**SQL Date Functions**

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**SQL Dates**

NoteThe most difficult part when working with dates is to be sure that the format of the date you are trying to insert, matches the format of the date column in the database.

As long as your data contains only the date portion, your queries will work as expected. However, if a time portion is involved, it gets complicated.

Before talking about the complications of querying for dates, we will look at the most important built-in functions for working with dates.

**MySQL Date Functions**

The following table lists the most important built-in date functions in MySQL:

|  |  |
| --- | --- |
| **Function** | **Description** |
| [NOW()](http://www.w3schools.com/sql/func_now.asp) | Returns the current date and time |
| [CURDATE()](http://www.w3schools.com/sql/func_curdate.asp) | Returns the current date |
| [CURTIME()](http://www.w3schools.com/sql/func_curtime.asp) | Returns the current time |
| [DATE()](http://www.w3schools.com/sql/func_date.asp) | Extracts the date part of a date or date/time expression |
| [EXTRACT()](http://www.w3schools.com/sql/func_extract.asp) | Returns a single part of a date/time |
| [DATE\_ADD()](http://www.w3schools.com/sql/func_date_add.asp) | Adds a specified time interval to a date |
| [DATE\_SUB()](http://www.w3schools.com/sql/func_date_sub.asp) | Subtracts a specified time interval from a date |
| [DATEDIFF()](http://www.w3schools.com/sql/func_datediff_mysql.asp) | Returns the number of days between two dates |
| [DATE\_FORMAT()](http://www.w3schools.com/sql/func_date_format.asp) | Displays date/time data in different formats |

**SQL Server Date Functions**

The following table lists the most important built-in date functions in SQL Server:

|  |  |
| --- | --- |
| **Function** | **Description** |
| [GETDATE()](http://www.w3schools.com/sql/func_getdate.asp) | Returns the current date and time |
| [DATEPART()](http://www.w3schools.com/sql/func_datepart.asp) | Returns a single part of a date/time |
| [DATEADD()](http://www.w3schools.com/sql/func_dateadd.asp) | Adds or subtracts a specified time interval from a date |
| [DATEDIFF()](http://www.w3schools.com/sql/func_datediff.asp) | Returns the time between two dates |
| [CONVERT()](http://www.w3schools.com/sql/func_convert.asp) | Displays date/time data in different formats |

**SQL Date Data Types**

**MySQL** comes with the following data types for storing a date or a date/time value in the database:

* DATE - format YYYY-MM-DD
* DATETIME - format: YYYY-MM-DD HH:MM:SS
* TIMESTAMP - format: YYYY-MM-DD HH:MM:SS
* YEAR - format YYYY or YY

**SQL Server** comes with the following data types for storing a date or a date/time value in the database:

* DATE - format YYYY-MM-DD
* DATETIME - format: YYYY-MM-DD HH:MM:SS
* SMALLDATETIME - format: YYYY-MM-DD HH:MM:SS
* TIMESTAMP - format: a unique number

**Note:** The date types are chosen for a column when you create a new table in your database!

For an overview of all data types available, go to our complete [Data Types reference](http://www.w3schools.com/sql/sql_datatypes.asp).

**SQL Working with Dates**

NoteYou can compare two dates easily if there is no time component involved!

Assume we have the following "Orders" table:

|  |  |  |
| --- | --- | --- |
| **OrderId** | **ProductName** | **OrderDate** |
| 1 | Geitost | 2008-11-11 |
| 2 | Camembert Pierrot | 2008-11-09 |
| 3 | Mozzarella di Giovanni | 2008-11-11 |
| 4 | Mascarpone Fabioli | 2008-10-29 |

Now we want to select the records with an OrderDate of "2008-11-11" from the table above.

We use the following SELECT statement:

SELECT \* FROM Orders WHERE OrderDate='2008-11-11'

The result-set will look like this:

|  |  |  |
| --- | --- | --- |
| **OrderId** | **ProductName** | **OrderDate** |
| 1 | Geitost | 2008-11-11 |
| 3 | Mozzarella di Giovanni | 2008-11-11 |

Now, assume that the "Orders" table looks like this (notice the time component in the "OrderDate" column):

|  |  |  |
| --- | --- | --- |
| **OrderId** | **ProductName** | **OrderDate** |
| 1 | Geitost | 2008-11-11 13:23:44 |
| 2 | Camembert Pierrot | 2008-11-09 15:45:21 |
| 3 | Mozzarella di Giovanni | 2008-11-11 11:12:01 |
| 4 | Mascarpone Fabioli | 2008-10-29 14:56:59 |

If we use the same SELECT statement as above:

SELECT \* FROM Orders WHERE OrderDate='2008-11-11'

we will get no result! This is because the query is looking only for dates with no time portion.

