Database Programming with SQL

5-1: Conversion Functions

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.

```
1  SELECT LAST_NAME, TO_CHAR(date_of_birth, 'Month DD, YYYY') AS BIRTHDAY
2  FROM employees;
```

Results | Explain | Describe | Saved SQL | History

LAST_NAME	BIRTHDAY
King	January 15, 1990
Kochhar	July 11, 1992
De Haan	-
Whalen	-
Higgins	-
Gietz	-
Zlotkey	-
Abel	-
Taylor	-
Grant	-

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

```
1  SELECT TO_DATE('January 3, 04', 'Month DD, RR') AS CONVERTED_DATE
2  FROM dual;
```

Results | Explain | Describe | Saved SQL | History

CONVERTED_DATE
03-Jan-2004

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.

```
1  SELECT 'The promotion began on the ' || TO_CHAR(START_DATE, 'fmDdspth "of" Month YYYY') AS PROMO_START
2  FROM f_promotional_menus
3  WHERE CODE = 110;
```

Results | Explain | Describe | Saved SQL | History

PROMO_START
The promotion began on the Tenth of February 2004

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

```
1  SELECT 'Today is the ' || TO_CHAR(SYSDATE, 'fmDdspth "of" Month, Year') AS TODAY_DATE
2  FROM dual;
```

Results | Explain | Describe | Saved SQL | History

TODAY_DATE
Today is the Twenty-Seventh of September, Twenty Twenty-Four

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

```
1  SELECT EMPLOYEE_ID, FIRST_NAME || ' ' || LAST_NAME AS NAME,
2         TO_CHAR(SALARY, '$999,999.99') AS SALARY
3  FROM employees;
```

Results | Explain | Describe | Saved SQL | History

EMPLOYEE_ID	NAME	SALARY
100	Steven King	$24,000.00
101	Neena Kochhar	$17,000.00
102	Lex De Haan	$17,000.00
200	Jennifer Whalen	$4,400.00
205	Shelley Higgins	$12,000.00
206	William Gietz	$8,300.00
149	Eleni Zlotkey	$10,500.00
174	Ellen Abel	$11,000.00
176	Jonathon Taylor	$8,600.00
178	Kimberely Grant	$7,000.00

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, LAST_NAME,
       TO_CHAR(SALARY, '$999,999.99') AS CURRENT_SALARY,
       TO_CHAR(SALARY + 2000, '$999,999.99') AS "New Salary"
FROM employees
WHERE FIRST_NAME = 'Ellen' AND LAST_NAME = 'Abel';
```

Results | Explain | Describe | Saved SQL | History

FIRST_NAME	LAST_NAME	CURRENT_SALARY	New Salary
Ellen	Abel	$11,000.00	$13,000.00

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, DDth Month YYYY') AS PROMO_START
FROM f_promotional_menus
WHERE CODE = 110;
```

Results | Explain | Describe | Saved SQL | History

PROMO_START
Tuesday , 10TH February 2004

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'), 'Month DDth, YYYY') AS FORMAT_1,
       TO_CHAR(TO_DATE('25-Dec-2004', 'DD-Mon-YYYY'), 'MONTH DDth, YYYY') AS FORMAT_2,
       TO_CHAR(TO_DATE('25-Dec-2004', 'DD-Mon-YYYY'), 'DDth Month, YYYY') AS FORMAT_3
FROM dual;
```

Results | Explain | Describe | Saved SQL | History

FORMAT_1	FORMAT_2	FORMAT_3
December 25TH, 2004	DECEMBER 25TH, 2004	25TH December , 2004

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, '$9999.99') AS LOW_COST,
       TO_CHAR(HIGH_RANGE, '$9999.99') AS HIGH_COST
FROM d_packages;
```

Results | Explain | Describe | Saved SQL | History

LOW_COST	HIGH_COST
$500.00	$2500.00
$2501.00	$5000.00
$5001.00	##########
##########	##########

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

```
SELECT TO_DATE('JUNE192004', 'fxMONTHDDYYYY') AS CONVERTED_DATE
FROM dual;
```

Results | Explain | Describe | Saved SQL | History

CONVERTED_DATE
19-Jun-2004

11. What is the distinction between implicit and explicit datatype conversion? Give an example of each.
    - **Implicit Conversion:** The database automatically converts the datatype when needed.

```
SELECT '100' + 1 FROM dual;
```

Results | Explain | Describe | Saved SQL | History

'100'+1
101

    - **Explicit Conversion:** You specify datatype conversion using functions like TO_CHAR & TO_DATE.

```
SELECT TO_NUMBER('100') + 1 FROM dual;
```

Results | Explain | Describe | Saved SQL | History

TO_NUMBER('100')+1
101

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

    - Datatype conversion ensures data integrity, proper formatting for reports, and compatibility between systems. It helps present data in a human-readable form, such as formatting dates and currency values.

