# **MySQL – SQL Modes**

To change the SQL mode at runtime, set the global or session sql\_mode system variable using a SET statement:

SET GLOBAL sql\_mode = 'modes';

SET SESSION sql\_mode = 'modes';

| SQL Mode | Traditional?[[1]](#endnote-1) | Description |
| --- | --- | --- |
| ANSI |  | This mode changes syntax and behavior to conform more closely to standard SQL. It is one of the special combination modes. |
| STRICT\_TRANS\_TABLES | Yes | If a value could not be inserted as given into a transactional table, abort the statement. For a nontransactional table, abort the statement if the value occurs in a single-row statement or the first row of a multiple-row statement. More details are given later in this section. |
| [NO\_ENGINE\_SUBSTITUTION](https://dev.mysql.com/doc/refman/5.7/en/sql-mode.html#sqlmode_no_engine_substitution) | Yes | Control automatic substitution of the default storage engine when a statement such as [CREATE TABLE](https://dev.mysql.com/doc/refman/5.7/en/create-table.html) or [ALTER TABLE](https://dev.mysql.com/doc/refman/5.7/en/alter-table.html) specifies a storage engine that is disabled or not compiled in.  By default, [NO\_ENGINE\_SUBSTITUTION](https://dev.mysql.com/doc/refman/5.7/en/sql-mode.html#sqlmode_no_engine_substitution) is enabled.  Because storage engines can be pluggable at runtime, unavailable engines are treated the same way:  With [NO\_ENGINE\_SUBSTITUTION](https://dev.mysql.com/doc/refman/5.7/en/sql-mode.html#sqlmode_no_engine_substitution) disabled, for [CREATE TABLE](https://dev.mysql.com/doc/refman/5.7/en/create-table.html) the default engine is used and a warning occurs if the desired engine is unavailable. For [ALTER TABLE](https://dev.mysql.com/doc/refman/5.7/en/alter-table.html), a warning occurs and the table is not altered.  With [NO\_ENGINE\_SUBSTITUTION](https://dev.mysql.com/doc/refman/5.7/en/sql-mode.html#sqlmode_no_engine_substitution) enabled, an error occurs and the table is not created or altered if the desired engine is unavailable. |
| [STRICT\_ALL\_TABLES](https://dev.mysql.com/doc/refman/5.7/en/sql-mode.html#sqlmode_strict_all_tables) | Yes | Enable strict SQL mode for all storage engines. Invalid data values are rejected.  From MySQL 5.7.4 through 5.7.7, [STRICT\_ALL\_TABLES](https://dev.mysql.com/doc/refman/5.7/en/sql-mode.html#sqlmode_strict_all_tables) includes the effect of the [ERROR\_FOR\_DIVISION\_BY\_ZERO](https://dev.mysql.com/doc/refman/5.7/en/sql-mode.html#sqlmode_error_for_division_by_zero), [NO\_ZERO\_DATE](https://dev.mysql.com/doc/refman/5.7/en/sql-mode.html#sqlmode_no_zero_date), and [NO\_ZERO\_IN\_DATE](https://dev.mysql.com/doc/refman/5.7/en/sql-mode.html#sqlmode_no_zero_in_date) modes. |
| [STRICT\_TRANS\_TABLES](https://dev.mysql.com/doc/refman/5.7/en/sql-mode.html#sqlmode_strict_trans_tables) |  | Enable strict SQL mode for transactional storage engines, and when possible for nontransactional storage engines. [STRICT\_TRANS\_TABLES](https://dev.mysql.com/doc/refman/5.7/en/sql-mode.html#sqlmode_strict_trans_tables) includes the effect of the [ERROR\_FOR\_DIVISION\_BY\_ZERO](https://dev.mysql.com/doc/refman/5.7/en/sql-mode.html#sqlmode_error_for_division_by_zero), [NO\_ZERO\_DATE](https://dev.mysql.com/doc/refman/5.7/en/sql-mode.html#sqlmode_no_zero_date), and [NO\_ZERO\_IN\_DATE](https://dev.mysql.com/doc/refman/5.7/en/sql-mode.html#sqlmode_no_zero_in_date) modes. |
| NO\_ZERO\_IN\_DATE | Yes | The [NO\_ZERO\_IN\_DATE](https://dev.mysql.com/doc/refman/5.6/en/sql-mode.html#sqlmode_no_zero_in_date) mode affects whether the server permits dates in which the year part is nonzero but the month or day part is 0.  Deprecated in 5.7 |
| NO\_ZERO\_DATE | Yes | The [NO\_ZERO\_DATE](https://dev.mysql.com/doc/refman/5.6/en/sql-mode.html#sqlmode_no_zero_date) mode affects whether the server permits '0000-00-00' as a valid date. Its effect also depends on whether strict SQL mode is enabled.  Deprecated in 5.7 |
| ERROR\_FOR\_DIVISION\_BY\_ZERO | Yes | The [ERROR\_FOR\_DIVISION\_BY\_ZERO](https://dev.mysql.com/doc/refman/5.6/en/sql-mode.html#sqlmode_error_for_division_by_zero) mode affects handling of division by zero, which includes [MOD(N,0)](https://dev.mysql.com/doc/refman/5.6/en/mathematical-functions.html#function_mod). For data-change operations ([INSERT](https://dev.mysql.com/doc/refman/5.6/en/insert.html), [UPDATE](https://dev.mysql.com/doc/refman/5.6/en/update.html)), its effect also depends on whether strict SQL mode is enabled.   * If this mode is not enabled, division by zero inserts NULL and produces no warning. * If this mode is enabled, division by zero inserts NULL and produces a warning. * If this mode and strict mode are enabled, division by zero produces an error, unless IGNORE is given as well. For INSERT IGNORE and UPDATE IGNORE, division by zero inserts NULL and produces a warning.   Deprecated on 5.7 |
| NO\_AUTO\_CREATE\_USER | Yes | Prevent the [GRANT](https://dev.mysql.com/doc/refman/5.6/en/grant.html) statement from automatically creating new users if it would otherwise do so, unless authentication information is specified. The statement must specify a nonempty password using IDENTIFIED BY or an authentication plugin using IDENTIFIED WITH. |

1. Make MySQL behave like a “traditional” SQL database system. A simple description of this mode is “give an error instead of a warning” when inserting an incorrect value into a column. It is one of the special combination modes listed at the end of this section. [↑](#endnote-ref-1)