**Tip:** If you want to keep your queries simple and easy to maintain, do not allow time components in your dates!

**SQL Server GETDATE() Function**

**Definition and Usage**

The GETDATE() function returns the current date and time from the SQL Server.

**Syntax**

GETDATE()

**Example**

The following SELECT statement:

SELECT GETDATE() AS CurrentDateTime

will result in something like this:

|  |
| --- |
| **CurrentDateTime** |
| 2008-11-11 12:45:34.243 |

**Note:** The time part above goes all the way to milliseconds.

**Example**

The following SQL creates an "Orders" table with a datetime column (OrderDate):

CREATE TABLE Orders  
(  
OrderId int NOT NULL PRIMARY KEY,  
ProductName varchar(50) NOT NULL,  
OrderDate datetime NOT NULL DEFAULT GETDATE()  
)

Notice that the OrderDate column specifies GETDATE() as the default value. As a result, when you insert a row into the table, the current date and time are automatically inserted into the column.

Now we want to insert a record into the "Orders" table:

INSERT INTO Orders (ProductName) VALUES ('Jarlsberg Cheese')

The "Orders" table will now look something like this:

|  |  |  |
| --- | --- | --- |
| **OrderId** | **ProductName** | **OrderDate** |
| 1 | Jarlsberg Cheese | 2008-11-11 13:23:44.657 |

**SQL Server DATEPART() Function**

**Definition and Usage**

The DATEPART() function is used to return a single part of a date/time, such as year, month, day, hour, minute, etc.

**Syntax**

DATEPART(datepart,date)

Where date is a valid date expression and datepart can be one of the following:

|  |  |
| --- | --- |
| **datepart** | **Abbreviation** |
| year | yy, yyyy |
| quarter | qq, q |
| month | mm, m |
| dayofyear | dy, y |
| day | dd, d |
| week | wk, ww |
| weekday | dw, w |
| hour | hh |
| minute | mi, n |
| second | ss, s |
| millisecond | ms |
| microsecond | mcs |
| nanosecond | ns |

**Example**

Assume we have the following "Orders" table:

|  |  |  |
| --- | --- | --- |
| **OrderId** | **ProductName** | **OrderDate** |
| 1 | Jarlsberg Cheese | 2008-11-11 13:23:44.657 |

The following SELECT statement:

SELECT DATEPART(yyyy,OrderDate) AS OrderYear,  
DATEPART(mm,OrderDate) AS OrderMonth,  
DATEPART(dd,OrderDate) AS OrderDay,  
FROM Orders  
WHERE OrderId=1

will result in this:

|  |  |  |
| --- | --- | --- |
| **OrderYear** | **OrderMonth** | **OrderDay** |
| 2008 | 11 | 11 |

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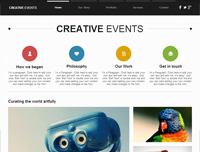
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|  |

**SQL Server DATEADD() Function**

**Definition and Usage**

The DATEADD() function is adds or subtracts a specified time interval from a date.

**Syntax**

DATEADD(datepart,number,date)

Where date is a valid date expression and number is the number of interval you want to add. The number can either be positive, for dates in the future, or negative, for dates in the past.

datepart can be one of the following:

|  |  |
| --- | --- |
| **datepart** | **Abbreviation** |
| year | yy, yyyy |
| quarter | qq, q |
| month | mm, m |
| dayofyear | dy, y |
| day | dd, d |
| week | wk, ww |
| weekday | dw, w |
| hour | hh |
| minute | mi, n |
| second | ss, s |
| millisecond | ms |
| microsecond | mcs |
| nanosecond | ns |

**Example**

Assume we have the following "Orders" table:

|  |  |  |
| --- | --- | --- |
| **OrderId** | **ProductName** | **OrderDate** |
| 1 | Jarlsberg Cheese | 2008-11-11 13:23:44.657 |

Now we want to add 45 days to the "OrderDate", to find the payment date.

