Using Conversion Functions and Conditional Expressions

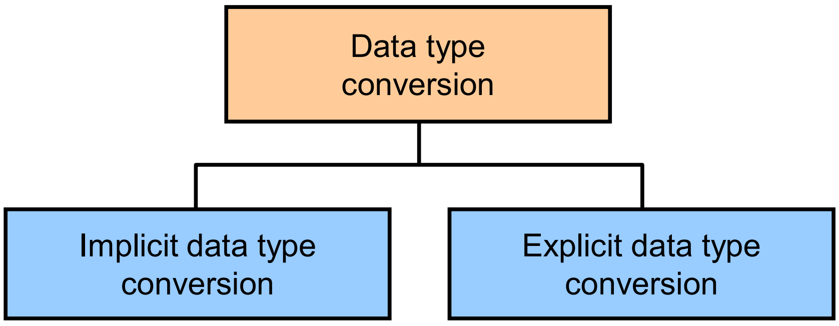
Objectives

After completing this lesson, you should be able to do the following:

- Describe the various types of conversion functions that are available in SQL
- Use the `TO_CHAR`, `TO_NUMBER`, and `TO_DATE` conversion functions
- Apply conditional expressions in a `SELECT` statement

This lesson focuses on functions that convert data from one type to another (for example, conversion from character data to numeric data) and discusses the conditional expressions in SQL `SELECT` statements.

Conversion Functions



Although implicit data type conversion is available, it is recommended that you do the explicit data type conversion to ensure the reliability of your SQL statements.

In addition to Oracle data types, columns of tables in an Oracle Database can be defined by using the American National Standards Institute (ANSI), DB2, and SQL/DS data types. However, the Oracle server internally converts such data types to Oracle data types.

In some cases, the Oracle server receives data of one data type where it expects data of a different data type. When this happens, the Oracle server can automatically convert the data to the expected data type. This data type conversion can be done *implicitly* by the Oracle server or *explicitly* by the user.

Implicit data type conversions work according to the rules explained in the following slides.

Explicit data type conversions are performed by using the conversion functions. Conversion functions convert a value from one data type to another. Generally, the form of the function names follows the convention `data type TO data type`. The first data type is the input data type and the second data type is the output.

Implicit Data Type Conversion

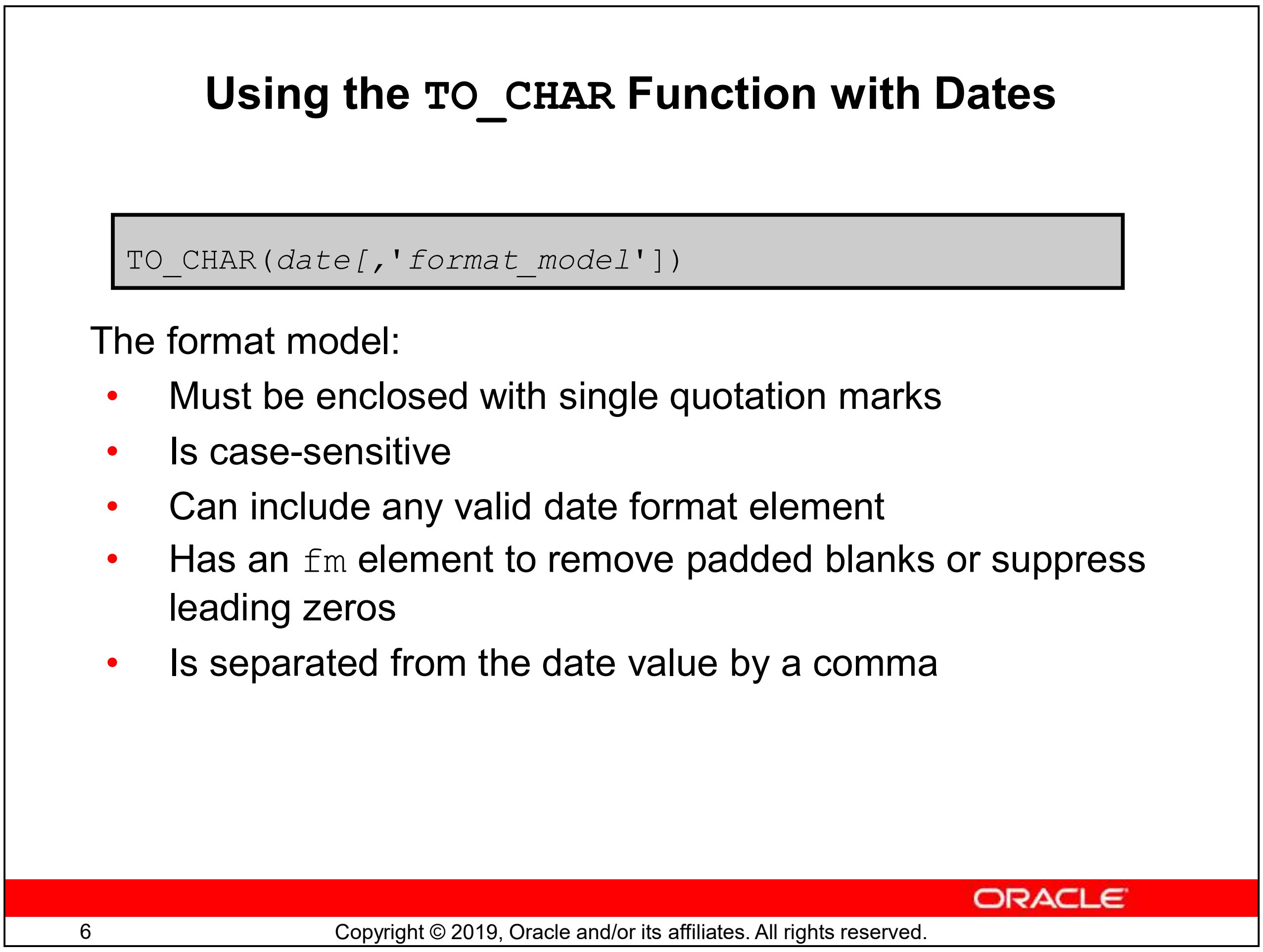
- Oracle server can automatically perform data type conversion in an expression.
- For example, the expression `hire_date > '01-JAN-90'` results in the implicit conversion from the string `'01-JAN-90'` to a date.
- Therefore, a `VARCHAR2` or `CHAR` value can be implicitly converted to a number or date data type in an expression.
- **Note:** `CHAR` to `NUMBER` conversions succeed only if the character string represents a valid number.

