
mysql> SELECT TRIM("    Client master    ") AS TrimmedString;
+---------------+
| TrimmedString |
+---------------+
| Client master |
+---------------+
1 row in set (0.01 sec)
```

11)Ucase()

```
mysql> SELECT UCASE("welcome to client_master database");
+-------------------------------------------------+
| UCASE("welcome to client_master database") |
+-------------------------------------------------+
| WELCOME TO CLIENT_MASTER DATABASE          |
+-------------------------------------------------+
1 row in set (0.00 sec)
```

Five Fuction From Given Assignment.

1)Student date:

```
mysql> create table lab(Student_no varchar(6), Student_name varchar(20), city varchar(15), pincode int(8), state varchar(15), Adm_date date, Dis_date date);
Query OK, 0 rows affected (0.03 sec)

mysql> insert into Lab values("S1" , "Vishal" , "Mumbai", 400050 , "Maharashtra ", "2017-06-15","2017-06-20");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Lab values("S2" , "Tanay" , "Mumbai", 400060 , "Maharashtra ", "2017-06-20","2017-06-24");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Lab values("S3" , "Sandesh" , "Mumbai", 400047 , "Maharashtra ", "2017-06-25","2017-06-30");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Lab values("S4" , "Manish" , "Mumbai", 400058 , "Maharashtra ", "2017-06-30", "2017-07-04");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Lab values("S5" , "Siddesh" , "Mumbai", 400068 , "Maharashtra ", "2017-07-10","2017-07-15");
Query OK, 1 row affected (0.01 sec)

mysql> select * from lab;
+------------+--------------+--------+---------+--------------+------------+------------+
| Student_no | Student_name | city   | pincode | state        | Adm_date   | Dis_date   |
+------------+--------------+--------+---------+--------------+------------+------------+
| S1         | Vishal       | Mumbai |  400050 | Maharashtra  | 2017-06-15 | 2017-06-20 |
| S2         | Tanay        | Mumbai |  400060 | Maharashtra  | 2017-06-20 | 2017-06-24 |
| S3         | Sandesh      | Mumbai |  400047 | Maharashtra  | 2017-06-25 | 2017-06-30 |
| S4         | Manish       | Mumbai |  400058 | Maharashtra  | 2017-06-30 | 2017-07-04 |
| S5         | Siddesh      | Mumbai |  400068 | Maharashtra  | 2017-07-10 | 2017-07-15 |
+------------+--------------+--------+---------+--------------+------------+------------+
5 rows in set (0.00 sec)
```

2)Doctor data

```
mysql> create table Doctor(D_no varchar(6), D_name varchar(20), city varchar(15), pincode int(8), state varchar(15), Type varchar(20), Gender varchar(8));
Query OK, 0 rows affected (0.02 sec)

mysql> insert into Doctor values("D1" , "Ram" , "Mumbai", 400068 , "Maharashtra ", "Permanent","M");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Doctor values("D2" , "Rakhi" , "Mumbai", 400050 , "Maharashtra ", "Permanent","F");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Doctor values("D3" , "Sima" , "Mumbai", 400060 , "Maharashtra ", "Visiting","F");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Doctor values("D4" , "Ramesh" , "Mumbai", 400053 , "Maharashtra ", "Visiting","M");
Query OK, 1 row affected (0.01 sec)

mysql> select * from Doctor;
+------+--------+--------+---------+-------------+-----------+--------+
| D_no | D_name | city   | pincode | state       | Type      | Gender |
+------+--------+--------+---------+-------------+-----------+--------+
| D1   | Ram    | Mumbai |  400068 | Maharashtra | Permanent | M      |
| D2   | Rakhi  | Mumbai |  400050 | Maharashtra | Permanent | F      |
| D3   | Sima   | Mumbai |  400060 | Maharashtra | Visiting  | F      |
| D4   | Ramesh | Mumbai |  400053 | Maharashtra | Visiting  | M      |
+------+--------+--------+---------+-------------+-----------+--------+
4 rows in set (0.00 sec)
```

3)Care taker data

