

CS122 Using Relational Databases and SQL Common Functions in MySQL

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Common Functions in Databases

- ◆ Numeric functions
- ◆ String functions
- ◆ Date and time functions
- ◆ NULL related functions
- ◆ *Aggregation functions*

Most functions are DBMS specific.

MySQL Functions

- ◆ <http://dev.mysql.com/doc/refman/5.0/en/functions.html>

Numeric Functions

- ◆ Precision functions
 - ceiling, floor, round, truncate
- ◆ Power and square root
 - power, pow, exp, sqrt
- ◆ Logarithmic functions
 - log, log2, log10, ln
- ◆ Angular functions
 - pi, sin, cos, tan, cot, asin, acos, atan
- ◆ Misc.
 - abs, sign, rand

Using Numeric Functions

- ◆ List the prices of the products after 3% discount

String Functions

- ◆ String length
 - length, char_length
- ◆ Concatenation
 - concat, concat_ws
- ◆ Format numbers
 - format
- ◆ Trim white spaces
 - ltrim, rtrim, trim
- ◆ Find substring
 - instr, locate, position
- ◆ Extract substring
 - mid, substring, substr, left, right
- ◆ Change to upper/lower case
 - upper, lower, ucase, lcase

Using String Functions

- ◆ List the names of the customers in the format of <First name> <Last name>, e.g. John Doe. Note that the first letter of the first name and last name should be capitalized.
- ◆ List the cities where the customers live.

Date and Time Types

- ◆ date – YYYY-MM-DD
- ◆ time – HH:MM:SS
- ◆ datetime – YYYY-MM-DD HH:MM:SS
- ◆ timestamp – YYYY-MM-DD HH:MM:SS

Data and Time Functions

- ◆ Format date/time to string
 - date_format
- ◆ Convert string to date/time
 - str_to_date
- ◆ Current date/time
 - current_date,
 - current_time,
 - current_timestamp,
 - now
- ◆ Extract date/time fields
 - extract, year,
 - month, day,
 - dayofmonth,
 - dayofweek, hour,
 - minute, second
- ◆ Manipulate date/time
 - date_add,
 - date_sub, addtime,
 - subtime

Format Date and Time

- ◆ http://dev.mysql.com/doc/refman/5.0/en/date-and-time-functions.html#function_date-format

date_format(date_ordered, '%M %d, %Y')

date_format(date_ordered, '%M/%d/%Y')

str_to_date('Jan 18 1968', '%b %d %Y')

Using Date and Time Functions

- ◆ List the orders that were placed in the last 10 days
- ◆ List the orders that were placed in the last month
- ◆ Find the products sold last year

NULL related functions

- ◆ ifnull(arg1, arg2)
 - Return arg1 if arg1 is not null
 - Return arg2 if arg1 is null

◆ Example:

```
select id, ifnull( date_shipped, 'Not shipped yet' ) from orders;
```

if () function

◆ if(arg1, arg2, arg3)

- Return arg2 if arg1 is true
- Return arg3 if arg1 is false

◆ Example:

```
select id, if( date_shipped is null,  
             'Not shipped yet', date_shipped ) from orders;
```