From	To
VARCHAR2 or CHAR	NUMBER
VARCHAR2 or CHAR	DATE

Implicit Data Type Conversion

- In general, the Oracle server uses the rule for expressions when a data type conversion is needed.
- For example, the expression `grade = 2` results in the implicit conversion of the number `2` to the string “2” because grade is a `CHAR(2)` column.

From	To
`NUMBER`	`VARCHAR2 or CHAR`
`DATE`	`VARCHAR2 or CHAR`



Using the TO_CHAR Function with Dates

```
TO_CHAR(date[,'format_model'])
```

The format model:

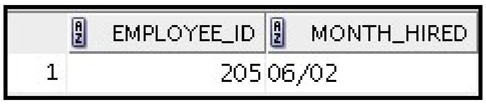
- Must be enclosed with single quotation marks
- Is case-sensitive
- Can include any valid date format element
- Has an `fm` element to remove padded blanks or suppress leading zeros
- Is separated from the date value by a comma

`TO_CHAR` converts a datetime data type to a value of `VARCHAR2` data type in the format specified by the *format_model*. A format model is a character literal that describes the format of datetime stored in a character string. For example, the datetime format model for the string `'11-Nov-2000'` is `'DD-Mon-YYYY'`. You can use the `TO_CHAR` function to convert a date from its default format to the one that you specify.

Guidelines

- The format model must be enclosed with single quotation marks and is case-sensitive.
- The format model can include any valid date format element. But be sure to separate the date value from the format model with a comma.
- The names of days and months in the output are automatically padded with blanks.
- To remove padded blanks or to suppress leading zeros, use the fill mode *fm* element.

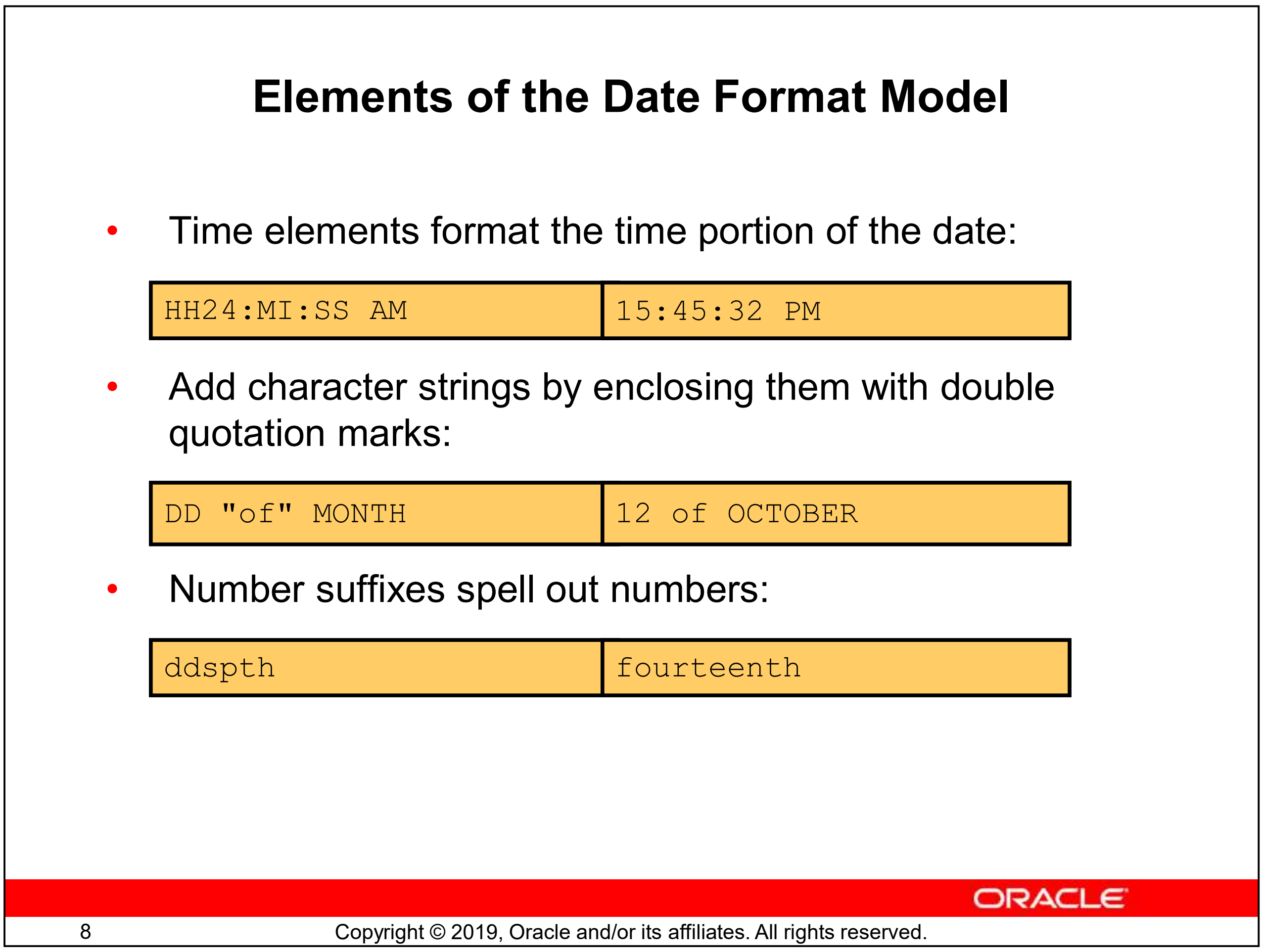
```
SELECT employee_id, TO_CHAR(hire_date, 'MM/YY') Month_Hired
FROM   employees
WHERE  last_name = 'Higgins';
```



