ORACLE SQL TIPS, TRICKS AND HACKS

EVERYTHING ORACLE SQL

Cheat Sheet: Format Models

Number Format Elements:

Element	Example	Description
, (comma)	9,999	Returns a comma in the specified position. You can specify multiple commas in a number format model. Restrictions: A comma element cannot begin a number format model. A comma cannot appear to the right of a decimal character or period in a number format model.
. (period)	99.99	Returns a decimal point, which is a period (.) in the specified position. Restriction: You can specify only one period in a number format model.
$	$9999	Returns value with a leading dollar sign.
0	0999 9990	Returns leading zeros. Returns trailing zeros.
9	9999	Returns value with the specified number of digits with a leading space if positive or with a leading minus if negative. Leading zeros are blank, except for a zero value, which returns a zero for the integer part of the fixed-point number.
B	B9999	Returns blanks for the integer part of a fixed-point number when the integer part is zero (regardless of zeros in the format model).
C	C999	Returns in the specified position the ISO currency symbol (the current value of the NLS_ISO_CURRENCY parameter).
D	99D99	Returns in the specified position the decimal character, which is the current value of the NLS_NUMERIC_CHARACTER parameter. The default is a period (.). Restriction: You can specify only one decimal character in a number format model.
EEEE	9.9EEEE	Returns a value using in scientific notation.
G	9G999	Returns in the specified position the group separator (the current value of the NLS_NUMERIC_CHARACTER parameter). You can specify multiple group separators in a number format model.

		Restriction: A group separator cannot appear to the right of a decimal character or period in a number format model.
L	L999	Returns in the specified position the local currency symbol (the current value of the NLS_CURRENCY parameter).
MI	9999MI	Returns negative value with a trailing minus sign (-). Returns positive value with a trailing blank. Restriction: The MI format element can appear only in the last position of a number format model.
PR	9999PR	Returns negative value in <angle brackets>. Returns positive value with a leading and trailing blank. Restriction: The PR format element can appear only in the last position of a number format model.
RN rn	RN rn	Returns a value as Roman numerals in uppercase. Returns a value as Roman numerals in lowercase. Value can be an integer between 1 and 3999.
S	S9999 9999S	Returns negative value with a leading minus sign (-). Returns positive value with a leading plus sign (+). Returns negative value with a trailing minus sign (-). Returns positive value with a trailing plus sign (+). Restriction: The S format element can appear only in the first or last position of a number format model.
TM	TM	The text minimum number format model returns (in decimal output) the smallest number of characters possible. This element is case insensitive. The default is TM9, which returns the number in fixed notation unless the output exceeds 64 characters. If the output exceeds 64 characters, then Oracle Database automatically returns the number in scientific notation. Restrictions: You cannot precede this element with any other element.

		You can follow this element only with one 9 or one E (or e), but not with any combination of these. The following statement returns an error: SELECT TO_CHAR(1234, 'TM9e') FROM DUAL;
U	U9999	Returns in the specified position the Euro (or other) dual currency symbol, determined by the current value of the NLS_DUAL_CURRENCY parameter.
V	999V99	Returns a value multiplied by 10^n (and if necessary, round it up), where n is the number of 9's after the V.
X	XXXX xxxx	Returns the hexadecimal value of the specified number of digits. If the specified number is not an integer, then Oracle Database rounds it to an integer. Restrictions: This element accepts only positive values or 0. Negative values return an error. You can precede this element only with 0 (which returns leading zeroes) or FM. Any other elements return an error. If you specify neither 0 nor FM with X, then the return always has one leading blank. Refer to the format model modifier FM for more information.

Datetime Format Elements:

Element	TO_* datetime functions?	Description
- / , . ; : "text"	Yes	Punctuation and quoted text is reproduced in the result.
AD A.D.	Yes	AD indicator with or without periods.
AM A.M.	Yes	Meridian indicator with or without periods.
BC B.C.	Yes	BC indicator with or without periods.