```
mysql> create table Care_taker(C_no varchar(6), C_name varchar(20), city varchar(15), pincode int(8), state varchar(15), Gender varchar(8));
Query OK, 0 rows affected (0.03 sec)

mysql> insert into Care_taker values("C1" , "Rajesh" , "Mumbai", 400068 , "Maharashtra ","M");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Care_taker values("C2" , "Rasika" , "Mumbai", 400048 , "Maharashtra ","F");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Care_taker values("C3" , "Radha" , "Mumbai", 400045 , "Maharashtra ","F");
Query OK, 1 row affected (0.01 sec)

mysql> insert into Care_taker values("C4" , "Harshal" , "Mumbai", 400045 , "Maharashtra ","M");
Query OK, 1 row affected (0.01 sec)

mysql> select * from Care_taker;
+------+---------+--------+---------+-------------+--------+
| C_no | C_name  | city   | pincode | state       | Gender |
+------+---------+--------+---------+-------------+--------+
| C1   | Rajesh  | Mumbai |  400068 | Maharashtra | M      |
| C2   | Rasika  | Mumbai |  400048 | Maharashtra | F      |
| C3   | Radha   | Mumbai |  400045 | Maharashtra | F      |
| C4   | Harshal | Mumbai |  400045 | Maharashtra | M      |
+------+---------+--------+---------+-------------+--------+
4 rows in set (0.00 sec)
```

4)Describe lab

```
mysql> describe lab;
+---------------+-------------+------+-----+---------+-------+
| Field         | Type        | Null | Key | Default | Extra |
+---------------+-------------+------+-----+---------+-------+
| Student_no    | varchar(6)  | YES  |     | NULL    |       |
| Student_name  | varchar(20) | YES  |     | NULL    |       |
| city          | varchar(15) | YES  |     | NULL    |       |
| pincode       | int(8)      | YES  |     | NULL    |       |
| state         | varchar(15) | YES  |     | NULL    |       |
| Adm_date      | date        | YES  |     | NULL    |       |
| Dis_date      | date        | YES  |     | NULL    |       |
+---------------+-------------+------+-----+---------+-------+
7 rows in set (0.01 sec)
```

5) Describe doctor

```
mysql> describe Doctor;
+---------+-------------+------+-----+---------+-------+
| Field   | Type        | Null | Key | Default | Extra |
+---------+-------------+------+-----+---------+-------+
| D_no    | varchar(6)  | YES  |     | NULL    |       |
| D_name  | varchar(20) | YES  |     | NULL    |       |
| city    | varchar(15) | YES  |     | NULL    |       |
| pincode | int(8)      | YES  |     | NULL    |       |
| state   | varchar(15) | YES  |     | NULL    |       |
| Type    | varchar(20) | YES  |     | NULL    |       |
| Gender  | varchar(8)  | YES  |     | NULL    |       |
+---------+-------------+------+-----+---------+-------+
7 rows in set (0.00 sec)
```

6) Describe Care taker

```
mysql> describe Care_taker;
+---------+-------------+------+-----+---------+-------+
| Field   | Type        | Null | Key | Default | Extra |
+---------+-------------+------+-----+---------+-------+
| C_no    | varchar(6)  | YES  |     | NULL    |       |
| C_name  | varchar(20) | YES  |     | NULL    |       |
| city    | varchar(15) | YES  |     | NULL    |       |
| pincode | int(8)      | YES  |     | NULL    |       |
| state   | varchar(15) | YES  |     | NULL    |       |
| Gender  | varchar(8)  | YES  |     | NULL    |       |
+---------+-------------+------+-----+---------+-------+
6 rows in set (0.00 sec)
```

7)All Hospital syatem

```
mysql> select * from lab;
+------------+--------------+--------+---------+--------------+------------+------------+
| Student_no | Student_name | city   | pincode | state        | Adm_date   | Dis_date   |
+------------+--------------+--------+---------+--------------+------------+------------+
| S1         | Vishal       | Mumbai |  400050 | Maharashtra  | 2017-06-15 | 2017-06-20 |
| S2         | Tanay        | Mumbai |  400060 | Maharashtra  | 2017-06-20 | 2017-06-24 |
| S3         | Sandesh      | Mumbai |  400047 | Maharashtra  | 2017-06-25 | 2017-06-30 |
| S4         | Manish       | Mumbai |  400058 | Maharashtra  | 2017-06-30 | 2017-07-04 |
| S5         | Siddesh      | Mumbai |  400068 | Maharashtra  | 2017-07-10 | 2017-07-15 |
+------------+--------------+--------+---------+--------------+------------+------------+
5 rows in set (0.00 sec)

mysql> select * from Doctor;
+------+--------+--------+---------+--------------+-----------+--------+
| D_no | D_name | city   | pincode | state        | Type      | Gender |
+------+--------+--------+---------+--------------+-----------+--------+
| D1   | Ram    | Mumbai |  400068 | Maharashtra  | Permanent | M      |
| D2   | Rakhi  | Mumbai |  400050 | Maharashtra  | Permanent | F      |
| D3   | Sima   | Mumbai |  400060 | Maharashtra  | Visiting  | F      |
| D4   | Ramesh | Mumbai |  400053 | Maharashtra  | Visiting  | M      |
+------+--------+--------+---------+--------------+-----------+--------+
4 rows in set (0.00 sec)

mysql> select * from Care_taker;
+------+---------+--------+---------+--------------+--------+
| C_no | C_name  | city   | pincode | state        | Gender |
+------+---------+--------+---------+--------------+--------+
| C1   | Rajesh  | Mumbai |  400068 | Maharashtra  | M      |
| C2   | Rasika  | Mumbai |  400048 | Maharashtra  | F      |
| C3   | Radha   | Mumbai |  400045 | Maharashtra  | F      |
| C4   | Harshal | Mumbai |  400045 | Maharashtra  | M      |
+------+---------+--------+---------+--------------+--------+
4 rows in set (0.00 sec)
```

