
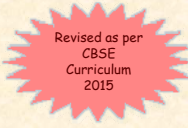


Chapter 10:

MySQL – Functions



Informatics Practices
Class XI (CBSE Board)



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Objective

In this presentation, you will learn about-

- Introduction to MySQL Functions.
- Types of MySQL Functions
 - Numeric Functions
 - String Functions
 - Date & Time Functions
 - Aggregate Functions

Working with Functions

- **What is Function?**
A function is a special types of command in MySQL that performs some operation on table and returns a single value as a result.
- **Types of Functions:**
 - Numeric Functions
 - String Functions
 - Date & Time Function
 - Aggregate Functions

❖ Numeric, String and Date-Time functions are called **Single row functions** because they can accept one row and return only one value. When applied on a table, they return a single result for every row of the queried table.

❖ Aggregate Functions are called **Multiple row functions** because they operate on a set of rows to return a single value.

Numeric Functions

These functions may accept some numeric values and performs required operation, returns numeric values as result.

Name	Purpose	Example
MOD (M, N)	Returns remainder of M divide by N	Select MOD(11,4) ; → 3
POWER (M, N) POW (M, N)	Returns M ^N	Select POWER(3,2); → 9
ROUND (N [,M])	Returns a number rounded off up to M place. If M is -1, it rounds nearest 10. If M is not given, then N is rounded to the nearest Integer.	Select ROUND(15.193,1); → 15.2 Select ROUND(15.193); → 15 Select ROUND(-1.58); → -2
SQRT (N)	Returns square root of N	Select SQRT(25); → 5
TRUNCATE(N,M)	Returns number after truncating M decimal place.	Select TRUNCATE(15.79,1) → 15.7

String Functions

- **CONCAT()**
Concatenates (Adds) two string.
CONCAT(Str1, Str2)
mysql> SELECT CONCAT('ab', 'cd') FROM DUAL;
→ **abcd**
mysql> SELECT CONCAT('Mr', Name) FROM Student;
> **Concat() can be nested.**
mysql> SELECT CONCAT(CONCAT(Name,'son of '), Fname) FROM Student;
- **LENGTH()**
Returns length of given string.
LENGTH (Str)
mysql> SELECT LENGTH('abcd') FROM DUAL;
→ **4**
mysql> SELECT Name, LENGTH(Name) FROM Student;

String Functions cont...

- **LOWER() or LCASE()**
Converts given string in lower case.
LOWER (Str)
mysql> SELECT LOWER('ABcd') FROM DUAL;
→ **abcd**
mysql> SELECT LOWER(Name) FROM Student;
mysql> SELECT LCASE(Fname) FROM Student;
- **UPPER() or UCASE()**
Converts given string in upper case.
UPPER (Str)
mysql> SELECT UPPER('abcd') FROM DUAL;
→ **ABCD**
mysql> SELECT UPPER(Name) FROM Student;
mysql> SELECT UCASE(Fname) FROM Student;

String Functions cont...

- LTRIM()**
Returns string after removing leading spaces.
mysql> **SELECT LTRIM(' abcd') FROM DUAL;**
→ **abcd**
mysql> **SELECT LTRIM(Name) FROM Student;**
- RTRIM()**
Returns string after removing trailing spaces.
mysql> **SELECT RTRIM('abcd ') FROM DUAL;**
→ **abcd**
mysql> **SELECT RTRIM(Name) FROM Student;**
- TRIM()**
Returns string after removing leading and trailing spaces.
mysql> **SELECT TRIM(' abcd ') FROM DUAL;**
→ **abcd**

String Functions cont...

- SUBSTR()**
Returns a sub string of given length from specified position.
SUBSTR (Str, position [,length])
mysql> **SELECT SUBSTR('MY COMPUTER', 4,3')** → **COM**
 - > If position is negative then backward position is counted.
mysql> **SELECT SUBSTR('ABCDEFG' , -5, 4) FROM Student;**
→ **CDEF**
 - > If Length is omitted then up to end of the string is considered.
mysql> **SELECT SUBSTR('ABCDEFG' , 3) FROM Student;**
→ **CDEFG**
- INSTR()**
Searches a string in to another string and returns its position.
INSTR(Str1, Str2)
mysql> **SELECT INSTR('CORPORATE FLOOR', 'OR');** → **2**
mysql> **SELECT Name, INSTR(Name,'a') FROM Student;**

String Functions cont...