CC SCC		Century. If the last 2 digits of a 4-digit year are between 01 and 99 (inclusive), then the century is one greater than the first 2 digits of that year. If the last 2 digits of a 4-digit year are 00, then the century is the same as the first 2 digits of that year. For example, 2002 returns 21; 2000 returns 20.
D	Yes	Day of week (1-7). This element depends on the NLS territory of the session.
DAY	Yes	Name of day.
DD	Yes	Day of month (1-31).
DDD	Yes	Day of year (1-366).
DL	Yes	Returns a value in the long date format, which is an extension of the Oracle Database DATE format, determined by the current value of the NLS_DATE_FORMAT parameter. Makes the appearance of the date components (day name, month number, and so forth) depend on the NLS_TERRITORY and NLS_LANGUAGE parameters. For example, in the AMERICAN_AMERICA locale, this is equivalent to specifying the format 'fmDay, Month dd, yyyy'. In the GERMAN_GERMANY locale, it is equivalent to specifying the format 'fmDay, dd. Month yyyy'. Restriction: You can specify this format only with the TS element, separated by white space.
DS	Yes	Returns a value in the short date format. Makes the appearance of the date components (day name, month number, and so forth) depend on the NLS_TERRITORY and NLS_LANGUAGE parameters. For example, in the AMERICAN_AMERICA locale, this is equivalent to specifying the format 'MM/DD/RRRR'. In the ENGLISH_UNITED_KINGDOM locale, it is equivalent to specifying the format 'DD/MM/RRRR'. Restriction: You can specify this format only with the TS element, separated by white space.
DY	Yes	Abbreviated name of day.
E	Yes	Abbreviated era name (Japanese Imperial, ROC Official, and Thai Buddha calendars).
EE	Yes	Full era name (Japanese Imperial, ROC Official, and Thai Buddha calendars).

FF [1..9]	Yes	Fractional seconds; no radix character is printed. Use the X format element to add the radix character. Use the numbers 1 to 9 after FF to specify the number of digits in the fractional second portion of the datetime value returned. If you do not specify a digit, then Oracle Database uses the precision specified for the datetime data type or the data type's default precision. Valid in timestamp and interval formats, but not in DATE formats. Examples: 'HH:MI:SS.FF' SELECT TO_CHAR(SYSTIMESTAMP, 'SS.FF3') from DUAL;
FM	Yes	Returns a value with no leading or trailing blanks. See Also: Additional discussion on this format model modifier in the Oracle Database SQL Language Reference
FX	Yes	Requires exact matching between the character data and the format model. See Also: Additional discussion on this format model modifier in the Oracle Database SQL Language Reference
HH HH12	Yes	Hour of day (1-12).
HH24	Yes	Hour of day (0-23).
IW		Calendar week of year (1-52 or 1-53), as defined by the ISO 8601 standard. A calendar week starts on Monday. The first calendar week of the year includes January 4. The first calendar week of the year may include December 29, 30, and 31. The last calendar week of the year may include January 1, 2, and 3.
IYYY		4-digit year of the year containing the calendar week, as defined by the ISO 8601 standard.
IYY IY I		Last 3, 2, or 1 digit(s) of the year containing the calendar week, as defined by the ISO 8601 standard.
J	Yes	Julian day; the number of days since January 1, 4712 BC. Number specified with J must be integers.
MI	Yes	Minute (0-59).

