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Database Programming with SQL  
5-1: Conversion Functions  
Practice Activities

• Provide an example of an explicit data-type conversion and an implicit data-type conversion

• Explain why it is important, from a business perspective, for a language to have built-in data conversion capabilities

• Construct a SQL query that correctly applies TO\_CHAR, TO\_NUMBER, and TO\_DATE single row functions to produce a desired result

• Apply the appropriate date and/or character format model to produce a desired output

• Explain and apply the use of YY and RR to return the correct year as stored in the database Vocabulary Identify the vocabulary word for each definition

**Vocabulary**

Identify the vocabulary word for each definition below.

1. Used for text and character data of fixed length, including numbers, dashes, and special characters.

* Char

1. Used to remove padded blanks or to suppress leading zeros Functions that convert a value from one datatype to another. Used to store variable-length numeric data.

* Trim

1. Used for character data of variable length, including numbers, special characters, and dashes.

* Varchar2

1. Used for date and time values.

* Date

1. Converts dates or numbers to character strings with optional formatting

* To\_char

1. Century value depends on the specified year and the last two digits of the current year

* RR

1. Converts a character string containing digits to a number with optional formatting Numeric day of the month

* To\_number

1. Converts a character string representing a date to a date value with optional formatting

* To\_date

**Try It / Solve It**

In each of the following exercises, feel free to use labels for the converted column to make the output more readable.

1. List the last names and birthdays of Global Fast Food Employees. Convert the birth dates to character data in the Month DD, YYYY format. Suppress any leading zeros.

SELECT last\_name, TO\_CHAR(birth\_date, 'FMMonth DD, YYYY') AS birthday

FROM global\_employees

2. Convert January 3, 04, to the default date format 03-Jan-2004.

SELECT TO\_CHAR(TO\_DATE('January 3, 04', 'Month DD, YY'), 'DD-Mon-YYYY') AS formatted\_date

FROM dual;

3. Format a query from the Global Fast Foods f\_promotional\_menus table to print out the start\_date of promotional code 110 as: The promotion began on the tenth of February 2004.

SELECT 'The promotion began on the ' || TO\_CHAR(start\_date, 'FMDay') || ' of ' || TO\_CHAR(start\_date, 'FMMonth YYYY') AS promotion\_message

FROM f\_promotional\_menus

WHERE promotional\_code = 110;

4. Convert today’s date to a format such as: “Today is the Twentieth of March, Two Thousand Four”

SELECT 'Today is the ' || TO\_CHAR(SYSDATE, 'DDth') || ' of ' || TO\_CHAR(SYSDATE, 'FMMonth') || ', ' || TO\_CHAR(SYSDATE, 'YYYY') AS today\_date

FROM dual;

5. List the ID, name, and salary for all Global Fast Foods employees. Display salary with a $ sign and two decimal places.

SELECT employee\_id AS ID, employee\_name AS Name, '$' || TO\_CHAR(salary, '999,999.00') AS Salary

FROM global\_employees

WHERE company\_name = 'Global Fast Foods';

6. Ellen Abel is an employee who has received a $2,000 raise. Display her first name and last name, her current salary, and her new salary. Display both salaries with a $ and two decimal places. Label her new salary column AS New Salary.

SELECT first\_name AS First\_Name, last\_name AS Last\_Name, '$' || TO\_CHAR(salary, 'FM999,999.00') AS Current\_Salary, '$' || TO\_CHAR(salary + 2000, 'FM999,999.00') AS "New Salary"

FROM employees

WHERE first\_name = 'Ellen' AND last\_name = 'Abel';

7. On what day of the week and date did Global Fast Foods’ promotional code 110 Valentine’s Special begin?

SELECT TO\_CHAR(start\_date, 'Day') AS Day\_Of\_Week, TO\_CHAR(start\_date, 'MM/DD/YYYY') AS Start\_Date

FROM f\_promotional\_menus

WHERE promotional\_code = 110;

8. Create one query that will convert 25-Dec-2004 into each of the following (you will have to convert 25-Dec-2004 to a date and then to character data): December 25th, 2004 DECEMBER 25TH, 2004 25th december, 2004

SELECT TO\_CHAR(TO\_DATE('25-Dec-2004', 'DD-Mon-YYYY'), 'FMMonth DDth, YYYY') AS "Format1", UPPER(TO\_CHAR(TO\_DATE('25-Dec-2004', 'DD-Mon-YYYY'), 'FMMonth DDth, YYYY')) AS "Format2", TO\_CHAR(TO\_DATE('25-Dec-2004', 'DD-Mon-YYYY'), 'DDth FMMonth, YYYY') AS "Format3"

FROM dual;

9. Create a query that will format the DJs on Demand d\_packages columns, low-range and highrange package costs, in the format $2500.00.

SELECT '$' || TO\_CHAR(low\_range, '999,999.00') AS Low\_Range, '$' || TO\_CHAR(high\_range, '999,999.00') AS High\_Range

FROM d\_packages;

10. Convert JUNE192004 to a date using the fx format model.

SELECT TO\_DATE('JUNE192004', 'FXFMMonthYYYY') AS new\_date

FROM dual;

11. What is the distinction between implicit and explicit datatype conversion? Give an example of each.

Implicit- SELECT 100 + 13 AS Result

Explicit- SELECT TO\_CHAR(12345678) AS String;

12. Why is it important from a business perspective to have datatype conversions?

- Adaptability to change and reduction of error presence.