```
mysql> select * from lab;
+------------+--------------+--------+---------+--------------+------------+------------+
| Student_no | Student_name | city   | pincode | state        | Adm_date   | Dis_date   |
+------------+--------------+--------+---------+--------------+------------+------------+
| S1         | Vishal       | Mumbai |  400050 | Maharashtra  | 2017-06-15 | 2017-06-20 |
| S2         | Tanay        | Mumbai |  400060 | Maharashtra  | 2017-06-20 | 2017-06-24 |
| S3         | Sandesh      | Mumbai |  400047 | Maharashtra  | 2017-06-25 | 2017-06-30 |
| S4         | Manish       | Mumbai |  400058 | Maharashtra  | 2017-06-30 | 2017-07-04 |
| S5         | Siddesh      | Mumbai |  400068 | Maharashtra  | 2017-07-10 | 2017-07-15 |
+------------+--------------+--------+---------+--------------+------------+------------+
5 rows in set (0.00 sec)

mysql> SELECT * FROM lab WHERE adm_date > '2017-06-20 ';
+------------+--------------+--------+---------+--------------+------------+------------+
| Student_no | Student_name | city   | pincode | state        | Adm_date   | Dis_date   |
+------------+--------------+--------+---------+--------------+------------+------------+
| S3         | Sandesh      | Mumbai |  400047 | Maharashtra  | 2017-06-25 | 2017-06-30 |
| S4         | Manish       | Mumbai |  400058 | Maharashtra  | 2017-06-30 | 2017-07-04 |
| S5         | Siddesh      | Mumbai |  400068 | Maharashtra  | 2017-07-10 | 2017-07-15 |
+------------+--------------+--------+---------+--------------+------------+------------+
3 rows in set (0.01 sec)

mysql> SELECT * FROM lab WHERE adm_date > '2017-06-30 ';
+------------+--------------+--------+---------+--------------+------------+------------+
| Student_no | Student_name | city   | pincode | state        | Adm_date   | Dis_date   |
+------------+--------------+--------+---------+--------------+------------+------------+
| S5         | Siddesh      | Mumbai |  400068 | Maharashtra  | 2017-07-10 | 2017-07-15 |
+------------+--------------+--------+---------+--------------+------------+------------+
1 row in set (0.00 sec)

mysql> SELECT * FROM lab WHERE adm_date > '2017-06-15 ';
+------------+--------------+--------+---------+--------------+------------+------------+
| Student_no | Student_name | city   | pincode | state        | Adm_date   | Dis_date   |
+------------+--------------+--------+---------+--------------+------------+------------+
| S2         | Tanay        | Mumbai |  400060 | Maharashtra  | 2017-06-20 | 2017-06-24 |
| S3         | Sandesh      | Mumbai |  400047 | Maharashtra  | 2017-06-25 | 2017-06-30 |
| S4         | Manish       | Mumbai |  400058 | Maharashtra  | 2017-06-30 | 2017-07-04 |
| S5         | Siddesh      | Mumbai |  400068 | Maharashtra  | 2017-07-10 | 2017-07-15 |
+------------+--------------+--------+---------+--------------+------------+------------+
4 rows in set (0.00 sec)
```

8)Where

```
mysql> SELECT * FROM lab WHERE Dis_date > '2017-06-20 ';
+------------+--------------+--------+---------+--------------+------------+------------+
| Student_no | Student_name | city   | pincode | state        | Adm_date   | Dis_date   |
+------------+--------------+--------+---------+--------------+------------+------------+
| S2         | Tanay        | Mumbai |  400060 | Maharashtra  | 2017-06-20 | 2017-06-24 |
| S3         | Sandesh      | Mumbai |  400047 | Maharashtra  | 2017-06-25 | 2017-06-30 |
| S4         | Manish       | Mumbai |  400058 | Maharashtra  | 2017-06-30 | 2017-07-04 |
| S5         | Siddesh      | Mumbai |  400068 | Maharashtra  | 2017-07-10 | 2017-07-15 |
+------------+--------------+--------+---------+--------------+------------+------------+
4 rows in set (0.00 sec)

mysql> SELECT * FROM lab WHERE Dis_date > '2017-06-30 ';
+------------+--------------+--------+---------+--------------+------------+------------+
| Student_no | Student_name | city   | pincode | state        | Adm_date   | Dis_date   |
+------------+--------------+--------+---------+--------------+------------+------------+
| S4         | Manish       | Mumbai |  400058 | Maharashtra  | 2017-06-30 | 2017-07-04 |
| S5         | Siddesh      | Mumbai |  400068 | Maharashtra  | 2017-07-10 | 2017-07-15 |
+------------+--------------+--------+---------+--------------+------------+------------+
2 rows in set (0.00 sec)
```

9)Like r