5-2: Null Functions

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.

```
1  SELECT NAME, START_DATE,
2         NVL2(END_DATE, 'End in two weeks', TO_CHAR(SYSDATE, 'DD-Mon-YYYY')) AS END_DATE
3  FROM f_promotional_menus;
```

Results | Explain | Describe | Saved SQL | History

NAME	START_DATE	END_DATE
Back to School	01-Sep-2004	End in two weeks
Valentines Special	10-Feb-2004	End in two weeks

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".

```
1  SELECT LAST_NAME,
2         NVL(OVERTIME_RATE, 0) AS "Overtime Status"
3  FROM employees;
```

Results | Explain | Describe | Saved SQL | History

LAST_NAME	Overtime Status
King	0
Kochhar	0
De Haan	0
Whalen	0
Higgins	0
Gietz	0
Zlotkey	0
Abel	0
Taylor	0

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.

```
1  SELECT LAST_NAME,
2         NVL(OVERTIME_RATE, 5.00) AS OVERTIME_RATE
3  FROM employees;
```

Results | Explain | Describe | Saved SQL | History

LAST_NAME	OVERTIME_RATE
King	5
Kochhar	5
De Haan	5
Whalen	5
Higgins	5
Gietz	5
Zlotkey	5
Abel	5
Taylor	5

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.

```
1  SELECT LAST_NAME,
2         NVL(MANAGER_ID, 9999) AS MANAGER_ID
3  FROM employees;
```

Results | Explain | Describe | Saved SQL | History

LAST_NAME	MANAGER_ID
King	9999
Kochhar	100
De Haan	100
Whalen	101
Higgins	101
Gietz	205
Zlotkey	100
Abel	149
Taylor	149

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;

```
1  SELECT COALESCE(last_name, TO_CHAR(manager_id)) AS NAME
2  FROM f_staffs;
```

Results | Explain | Describe | Saved SQL | History

NAME
Doe
Miller
Tuttle

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).

```
1  SELECT FIRST_NAME, LAST_NAME,
2         TO_CHAR(HIRE_DATE, 'Month') AS MONTH_OF_HIRE
3  FROM employees;
```

Results | Explain | Describe | Saved SQL | History

FIRST_NAME	LAST_NAME	MONTH_OF_HIRE
Steven	King	June
Neena	Kochhar	September
Lex	De Haan	January
Jennifer	Whalen	September
Shelley	Higgins	June
William	Gietz	June
Eleni	Zlotkey	January
Ellen	Abel	May
Jonathon	Taylor	March

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

```
1  SELECT FIRST_NAME, LAST_NAME,
2         NULLIF(TO_CHAR(HIRE_DATE, 'Month'), 'September') AS MONTH_OF_HIRE
3  FROM employees;
```

Results | Explain | Describe | Saved SQL | History

FIRST_NAME	LAST_NAME	MONTH_OF_HIRE
Steven	King	June
Neena	Kochhar	-
Lex	De Haan	January
Jennifer	Whalen	-
Shelley	Higgins	June
William	Gietz	June
Eleni	Zlotkey	January
Ellen	Abel	May
Jonathon	Taylor	March

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

```
1  SELECT FIRST_NAME,
2         NVL(SPECIALTY, 'No Specialty') AS SPECIALTY
3  FROM d_partners;
```

Results | Explain | Describe | Saved SQL | History

FIRST_NAME	SPECIALTY
Jennifer	All Types
Jason	Hip Hop
Allison	No Specialty

5-2: Null Functions

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 TITLE,
       CASE
           WHEN DURATION = '2' THEN 'shortest'
           WHEN DURATION = '10' THEN 'longest'
           ELSE DURATION
       END AS "Play Times"
FROM d_songs;
```

Results | Explain | Describe | Saved SQL | History

TITLE	Play Times
Its Finally Over	5 min
Im Going to Miss My Teacher	2 min
Hurrah for Today	3 min
Meet Me At the Altar	6 min
Lets Celebrate	8 min
All These Years	10 min

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.

```
SELECT DEPARTMENT_ID, LAST_NAME, SALARY,
       CASE
           WHEN DEPARTMENT_ID = 10 THEN 1.25 * SALARY
           WHEN DEPARTMENT_ID = 90 THEN 1.5 * SALARY
           WHEN DEPARTMENT_ID = 130 THEN 1.75 * SALARY
           ELSE SALARY
       END AS "New Salary"
FROM employees;
```

Results | Explain | Describe | Saved SQL | History

DEPARTMENT_ID	LAST_NAME	SALARY	New Salary
90	King	24000	36000
90	Kochhar	17000	25500
90	De Haan	17000	25500
10	Whalen	4400	5500
110	Higgins	12000	12000
110	Gietz	8300	8300
80	Zlotkey	10500	10500
80	Abel	11000	11000

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.

```
1  SELECT FIRST_NAME, LAST_NAME, MANAGER_ID, COMMISSION_PCT,
2         CASE
3             WHEN MANAGER_ID IS NULL THEN NVL(COMMISSION_PCT, 99999)
4             ELSE MANAGER_ID
5         END AS "Review"
6  FROM employees
7  WHERE DEPARTMENT_ID IN (80, 90);
```

Results | Explain | Describe | Saved SQL | History

FIRST_NAME	LAST_NAME	MANAGER_ID	COMMISSION_PCT	Review
Eleni	Zlotkey	100	.2	100
Ellen	Abel	149	.3	149
Jonathon	Taylor	149	.2	149
Nick	Hooper	149	.2	149
Steven	King	-	-	99999
Neena	Kochhar	100	-	100
Lex	De Haan	100	-	100