	EMPLOYEE_ID	MONTH_HIRED
1	205	06/02

Elements of the Date Format Model

Element	Result
YYYY	Full year in numbers
YEAR	Year spelled out (in English)
MM	Two-digit value for the month
MONTH	Full name of the month
MON	Three-letter abbreviation of the month
DY	Three-letter abbreviation of the day of the week
DAY	Full name of the day of the week
DD	Numeric day of the month



Elements of the Date Format Model

- Time elements format the time portion of the date:

`HH24:MI:SS AM`	`15:45:32 PM`

- Add character strings by enclosing them with double quotation marks:

`DD "of" MONTH`	`12 of OCTOBER`

- Number suffixes spell out numbers:

`ddspth`	`fourteenth`

Use the formats that are listed in the following tables to display time information and literals, and to change numerals to spelled numbers.

Element	**Description**
AM or PM	Meridian indicator
A.M. or P.M.	Meridian indicator with periods
HH or HH12	12 hour format
HH24	24 hour format
MI	Minute (0–59)
SS	Second (0–59)
SSSSS	Seconds past midnight (0–86399)

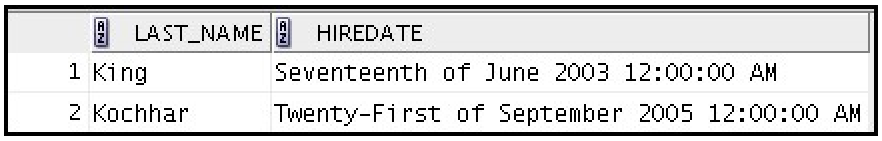
Using the `TO_CHAR` Function with Dates

```
SELECT last_name,
       TO_CHAR(hire_date, 'fmDD Month YYYY')
       AS HIREDATE
FROM   employees;
```

The hire date appears as 17 June 2003.

```
                SELECT  last_name,
                TO_CHAR(hire_date,
    'fmDdspth "of" Month YYYY fmHH:MI:SS AM')
             HIREDATE FROM  employees;
```

Seventeenth of June 2003 12:00:00 AM



	LAST_NAME	HIREDATE
1	King	Seventeenth of June 2003 12:00:00 AM
2	Kochhar	Twenty-First of September 2005 12:00:00 AM

...

Using the `TO_CHAR` Function with Numbers

```
TO_CHAR(number[, 'format_model'])
```

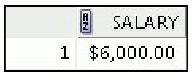
These are some of the format elements that you can use with the `TO_CHAR` function to display a number value as a character:

Element	Result
`9`	Represents a number
`0`	Forces a zero to be displayed
`$`	Places a floating dollar sign
`L`	Uses the floating local currency symbol
`.`	Prints a decimal point
`,`	Prints a comma as a thousands indicator

When working with number values, such as character strings, you should convert those numbers to the character data type using the `TO_CHAR` function, which translates a value of `NUMBER` data type to `VARCHAR2` data type. This technique is especially useful with concatenation.