```
mysql> select Student_no , Student_name from lab where Student_name like "%r%";
Empty set (0.01 sec)

mysql> select C_no , C_name from Care_taker where C_name like "%r%";
+------+---------+
| C_no | C_name  |
+------+---------+
| C1   | Rajesh  |
| C2   | Rasika  |
| C3   | Radha   |
| C4   | Harshal |
+------+---------+
4 rows in set (0.00 sec)
```

10)Alter

```
mysql> Alter table Doctor add Specialist varchar(20);
Query OK, 0 rows affected (0.10 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> select * from doctor;
+------+--------+--------+---------+--------------+-----------+--------+------------+
| D_no | D_name | city   | pincode | state        | Type      | Gender | Specialist |
+------+--------+--------+---------+--------------+-----------+--------+------------+
| D1   | Ram    | Mumbai |  400068 | Maharashtra  | Permanent | M      | NULL       |
| D2   | Rakhi  | Mumbai |  400050 | Maharashtra  | Permanent | F      | NULL       |
| D3   | Sima   | Mumbai |  400060 | Maharashtra  | Visiting  | F      | NULL       |
| D4   | Ramesh | Mumbai |  400053 | Maharashtra  | Visiting  | M      | NULL       |
+------+--------+--------+---------+--------------+-----------+--------+------------+
4 rows in set (0.00 sec)
```

11)Update

```
mysql> select * from doctor;
+------+--------+--------+---------+--------------+-----------+--------+------------+
| D_no | D_name | city   | pincode | state        | Type      | Gender | Specialist |
+------+--------+--------+---------+--------------+-----------+--------+------------+
| D1   | Ram    | Mumbai |  400068 | Maharashtra  | Permanent | M      | NULL       |
| D2   | Rakhi  | Mumbai |  400050 | Maharashtra  | Permanent | F      | NULL       |
| D3   | Sima   | Mumbai |  400060 | Maharashtra  | Visiting  | F      | NULL       |
| D4   | Ramesh | Mumbai |  400053 | Maharashtra  | Visiting  | M      | NULL       |
+------+--------+--------+---------+--------------+-----------+--------+------------+
4 rows in set (0.00 sec)

mysql> update Doctor set Specialist= "Heart" where D_no ="D1";
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update Doctor set Specialist= "Skin" where D_no ="D2";
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update Doctor set Specialist= "Teeth" where D_no ="D3";
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> update Doctor set Specialist= "Eye" where D_no ="D4";
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

```
mysql> select * from doctor;
+------+--------+--------+---------+-------------+-----------+--------+------------+
| D_no | D_name | city   | pincode | state       | Type      | Gender | Specialist |
+------+--------+--------+---------+-------------+-----------+--------+------------+
| D1   | Ram    | Mumbai |  400068 | Maharashtra | Permanent | M      | Heart      |
| D2   | Rakhi  | Mumbai |  400050 | Maharashtra | Permanent | F      | Skin       |
| D3   | Sima   | Mumbai |  400060 | Maharashtra | Visiting  | F      | Teeth      |
| D4   | Ramesh | Mumbai |  400053 | Maharashtra | Visiting  | M      | Eye        |
+------+--------+--------+---------+-------------+-----------+--------+------------+
4 rows in set (0.00 sec)
```

12)Count

```
mysql> select count(D_no),Type from Doctor ;
+-------------+-----------+
| count(D_no) | Type      |
+-------------+-----------+
|           4 | Permanent |
+-------------+-----------+
1 row in set (0.00 sec)

mysql> select count(D_no) from Doctor ;
+-------------+
| count(D_no) |
+-------------+
|           4 |
+-------------+
1 row in set (0.00 sec)
```

13)Group by

```
mysql> select count(D_no),Type from Doctor Group by Type;
+-------------+-----------+
| count(D_no) | Type      |
+-------------+-----------+
|           2 | Permanent |
|           2 | Visiting  |
+-------------+-----------+
2 rows in set (0.00 sec)
```

Conclusion:

Thus in database management an aggregate function is a function where the values of multiple rows are grouped together as input on certain criteria to form a single value of more significant meaning. Also learn date time function.