Database Programming with SQL  
5-2: NULL Functions  
Practice Activities

Objectives  
• Demonstrate and explain the evaluation of a nested function  
• List at least four general functions that work with any data type and relate to handling null  
values  
• Explain the use of the COALESCE and the NVL functions  
• Explain the use of general functions to deal with null values in data  
• Construct and execute a SQL query that correctly applies NVL, NVL2, NULLIF, and COALESCE single-row functions

**Vocabulary**

Identify the vocabulary word for each definition below.

1. Converts nulls to an actual value  
   - nvl
2. Returns the first non-null expression in the list  
   - coalesce
3. Examines the first expression; if the first expression is not null, it  
   returns the second expression; if the first expression is null, it  
   returns the third expression  
   - nvl2
4. Compares two expressions; if they are equal, the function returns  
   null; if they are not equal, the function returns the first expression

- nullif

**Try It / Solve It**Use aliases to make the output more readable.

1. Create a report that shows the Global Fast Foods promotional name, start date, and end date from the f\_promotional\_menus table. If there is an end date, temporarily replace it with “end in two weeks.” If there is no end date, replace it with today’s date.

SELECT promotional\_name AS "Promotional Name", start\_date AS "Start Date", CASE WHEN end\_date IS NOT NULL THEN 'End in Two Weeks' ELSE TO\_CHAR(SYSDATE, 'MM/DD/YYYY') END AS "End Date"

FROM f\_promotional\_menus;

2. Not all Global Fast Foods staff members receive overtime pay. Instead of displaying a null value for these employees, replace null with zero. Include the employee’s last name and overtime rate in the output. Label the overtime rate as “Overtime Status”.

SELECT last\_name AS "Last Name", NVL(overtime\_rate, 0) AS "Overtime"

FROM employees

3. The manager of Global Fast Foods has decided to give all staff who currently do not earn  
overtime an overtime rate of $5.00. Construct a query that displays the last names and the  
overtime rate for each staff member, substituting $5.00 for each null overtime value.

SELECT last\_name, NVL(overtime\_rate, 5.00) AS "Overtime Rate"

FROM employees

4. Not all Global Fast Foods staff members have a manager. Create a query that displays the employee last name and 9999 in the manager ID column for these employees.

SELECT last\_name AS "Last Name", 9999 AS "Manager ID"

FROM employees

5. Which statement(s) below will return null if the value of v\_sal is 50?

a. SELECT nvl(v\_sal, 50) FROM emp;  
b. SELECT nvl2(v\_sal, 50) FROM emp;  
**c. SELECT nullif(v\_sal, 50) FROM emp;**d. SELECT coalesce (v\_sal, Null, 50) FROM emp;

6. What does this query on the Global Fast Foods table return?  
SELECT COALESCE(last\_name, to\_char(manager\_id)) as NAME  
FROM f\_staffs;

SELECT COALESCE(last\_name, to\_char(manager\_id)) AS NAME

FROM f\_staffs;

7.

a. Create a report listing the first and last names and month of hire for all employees in the  
EMPLOYEES table (use TO\_CHAR to convert hire\_date to display the month).

SELECT first\_name AS "First Name", last\_name AS "Last Name", TO\_CHAR(hire\_date, 'Month') AS "Month of Hire"

FROM employees;

b. Modify the report to display null if the month of hire is September. Use the NULLIF function.

SELECT first\_name AS "First Name", last\_name AS "Last Name", NULLIF(TO\_CHAR(hire\_date, 'Month'), 'September') AS "Month of Hire"

FROM employees;

8. For all null values in the specialty column in the DJs on Demand d\_partners table, substitute “No  
Specialty.” Show the first name and s

SELECT first\_name AS "First Name", NVL(specialty, 'No Specialty') AS "Specialty"

FROM d\_partners;

Database Programming with SQL  
5-3: Conditional Expressions  
Practice Activities

Objectives  
• Compare and contrast the DECODE and CASE functions  
• Construct and execute a SQL query that correctly uses the DECODE and CASE functions  
• Construct and execute two methods for implementing IF-THEN-ELSE conditional logic

**Vocabulary**Identify the vocabulary word for each definition below.

1. Compares an expression to each of the search values  
   - decode
2. An if-then-else expression whose value depends on the truth-  
   value of a Boolean expression.  
   - case
3. Implements conditional processing within a SQL statement; it  
   meets the ANSI standard

- case

**Try It / Solve It**1. From the DJs on Demand d\_songs table, create a query that replaces the 2-minute songs with  
“shortest” and the 10-minute songs with “longest”. Label the output column “Play Times”.

SELECT CASE WHEN duration = 2 THEN 'shortest' WHEN duration = 10 THEN 'longest' ELSE TO\_CHAR(duration) END AS "Play Times"

FROM d\_songs;

2. Use the Oracle database employees table and CASE expression to decode the department id.  
Display the department id, last name, salary, and a column called “New Salary” whose value is based on the following conditions:  
If the department id is 10 then 1.25 \* salary  
If the department id is 90 then 1.5 \* salary  
If the department id is 130 then 1.75 \* salary  
Otherwise, display the old salary.

WHEN department\_id = 10 THEN salary \* 1.25

WHEN department\_id = 90 THEN salary \* 1.5

WHEN department\_id = 130 THEN salary \* 1.75

3. Display the first name, last name, manager ID, and commission percentage of all employees in departments 80 and 90. In a 5th column called “Review”, again display the manager ID. If they don’t have a manager, display the commission percentage. If they don’t have a commission, display 99999.

SELECT first\_name, last\_name, manager\_id, commission\_pct, CASE WHEN manager\_id IS NOT NULL THEN manager\_id WHEN commission\_pct IS NOT NULL THEN commission\_pct ELSE 99999 END AS Review

FROM employees

WHERE department\_id IN (80, 90);