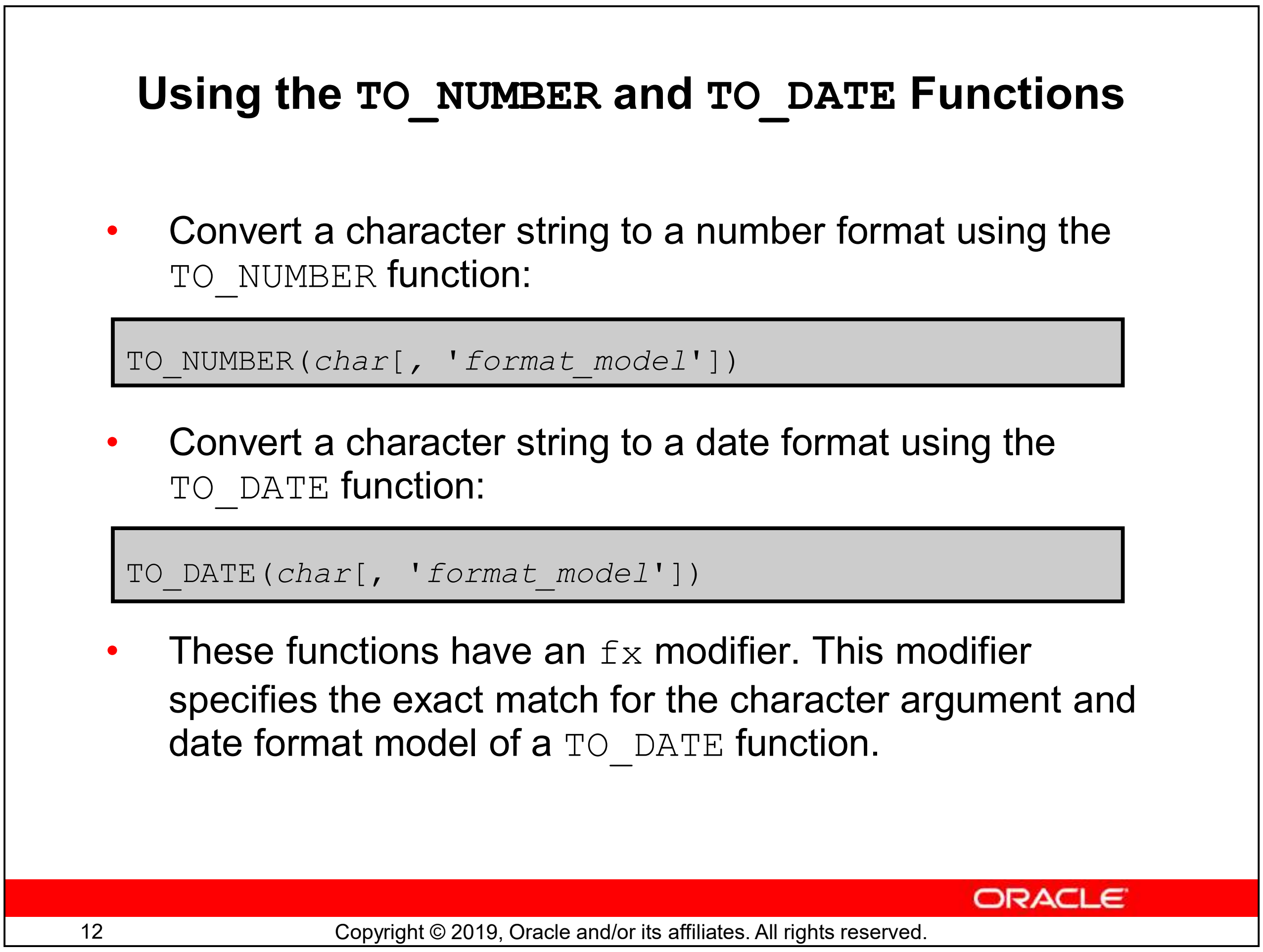
Using the `TO_CHAR` Function with Numbers

```
SELECT TO_CHAR(salary, '$99,999.00') SALARY
FROM   employees
WHERE  last_name = 'Ernst';
```



```
     SALARY
1  $6,000.00
```

- The Oracle server displays a string of number signs (#) in place of a whole number whose digits exceed the number of digits provided in the format model.
- The Oracle server rounds the stored decimal value to the number of decimal places provided in the format model.



Using the `TO_NUMBER` and `TO_DATE` Functions

- Convert a character string to a number format using the `TO_NUMBER` function:

```
TO_NUMBER(char[, 'format_model'])
```

- Convert a character string to a date format using the `TO_DATE` function:

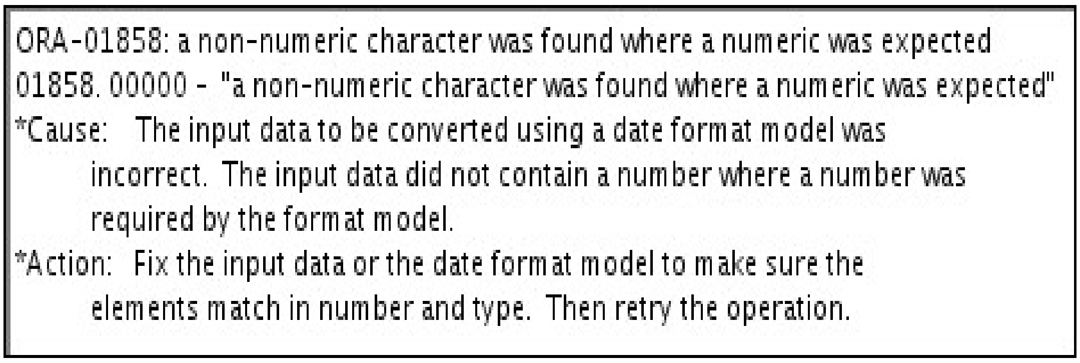
```
TO_DATE(char[, 'format_model'])
```

- These functions have an `fx` modifier. This modifier specifies the exact match for the character argument and date format model of a `TO_DATE` function.