- LEFT()**
Returns leftmost string up to given length.
LEFT (Str , length)
mysql> **SELECT LEFT('MYSQL', 2)** → **MY**
mysql> **SELECT LEFT(Name, 4) FROM Student;**
- RIGHT()**
Returns rightmost string up to given length.
RIGHT (Str , length)
mysql> **SELECT RIGHT('MYSQL', 3)** → **SQL**
mysql> **SELECT RIGHT(Name, 4) FROM Student;**
- MID()**
Returns a substring upto given length from given position.
MID (Str ,Pos, Length)
mysql> **SELECT MID('COMPUTER', 4,3)** → **PUT**
mysql> **SELECT MID(Name, 4,3) FROM Student;**

Mid() is similar to Substr()

Summary of String Functions

Name	Purpose	Example
CONCAT(str1,str2)	Returns concatenated string i.e. str1+str2.	Select CONCAT(Name, City) from Student;
LOWER(str) / LCASE(str)	Returns the given string in lower case.	Select LOWER('ABC'); → abc
UPPER(str) / UCASE(str)	Returns the given String in upper case.	Select UPPER('abc'); → ABC
LTRIM(str) RTRIM(str) TRIM(str)	Removes Leading/Trailing/both spaces from given string.	Select TRIM(' ABC '); → ABC
LEFT(str, N) RIGHT(str,N)	Returns the (N) characters from left/right from the given string.	Select LEFT('Computer',4); → Comp
SUBSTR(str,P,[N]) / MID (str,P,N)	Returns the substring for given position(P) and length (N). If M is (-ve) then backward position counted.	Select SUBSTR('Computer',3,2); → mp
INSTR(str1,str2)	Returns the index of first occurrence of str2 in str1.	Select INSTR('Common', 'm'); → 3
LENGTH(str)	Returns the length of given string	Select LENGTH('Common'); → 6

Date & Time Functions

- CURDATE() or CURRENT_DATE()**
Returns current date of the system in YYYY-MM-DD format.
mysql> **SELECT CURDATE() ;** → **2014-01-30**
mysql> **SELECT CURDATE()+10 ;** → **2014-02-09**
- SYSDATE()**
Returns current date and time as YYYY-MM-DD HH:MM:SS
mysql> **SELECT SYSDATE() ;**
→ **2014-01-30 10:30:20**
- NOW()**
Returns current date and time as YYYY-MM-DD HH:MM:SS
mysql> **SELECT SYSDATE() FROM DUAL**
→ **2010-01-30 10:30:20**

Difference between SYSDATE() & NOW()
NOW() returns the time when command began to execute and does not change time during execution. Where as SYSDATE() changes its time continuously.

Date & Time Functions cont...

- DATE()**
Returns date part of the given date-time expression.
DATE (Dt)
mysql> **SELECT DATE('2008-12-31 01:02:03');**
→ **2008-12-32**
mysql> **SELECT DATE(SYSDATE());**
- YEAR()**
Returns year of the given date expression.
YEAR (Dt)
mysql> **SELECT YEAR('2008-12-31');** → **2008**
mysql> **SELECT YAER(DOB) FROM Student;**
- MONTH()**
Returns month of the given date expression.
MONTH (Dt)
mysql> **SELECT MONTH('2008-12-31');** → **12**
mysql> **SELECT MONTH(CURDATE());**

Date & Time Functions cont...

DAYOFMONTH()
Returns day of month of the given date expression.
DAYOFMONTH (Dt)
mysql> SELECT DAYOFMONTH('2008-12-31') ;
→ 31
mysql> SELECT DAYOFMONTH(CURDATE()) ;
mysql> SELECT DAYOFMONTH(DOB) FROM Student;

DAYNAME()
Returns the name of Week day of the given date expression.
DAYNAME (Dt)
mysql> SELECT DAYNAME('2008-12-31') ;
→ SUNDAY
mysql> SELECT DAYNAME(CURDATE()) ;
mysql> SELECT DAYNAME(DOB) FROM Student;

Date & Time Functions cont...

