General MySQL terms are found in the chapter, appendices, or index of the textbook.

Term	Definition
Data Types **Appendix B**	The categories of numeric and string data values that MySQL can represent Each type is given below with the following: • specific meaning and length • attributes • range • default value • storage requirements • comparisons • possible synonyms * Square brackets ([]) in syntax descriptions indicate optional information. *M* represents the maximum display width for integer types, the precision (number of significant digits) for floating-point and decimal types, the number of bits for BIT, and the maximum length for string types. In string column definitions, the length is specified in bytes for binary string types and in characters for non-binary string types. *D* represents the scale (number of digits following the decimal point) for numeric types that have a fractional part. *D* must be less than or equal to *M,* or an error occurs. *fsp* represents the fractional seconds precision for temporal types that permit fractional seconds.
BINARY, VARBINARY, and BLOB	These are binary string types. A binary string is a sequence of bytes, and its length is measured in bytes. Binary strings have no character set, and values are compared based on their numeric byte values.

Term	Definition
BINARY[(*M*)]	**Meaning.** A fixed-length binary string 0 to *M* bytes long. *M* should be an integer from 0 to 255. If omitted, *M defaults* to 1. **Permitted attributes.** None, other than the global attributes **Permitted length.** 0 to *M* bytes **Default value.** NULL if the column can be NULL; "(empty string) if NOT NULL **Storage required.** *M* bytes **Comparisons.** Byte by byte, based on numeric byte values
BIT[(M)]	**Meaning.** A bit-field value. *M* should be an integer from 1 to 64, indicating the number of bits per value. If omitted, *M* defaults to 1. **Permitted attributes.** None, other than the global attributes **Default value.** NULL if the column can be NULL; 0 if NOTNULL **Storage required.** Approximately $(M+7)/8$ bytes
BLOB[(*M*)]	**Meaning.** A normal-sized BLOB (binary string) value **Permitted attributes.** None, other than the global attributes **Permitted length.** 0 to 65535 (0 to $2^{16}-1$) bytes. If a length *M* is given, it is used to choose the appropriate data type and then discarded. For lengths that require a maximum of 1 to 65535 bytes, the data type becomes BLOB. For lengths that require a maximum of more than 65535 bytes, the data type becomes whichever of MEDIUMBLOB or LONGBLOB is required to accommodate values of the given number of bytes. **Default value.** NULL if the column can be NULL; "(empty string) if NOT NULL **Storage required.** Length of value (in bytes), plus a 2-byte prefix to record the length **Comparisons.** Byte by byte, based on numeric byte values
CHAR, VARCHAR, and TEXT	These types are non-binary string types. A non-binary string is a sequence of characters. It has a character set and collation. The character set defines the permitted characters for the data type, and the collation defines the character sort order. A length as specified in a non-binary string column definition indicates the maximum number of characters the column should be able to hold.

Term	Definition
DATE	• **Meaning.** A date, in '*CCYY-MM-DD*' format • **Permitted attributes.** None, other than the global attributes • **Range.** '1000-01-01' to '9999-12-31' • **Zero value.** '0000-00-00' • **Default value.** NULL if the column can be NULL; '0000-00-00' if NOTNULL • **Storage required.** 3 bytes.
DATETIME[(fsp)]	• **Meaning.** A date and time value, in '*CCYY-MM-DD hh:mm:ss[.uuuuuu]*' format. As of MySQL 5.6.4, *fsp* is permitted to specify a fractional seconds precision from 0 to 6. If omitted, *fsp* defaults to 0. • **Permitted attributes.** Before MySQL 5.6.5, no attributes were permitted, other than the global attributes. As of 5.6.5, DATETIME columns also can include DEFAULT CURRENT_TIMESTAMP, or ON UPDATE CURRENT_TIMESTAMP, or both. The meanings are as for TIMESTAMP. See also Section 3.2.6.6 ''Automatic Properties for Temporal Types.'' • **Range.** '1000-01-01 00:00:00[.000000]' to '9999-12-31 23:59:59[.999999]' • **Zero value.** '0000-00-00 00:00:00[.000000]' • **Default value.** NULL if the column can be NULL; '0000-00-00 00:00:00[.000000]' if NOT NULL • **Storage required.** Before MySQL 5.6.4, 8 bytes; thereafter, 5 bytes plus storage for fractional seconds

Term	Definition
DECIMAL[(*M*,[*D*])]	• **Meaning.** A fixed-point number. *M* is the number of significant digits that values can have, from 1 to 65. *D* is the number of decimal places, from 0 to 30. If *D* is 0, column values have no decimal point or fractional part. If omitted, *M* and *D* default to 10 and 0, respectively. • **Permitted attributes.** UNSIGNED, ZEROFILL • **Range.** The range for a given DECIMAL column is determined by *M* and *D* and whether the UNSIGNED attribute is given. • **Default value.** NULL if the column can be NULL;, 0 if NOT NULL • **Storage required.** Storage depends on the number of digits on the left and right sides of the decimal point. For each side, 4 bytes are required for each multiple of nine digits, plus 1 to 4 bytes if there are any remaining digits. Storage per value is the sum of the left and right side storage. **Synonyms.** NUMERIC[(*M*,[*D*])], DEC[(*M*,[*D*])], and FIXED[(*M*,[*D*])].
DOUBLE[(*M*,*D*)]	• **Meaning.** A large floating-point number; double-precision (more precise than FLOAT). *M* and *D* have the same meaning as for FLOAT. • **Permitted attributes.** UNSIGNED, ZEROFILL • **Range.** Minimum nonzero values are ±2.2250738585072014E−308, while maximum nonzero values are ±1.7976931348623157E+308. Negative values are prohibited if the column is UNSIGNED. • **Default value.** NULL I if the column can be NULL;, 0 if NOT NULL. • **Storage required.** 8 bytes **Synonyms.** DOUBLE PRECISION[(*M*,*D*)] is a synonym for DOUBLE[(*M*,*D*)], as is REAL[(*M*,*D*)] if the REAL_AS_FLOAT SQL mode is not enabled. FLOAT8 is a synonym for DOUBLE with no *M* or *D* specifiers.
ENUM('*value1*', '*value2*',...)	• **Meaning.** An enumeration; Column values can be assigned exactly one member of the value list. • **Permitted attributes.** CHARACTER SET, COLLATE • **Default value.** NULL if the column can be NULL; first enumeration value if NOT NULL • **Storage required.** 1 byte for enumerations with 1 to 255 members; 2 bytes for enumerations with 256 to 65535 members • **Comparisons.** Based on the numeric value of column values **Note:** In the data type definition, any trailing spaces present in member values are ignored.