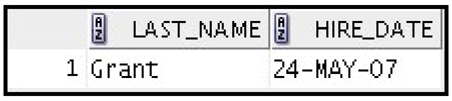
You may want to convert a character string to either a number or a date. To accomplish this task, use the `TO_NUMBER` or `TO_DATE` functions. The format model that you select is based on the previously demonstrated format elements.

The `fx` modifier specifies the exact match for the character argument and date 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`, the Oracle server 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`, the numbers in the character argument can omit leading zeros.



```
ORA-01858: a non-numeric character was found where a numeric was expected
01858. 00000 -  "a non-numeric character was found where a numeric was expected"
*Cause:    The input data to be converted using a date format model was
           incorrect.  The input data did not contain a number where a number was
           required by the format model.
*Action:   Fix the input data or the date format model to make sure the
           elements match in number and type.  Then retry the operation.
```

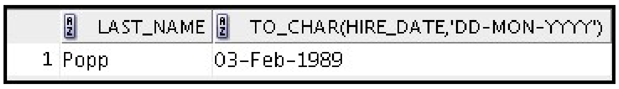


	LAST_NAME	HIRE_DATE
1	Grant	24-MAY-07

Using TO_CHAR and TO_DATE Functions with the RR Date Format

To find employees who were hired before 1990, the RR format can be used. Because the current year is greater than 1999, the RR format interprets the year portion of the date from 1950 to 1999.

```
SELECT last_name, TO_CHAR(hire_date, 'DD-Mon-YYYY')
FROM   employees
WHERE hire_date < TO_DATE('01-Jan-90','DD-Mon-RR');
```



```
  LAST_NAME  TO_CHAR(HIRE_DATE,'DD-MON-YYYY')
1 Popp       03-Feb-1989
```

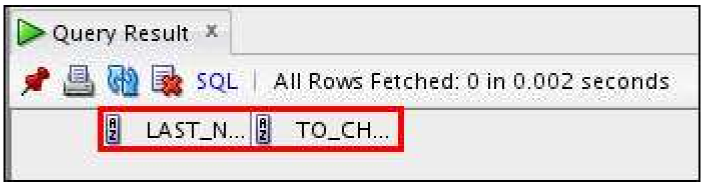
Alternatively, the following command, results in no rows being selected because the YY format interprets the year portion of the date in the current century (2090).

```
SELECT last_name, TO_CHAR(hire_date, 'DD-Mon-YYYY')
FROM   employees
WHERE TO_DATE(hire_date,'DD-Mon-yy') < '01-Jan-90' ;
```

To find employees who were hired before 1990, the RR format can be used. Because the current year is greater than 1999, the RR format interprets the year portion of the date from 1950 to 1999.

Alternatively, the following command, results in no rows being selected because the YY format interprets the year portion of the date in the current century (2090).

```
SELECT last_name, TO_CHAR(hire_date, 'DD-Mon-yyyy')
FROM   employees
WHERE  TO_DATE(hire_date, 'DD-Mon-yy') < '01-Jan-90';
```



```
Query Result ×
SQL | All Rows Fetched: 0 in 0.002 seconds
  LAST_N...  TO_CH...
```

Notice that no rows are retrieved from the above query.

General Functions

- These functions work with any data type and pertain to the use of null values in the expression list.

- `NVL (expr1, expr2)`
- `NVL2 (expr1, expr2, expr3)`
- `NULLIF (expr1, expr2)`
- `COALESCE (expr1, expr2, ..., exprn)`

Function	Description
`NVL`	Converts a null value to an actual value
`NVL2`	If `expr1` is not null, `NVL2` returns `expr2`. If `expr1` is null, `NVL2` returns `expr3`. The argument `expr1` can have any data type.
`NULLIF`	Compares two expressions and returns null if they are equal; returns the first expression if they are not equal
`COALESCE`	Returns the first non-null expression in the expression list

NVL Function

- To convert a null value to an actual value, use the `NVL` function.
- Data types that can be used are date, character, and number.
- Data types must match:
  - `NVL(commission_pct,0)`
  - `NVL(hire_date,'01-JAN-97')`
  - `NVL(job_id,'No Job Yet')`

To convert a null value to an actual value, use the `NVL` function.