DAYOFWEEK()
Returns day of week i.e. 1- Sunday, 2- Tuesday.. etc. of given date.
DAYOFWEEK (Dt)
mysql> SELECT DAYOFWEEK('2008-12-31') ;
→ 1
mysql> SELECT DAYOFWEEK(CURDATE()) ;

DAYOFYEAR()
Returns the day of year of the given date expression.
DAYOFYAER (Dt)
mysql> SELECT DAYOFYAER('2010-02-05') ;
→ 36
mysql> SELECT DAYOFYAER(CURDATE()) ;
mysql> SELECT DAYOFYEAR(DOB) FROM Student;

Summery of Date & Time Functions

Name	Purpose	Example
CURDATE() / CURRENT_DATE()	Returns the current date in YYYY-MM-DD format.	Select CURDATE(); → 2013-10-02
NOW()	Returns the current date & Time as YYYY-MM-DD HH:MM:SS	Select NOW(); → 2013-10-02 11:30:02
SYSDATE()	Returns the current date & Time as YYYY-MM-DD HH:MM:SS	Select SYSDATE(); → 2013-10-02 11:30:10
DATE()	Returns the date part of a date-time expression.	Select DATE(SYSDATE()); → 2013-10-02
MONTH() / YEAR()	Returns the Month/Year from given date argument.	Select MONTH(2012-10-02); → 10
DAYNAME()	Returns the name of the weekday	Select DAYNAME(CURDATE()); → SUNDAY
DAYOFMONTH()	Returns the day of month (1-31).	Select DAYOFMONTH(CURDATE());
DAYOFWEEK()	Returns the day of week (1-7).	Select DAYOFWEEK(CURDATE());
DAYOFYEAR()	Returns the day of year(1-366).	Select DAYOFYEAR(CURDATE());

Aggregate Functions

SUM()
Returns sum of given column in the table.
SUM (<Field>)
mysql> SELECT SUM (Sal) FROM Emp;
mysql> SELECT SUM(Sal) FROM Emo WHERE City='Jaipur';

MIN()
Returns minimum value in the given column of table.
MIN (<Field>)
mysql> SELECT MIN (Sal) FROM Emp;
mysql> SELECT MIN(Sal) FROM Emp WHERE City='Jaipur';

MAX()
Returns maximum value in the given column of table.
MAX (<Field>)
mysql> SELECT MAX (Sal) FROM Emp;
mysql> SELECT MAX(Sal) FROM Emp WHERE City='Jaipur';

Aggregate Functions

AVG()
Returns average value of given column in the table.
AVG (<Field>)
mysql> SELECT AVG (Sal) FROM Emp;
mysql> SELECT AVG(Sal) FROM Emo WHERE City='Jaipur';

COUNT()
Returns number of values in the given column of table. It also reflect the number of record in the table.
COUNT (<Field| * >)
mysql> SELECT COUNT (Name) FROM Emp;
mysql> SELECT COUNT(Name) FROM Emp WHERE City='Jaipur';
mysql> SELECT COUNT (*) FROM Emp;
→ Number of records in the Emp table
mysql> SELECT COUNT(*) FROM Emp WHERE City='Jaipur';

Aggregate Functions

Name	Purpose	Example
SUM()	Returns the sum of given column.	Select SUM(Pay) from Emp; Select Sum(Pay), Sum(Net) from Emp;
MIN()	Returns the minimum value in the given column.	Select MIN(Pay) from Emp;
MAX()	Returns the maximum value in the given column.	Select MAX(Pay) from Emp;
AVG()	Returns the Average value of the given column.	Select AVG(Pay) from Emp;
COUNT()	Returns the total number of values/ records in given column.	Select COUNT(Name) from Emp; Select COUNT(*) from Emp;

Aggregate Functions should not be used with other columns which may have multiple values in the table. The following query is **Illogical and wrong**. Why? Think yourself...
→ Select sum(pay), name from Employee;