MM	Yes	Month (01-12; January = 01).
MON	Yes	Abbreviated name of month.
MONTH	Yes	Name of month.
PM P.M.	Yes	Meridian indicator with or without periods.
Q		Quarter of year (1, 2, 3, 4; January - March = 1).
RM	Yes	Roman numeral month (I-XII; January = I).
RR	Yes	Lets you store 20th century dates in the 21st century using only two digits.
RRRR	Yes	Round year. Accepts either 4-digit or 2-digit input. If 2-digit, provides the same return as RR. If you do not want this functionality, then enter the 4-digit year.
SS	Yes	Second (0-59).
SSSSS	Yes	Seconds past midnight (0-86399).
TS	Yes	Returns a value in the short time format. Makes the appearance of the time components (hour, minutes, and so forth) depend on the NLS_TERRITORY and NLS_LANGUAGE initialization parameters. Restriction: You can specify this format only with the DL or DS element, separated by white space.
TZD	Yes	Daylight saving information. The TZD value is an abbreviated time zone string with daylight saving information. It must correspond with the region specified in TZR. Valid in timestamp and interval formats, but not in DATE formats. Example: PST (for US/Pacific standard time); PDT (for US/Pacific daylight time).
TZH	Yes	Time zone hour. (See TZM format element.) Valid in timestamp and interval formats, but not in DATE formats. Example: 'HH:MI:SS.FFTZH:TZM'.
TZM	Yes	Time zone minute. (See TZH format element.) Valid in timestamp and interval formats, but not in DATE formats.

		Example: 'HH:MI:SS.FFTZH:TZM'.
TZR	Yes	Time zone region information. The value must be one of the time zone region names supported in the database. Valid in timestamp and interval formats, but not in DATE formats. Example: US/Pacific
WW		Week of year (1-53) where week 1 starts on the first day of the year and continues to the seventh day of the year.
W		Week of month (1-5) where week 1 starts on the first day of the month and ends on the seventh.
X	Yes	Local radix character. Example: 'HH:MI:SSXFF'.
Y,YYY	Yes	Year with comma in this position.
YEAR SYEAR		Year, spelled out; S prefixes BC dates with a minus sign (-).
YYYY SYYYY	Yes	4-digit year; S prefixes BC dates with a minus sign.
YYY YY Y	Yes	Last 3, 2, or 1 digit(s) of year.

Format Model Modifiers:

FM

Fill mode. Oracle uses trailing blank characters and leading zeroes to fill format elements to a constant width. The width is equal to the display width of the largest element for the relevant format model:

- Numeric elements are padded with leading zeros to the width of the maximum value allowed for the element. For example, the `YYYY` element is padded to four digits (the length of '9999'), `HH24` to two digits (the length of '23'), and `DDD` to three digits (the length of '366').
- The character elements `MONTH`, `MON`, `DAY`, and `DY` are padded with trailing blanks to the width of the longest full month name, the longest abbreviated month name, the longest full date name, or the longest abbreviated day name, respectively, among valid names determined by the values of `NLS_DATE_LANGUAGE` and `NLS_CALENDAR` parameters. For example, when `NLS_DATE_LANGUAGE` is `AMERICAN` and `NLS_CALENDAR` is `GREGORIAN` (the default), the largest element for `MONTH` is `SEPTEMBER`, so all values of the `MONTH` format element are padded to nine display characters. The values of the `NLS_DATE_LANGUAGE` and `NLS_CALENDAR` parameters are specified in the third argument to `TO_CHAR` and `TO_*` datetime functions or they are retrieved from the NLS environment of the current session.
- The character element RM is padded with trailing blanks to the length of 4, which is the length of 'viii'.
- Other character elements and spelled-out numbers (`SP`, `SPTH`, and `THSP` suffixes) are not padded.

The `FM` modifier suppresses the above padding in the return value of the `TO_CHAR` function.

FX

Format exact. This modifier specifies exact matching for the character argument and datetime format model of a `TO_DATE` function:

- Punctuation and quoted text in the character argument must exactly match (except for case) the corresponding parts of the format model.
- The character argument cannot have extra blanks. Without `FX`, Oracle ignores extra blanks.
- Numeric data in the character argument must have the same number of digits as the corresponding element in the format model. Without `FX`, numbers in the character argument can omit leading zeros.

  When `FX` is enabled, you can disable this check for leading zeros by using the `FM` modifier as well.

If any portion of the character argument violates any of these conditions, then Oracle returns an error message.