Syntax

`NVL (`*`expr1`*`, `*`expr2`*`)`

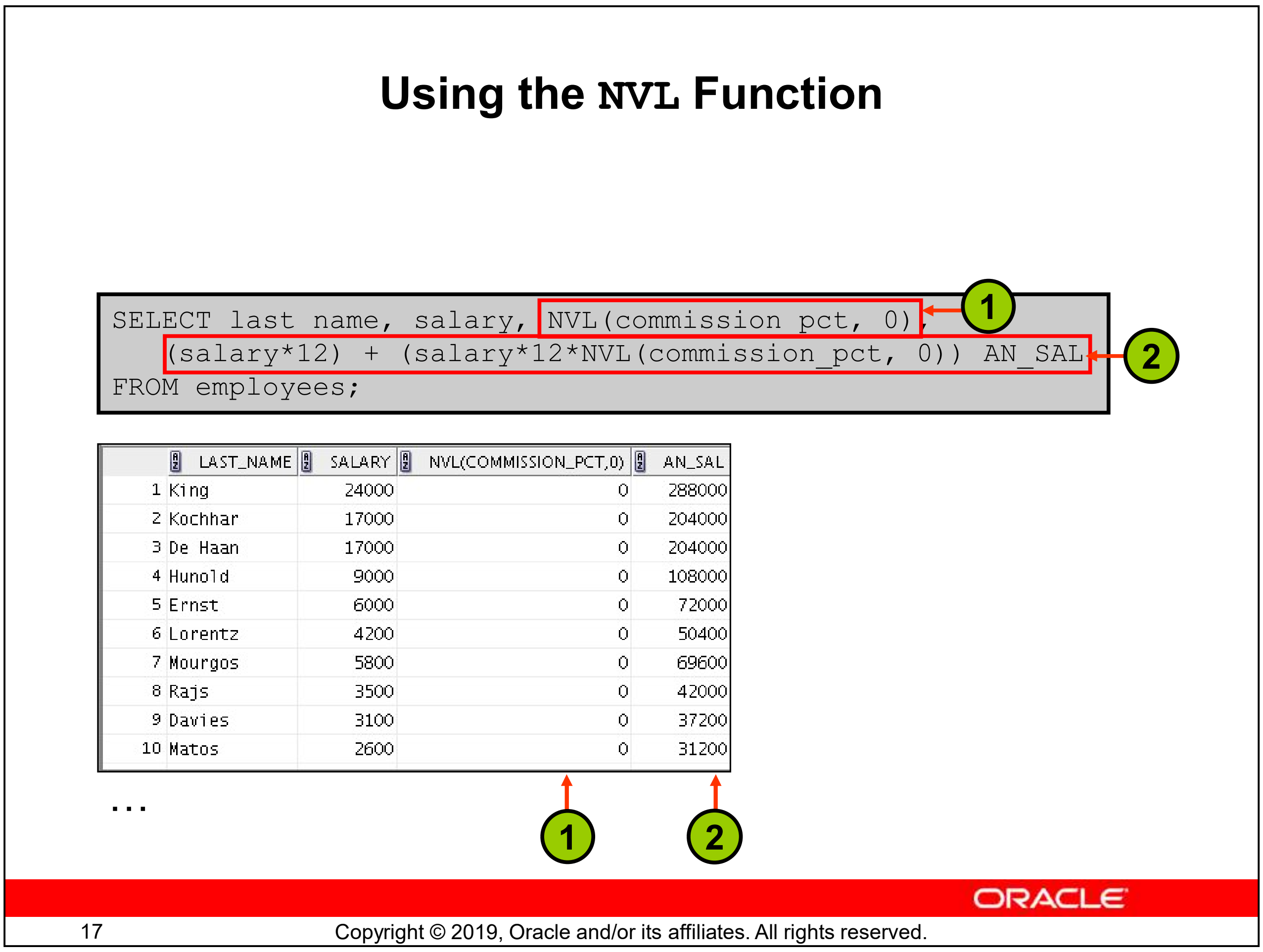
In the syntax:

- *`expr1`* is the source value or expression that may contain a null
- *`expr2`* is the target value for converting the null

You can use the `NVL` function with any data type, but the return value is always the same as the data type of *`expr1`*.

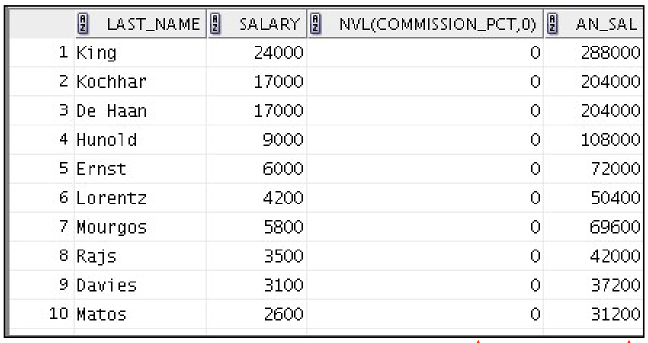
NVL Conversions for Various Data Types

Data Type	Conversion Example
NUMBER	NVL(*number_column*,9)
DATE	NVL(*date_column*, '01-JAN-95')
CHAR or VARCHAR2	NVL(*character_column*, 'Unavailable')



Using the NVL Function

```
SELECT last name, salary, NVL(commission pct, 0),
   (salary*12) + (salary*12*NVL(commission_pct, 0)) AN_SAL
FROM employees;
```