Term	Definition
FLOAT(*p*)	• **Meaning.** A floating-point number. In standard SQL, the precision *p* represents the minimum required bits of precision. In MySQL, *p* is used only to determine whether the data type is single -precision or double -precision: 　○ For values of *p* from 0 to 24, the type is single-precision, equivalent to FLOAT with no *M* or *D* specifiers. 　○ For values of *p* from 25 to 53, the type is double -precision, equivalent to DOUBLE with no *M* or *D* specifiers. 　○ Values of *p* outside the range of 0 to 53 are illegal. • **Permitted attributes.** UNSIGNED, ZEROFILL • **Range.** See the FLOAT and DOUBLE descriptions in this section. • **Default value.** NULL if the column can be NULL;, 0 if NOT NULL • **Storage required.** 4 bytes for single-precision, 8 bytes for double-precision
INT[(*M*)]	• **Meaning.** A normal-sized integer. *M* is the maximum display width, from 1 to 255. If omitted, *M* defaults to 11 (or 10 if the column is UNSIGNED). • **Permitted attributes.** AUTO_INCREMENT, SERIAL DEFAULT VALUE, UNSIGNED, ZEROFILL • **Range.** −2147483648 to 2147483647 (-2^{31} to $2^{31}-1$), or 0 to 4294967295 (0 to $2^{32}-1$) if UNSIGNED • **Default value.** NULL if the column can be NULL;, 0 if NOT NULL. • **Storage required.** 4 bytes **Synonyms.** INTEGER[(*M*)] and INT4[(*M*)].
SET('*value1*', '*value2*',...)	• **Meaning.** A set. Column values can be assigned zero or more members of the value list. • **Permitted attributes.** CHARACTER SET, COLLATE • **Default value.** NULL if the column can be NULL; "(empty set) if NOT NULL • **Storage required.** 1 byte (for sets with 1 to 8 members), 2 bytes (9 to 16 members), 3 bytes (17 to 24 members), 4 bytes (25 to 32 members), or 8 bytes (33 to 64 members) • **Comparisons.** Based on the numeric value of column values. **Note.** In the data type definition, any trailing spaces present in member values are ignored.

Term	Definition
TEXT[(*M*)]	• **Meaning.** A normal-sized TEXT (non-binary string) value • **Permitted attributes.** BINARY, CHARACTER SET, COLLATE • **Permitted length.** 0 to 65535 (0 to $2^{16}-1$) bytes; the number of characters permitted is less if the value contains multi-byte characters. If a length *M* is given, it is used to choose the appropriate data type and then discarded. The length *M* and the character set are used to determine the maximum possible length in bytes for column values. For lengths that require a maximum of 1 to 65535 bytes, the data type becomes TEXT. For lengths that require a maximum of more than 65535 bytes, the data type becomes whichever of MEDIUMTEXT or LONGTEXT is required to accommodate values of the given number of bytes. • **Default value.** NULL if the column can be NULL; "(empty string) if NOT NULL • **Storage required.** Length of value (in bytes), plus a 2-byte prefix to record the length • **Comparisons.** Character by character, based on the column collation
TIME [(fsp)]	• **Meaning.** A time, in '*hh:mm:ss[.uuuuuu]*' format (or '*hh:mm:ss[.uuuuuu]*' for negative values). As of MySQL 5.6.4, *fsp* is permitted to specify a fractional seconds precision from 0 to 6. If omitted, *fsp* defaults to 0. • **Permitted attributes.** None, other than the global attributes • **Range.** '-838:59:59[.000000]' to '838:59:59[.000000]'

Term	Definition
VARCHAR(*M*)	• **Meaning.** A variable-length non-binary string 0 to *M* characters long. *M* should be an integer from 0 to 65535. • **Permitted attributes.** BINARY, CHARACTER SET, COLLATE • **Permitted length.** 0 to *M* characters; possibly less as indicated in the note below • **Default value.** NULL if the column can be NULL; "(empty string) if NOT NULL • **Storage required.** Length of value (in bytes), plus a 1-byte or 2-byte prefix to record the length. The prefix requires 1 byte if the maximum length of column values in bytes is less than 256, and it requires 2 bytes otherwise. • **Comparisons.** Character by character, based on the column collation **Synonyms.** CHAR VARYING(*M*). NVARCHAR(*M*), NCHAR VARYING(*M*), and NATIONAL CHAR VARYING(*M*) are synonyms for VARCHAR(*M*) CHARACTER SET utf8 **Note:** In practice, the maximum length of a VARCHAR column is limited to 65535 bytes, and possibly less depending on storage engine internal row-size limits, whether the column character set is single-byte or multi-byte, and the space required by other columns in the table.