We use the following SELECT statement:

SELECT OrderId,DATEADD(day,45,OrderDate) AS OrderPayDate  
FROM Orders

Result:

|  |  |
| --- | --- |
| **OrderId** | **OrderPayDate** |
| 1 | 2008-12-26 13:23:44.657 |

**SQL Server DATEDIFF() Function**

**Definition and Usage**

The DATEDIFF() function returns the time between two dates.

**Syntax**

DATEDIFF(datepart,startdate,enddate)

Where startdate and enddate are valid date expressions and datepart can be one of the following:

|  |  |
| --- | --- |
| **datepart** | **Abbreviation** |
| year | yy, yyyy |
| quarter | qq, q |
| month | mm, m |
| dayofyear | dy, y |
| day | dd, d |
| week | wk, ww |
| weekday | dw, w |
| hour | hh |
| minute | mi, n |
| second | ss, s |
| millisecond | ms |
| microsecond | mcs |
| nanosecond | ns |

**Example**

Now we want to get the number of days between two dates.

We use the following SELECT statement:

SELECT DATEDIFF(day,'2008-06-05','2008-08-05') AS DiffDate

Result:

|  |
| --- |
| **DiffDate** |
| 61 |

**Example**

Now we want to get the number of days between two dates (notice that the second date is "earlier" than the first date, and will result in a negative number).

We use the following SELECT statement:

SELECT DATEDIFF(day,'2008-08-05','2008-06-05') AS DiffDate

Result:

|  |
| --- |
| **DiffDate** |
| -61 |

**SQL Server CONVERT() Function**

**Definition and Usage**

The CONVERT() function is a general function that converts an expression of one data type to another.

The CONVERT() function can be used to display date/time data in different formats.

**Syntax**

CONVERT(*data\_type(length)*,*expression*,*style*)

|  |  |
| --- | --- |
| **Value** | **Description** |
| *data\_type(length)* | Specifies the target data type (with an optional length) |
| *expression* | Specifies the value to be converted |
| *style* | Specifies the output format for the date/time |

The table below represent the style values for datetime or smalldatetime conversion to character data:

|  |  |  |  |
| --- | --- | --- | --- |
| **Value (century yy)** | **Value (century yyyy)** | **Input/Output** | **Standard** |
| - | 0 or 100 | mon dd yyyy hh:miAM (or PM) | Default |
| 1 | 101 | mm/dd/yy | USA |
| 2 | 102 | yy.mm.dd | ANSI |
| 3 | 103 | dd/mm/yy | British/French |
| 4 | 104 | dd.mm.yy | German |
| 5 | 105 | dd-mm-yy | Italian |
| 6 | 106 | dd mon yy |  |
| 7 | 107 | Mon dd, yy |  |
| 8 | 108 | hh:mm:ss |  |
| - | 9 or 109 | mon dd yyyy hh:mi:ss:mmmAM (or PM) | Default+millisec |
| 10 | 110 | mm-dd-yy | USA |
| 11 | 111 | yy/mm/dd | Japan |
| 12 | 112 | Yymmdd | ISO |
| - | 13 or 113 | dd mon yyyy hh:mi:ss:mmm (24h) |  |
| 14 | 114 | hh:mi:ss:mmm (24h) |  |
| - | 20 or 120 | yyyy-mm-dd hh:mi:ss (24h) |  |
| - | 21 or 121 | yyyy-mm-dd hh:mi:ss.mmm (24h) |  |
| - | 126 | yyyy-mm-ddThh:mi:ss.mmm (no spaces) | ISO8601 |
| - | 130 | dd mon yyyy hh:mi:ss:mmmAM | Hijiri |
| - | 131 | dd/mm/yy hh:mi:ss:mmmAM | Hijiri |

**Example**

The following script uses the CONVERT() function to display different formats. We will use the GETDATE() function to get the current date/time:

CONVERT(VARCHAR(19),GETDATE())  
CONVERT(VARCHAR(10),GETDATE(),10)  
CONVERT(VARCHAR(10),GETDATE(),110)  
CONVERT(VARCHAR(11),GETDATE(),6)  
CONVERT(VARCHAR(11),GETDATE(),106)  
CONVERT(VARCHAR(24),GETDATE(),113)

The result would look something like this:

Nov 04 2011 11:45 PM  
11-04-11  
11-04-2011  
04 Nov 11  
04 Nov 2011  
04 Nov 2011 11:45:34:243