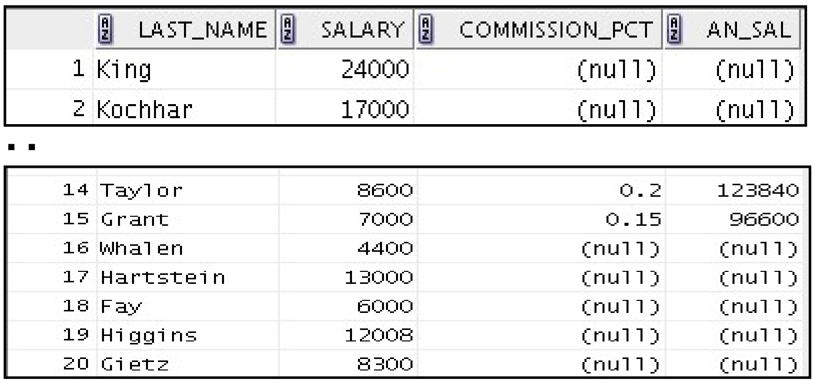


	LAST_NAME	SALARY	NVL(COMMISSION_PCT,0)	AN_SAL
1	King	24000	0	288000
2	Kochhar	17000	0	204000
3	De Haan	17000	0	204000
4	Hunold	9000	0	108000
5	Ernst	6000	0	72000
6	Lorentz	4200	0	50400
7	Mourgos	5800	0	69600
8	Rajs	3500	0	42000
9	Davies	3100	0	37200
10	Matos	2600	0	31200

...

To calculate the annual compensation of all employees, you need to multiply the monthly salary by 12 and then add the commission percentage to the result:

```
SELECT last_name, salary, commission_pct,
 (salary*12) + (salary*12*commission_pct) AN_SAL
FROM   employees;
```



	LAST_NAME	SALARY	COMMISSION_PCT	AN_SAL
1	King	24000	(null)	(null)
2	Kochhar	17000	(null)	(null)
...				
14	Taylor	8600	0.2	123840
15	Grant	7000	0.15	96600
16	Whalen	4400	(null)	(null)
17	Hartstein	13000	(null)	(null)
18	Fay	6000	(null)	(null)
19	Higgins	12008	(null)	(null)
20	Gietz	8300	(null)	(null)

Notice that the annual compensation is calculated for only those employees who earn a commission. If any column value in an expression is null, the result is null. To calculate values for all employees, you must convert the null value to a number before applying the arithmetic operator. In the example in the slide, the `NVL` function is used to convert null values to zero.

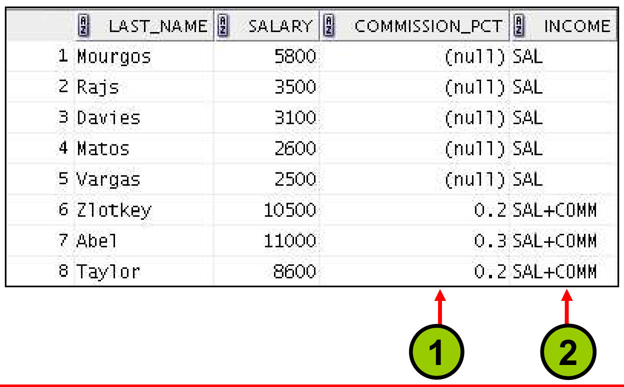
Using the `NVL2` Function

The `NVL2` function examines the first expression.

If the first expression is not null, the `NVL2` function returns the second expression.

If the first expression is null, the third expression is returned.

```
SELECT last_name,  salary, commission_pct,
       NVL2(commission_pct,
            'SAL+COMM', 'SAL') income
FROM   employees WHERE department_id IN (50, 80);
```



	LAST_NAME	SALARY	COMMISSION_PCT	INCOME
1	Mourgos	5800	(null)	SAL
2	Rajs	3500	(null)	SAL
3	Davies	3100	(null)	SAL
4	Matos	2600	(null)	SAL
5	Vargas	2500	(null)	SAL
6	Zlotkey	10500	0.2	SAL+COMM
7	Abel	11000	0.3	SAL+COMM
8	Taylor	8600	0.2	SAL+COMM

The `NVL2` function examines the first expression. If the first expression is not null, the `NVL2` function returns the second expression. If the first expression is null, the third expression is returned.

Syntax

```
        NVL2(expr1, expr2, expr3)
```

In the syntax:

- *`expr1`* is the source value or expression that may contain a null
- *`expr2`* is the value that is returned if *`expr1`* is not null
- *`expr3`* is the value that is returned if *`expr1`* is null

In the example shown in the slide, the `COMMISSION_PCT` column is examined. If a value is detected, the text literal value of `SAL+COMM` is returned. If the `COMMISSION_PCT` column contains a null value, the text literal value of `SAL` is returned.

Note: The argument *`expr1`* can have any data type. The arguments *`expr2`* and *`expr3`* can have any data types except `LONG`.

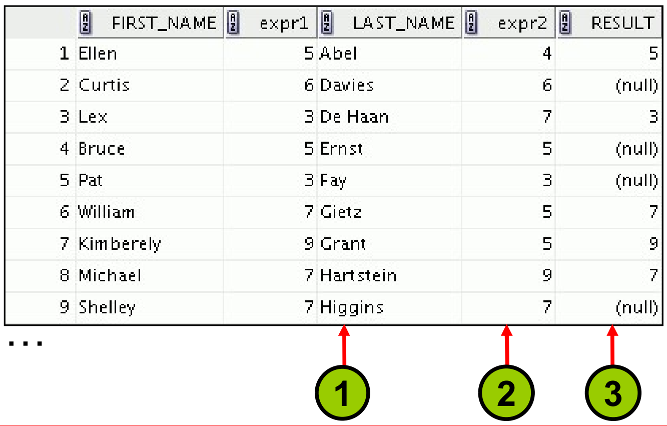
Using the `NULLIF` Function

The `NULLIF` function compares two expressions.

