Database Programming with SQL
5-1: Conversion Functions

Vocab	Definitions
CHAR	Used for text and character data of fixed length, including numbers, dashes, and special characters
fm	Used to remove padded blanks or to suppress leading zeros
CAST/CONVERT	Functions that convert a value from one datatype to another
FLOAT	Used to store variable-length numeric data
VARCHAR	Used for character data of variable length, including numbers, special characters, and dashes
DATE/TIME	Used for date and time values
FORMAT	Converts dates or numbers to character strings with optional formatting
CENTURY	Century value depends on the specified year and the last two digits of the current year
PARSE	Converts a character sting containing digits to a number with optional formatting
DAY	Numeric day of the month
STR_TO_DATE	Converts a character string representing a date to a date value with optional formatting

Try It / Solve it

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.
    a. SELECT last_name, TO_CHAR(birth_dates, ‘fmMonth dd, YYYY’)

       FROM employees WHERE company = “Global Fast Food”;

2. Convert January 3, 04, to the default date format 03-Jan-2004.
    a. SELECT TO_DATE(‘January 3, 04’, ‘DD-Mon-YYYY’) AS “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.
    a. SELECT “The promotion began on the” | | TO_CHAR(start_date, ‘DDth’) | | ‘of’ | | TO_CHAR(start_date, ‘Month YYY’) AS promotion_info
    FROM f_promotional_menus
    WHERE promotional_code = 110;
4. 4. Convert today’s date to a format such as: “Today is the Twentieth of March, Two Thousand Four”
    a. SELECT ‘Today is the’ | | TO_CHAR (SYSDATE, ‘DDth’) | | ‘of’ | | TO_CHAR(SYSDATE, ‘Month’) | | ‘,’ | | TO_CHAR(SYSDATE, ‘YYYY’) AS formatted_date
    FROM dual;
5. 5. List the ID, name, and salary for all Global Fast Foods employees. Display salary with a $ sign and two decimal places.
    a. SELECT employee_id, employee_name, ‘$’ | | TO_CHAR (salary, ‘FM99999.00’) AS formatted_salary
    FROM employees;
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.
    a. SELECT first_name, last_name, '$' || TO_CHAR(current_salary, 'FM9999.00') AS current_salary, '$' || TO_CHAR(current_salary + 2000, 'FM9999.00') 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?
    a. SELECT TO_CHAR(start_date, 'Day') AS day_of_week, TO_CHAR(start_date, 'MM/DD/YYYY') AS start_date
    FROM 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
    a. SELECT TO_CHAR(TO_DATE('25-Dec-2004', 'DD-Mon-YYYY'), 'FMMonth DDth, YYYY') AS
    FROM dual;

b. SELECT UPPER(TO_CHAR(TO_DATE('25-Dec-2004', 'DD-Mon-YYYY'), 'FMMonth DDth, YYYY')) AS b
FROM dual;
c. SELECT TO_CHAR(TO_DATE('25-Dec-2004', 'DD-Mon-YYYY'), 'DDth FMMonth, YYYY') AS c

FROM dual;

9. Create a query that will format the DJs on Demand d_packages columns, low-range and high-range package costs, in the format $2500.00.
    a. SELECT '$' || TO_CHAR(low_range_cost, 'FM999.00') AS formatted_low_range, '$' || TO_CHAR(high_range_cost, 'FM9999.00') AS formatted_high_range
    FROM packages;
10. Convert JUNE192004 to a date using the fx format model.
    a. SELECT TO_DATE('JUNE192004', 'FXFMMonthYYYY') AS convert_date
    FROM dual;
11. 12.Why is it important from a business perspective to have datatype conversions?
    a. To ensure that all data is normalized to meet business needs

5-2: NULL Functions

Vocab	Definitions
NVL	Converts nulls to an actual value
COALESCE	Returns the first non-null expression in the list
CASE	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
NULLIF	Compares two expressions; if they are equal, the function returns null; if they are not equal, the function returns the first expression

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.
    a. SELECT promotional_name, start_date, CASE
       WHEN end_date IS NOT NULL THEN 'end in two weeks'
       ELSE TO_CHAR(SYSDATE, 'YYYY-MM-DD') 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”.
    a. SELECT last_name, NVL(overtime_rate, 0) AS "Overtime Status"
       FROM f_staffs;;
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.
    a. SELECT last_name, NVL(overtime_rate, 5.00) AS overtime_rate
       FROM f_staffs;
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.
    a. SELECT last_name, NVL(manager_id, 9999) AS manager_id
       FROM f_staffs;
5. Which statement(s) below will return null if the value of v_sal is 50?
    a. SELECT nullif(v_sal, 50) FROM emp;
6. What does this query on the Global Fast Foods table return?
    a. Column NAME and manager ID if last_name is null
7. 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). Modify the report to display null if the month of hire is September. Use the NULLIF function.
    a. SELECT first_name, last_name, TO_CHAR(hire_date, 'Month') AS month_of_hire FROM employees;
    b. SELECT first_name, 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.”

a. SELECT first_name, NVL(specialty, 'No Specialty') AS specialty FROM d_partners;

5-3: Conditional Expressions

Vocab	Definitions
DECODE	Conpares an expression to each of the search values
CASE	An if-then-else expression whose value depends on the truth-value of a Boolean expression
CASE	Implements conditional processing within a SQL statement; it meets the ANSI standard

Try 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”.
    a. SELECT CASE
    WHEN play_time = 2 THEN 'shortest'
    WHEN play_time = 10 THEN 'longest' ELSE TO_CHAR(play_time)
    END AS "Play Times" FROM 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:
    a. SELECT department_id, last_name, salary, CASE WHEN department_id = 10 THEN salary * 1.25 WHEN department_id = 90 THEN salary * 1.50
    WHEN department_id = 130 THEN salary * 1.75
    ELSE salary END AS "New Salary"
    FROM employees;
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.

a. SELECT first_name, last_name, manager_id, commission_pct, CASE
   WHEN manager_id IS NOT NULL THEN TO_CHAR(manager_id)
   WHEN commission_pct IS NOT NULL THEN TO_CHAR(commission_pct)
   ELSE '99999' END AS "Review"

   FROM employees
   WHERE department_id IN (80, 90);