If they are equal, the function returns null.

If they are not, the function returns *`expr1`*.

```
SELECT first_name, LENGTH(first_name) "expr1",
       last_name,  LENGTH(last_name)  "expr2",
       NULLIF(LENGTH(first_name), LENGTH(last_name)) result
FROM   employees;
```



	FIRST_NAME	expr1	LAST_NAME	expr2	RESULT
1	Ellen	5	Abel	4	5
2	Curtis	6	Davies	6	(null)
3	Lex	3	De Haan	7	3
4	Bruce	5	Ernst	5	(null)
5	Pat	3	Fay	3	(null)
6	William	7	Gietz	5	7
7	Kimberely	9	Grant	5	9
8	Michael	7	Hartstein	9	7
9	Shelley	7	Higgins	7	(null)

...

The `NULLIF` function compares two expressions.

Syntax

```
NULLIF (expr1, expr2)
```

In the syntax:

- `NULLIF` compares *`expr1`* and *`expr2`*. If they are equal, the function returns null. If they are not, the function returns *`expr1`*. However, you cannot specify the literal `NULL` for *`expr1`*.

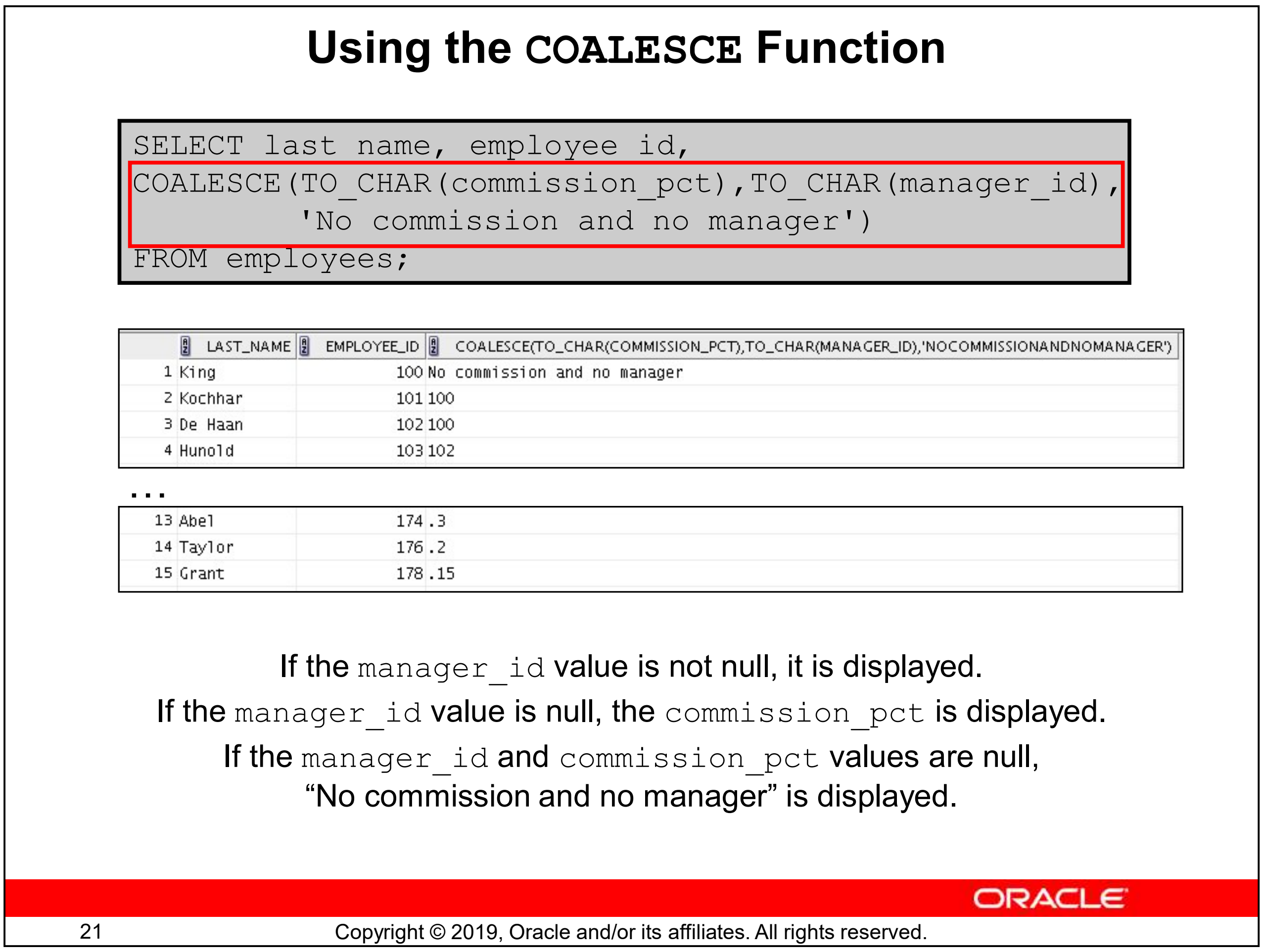
In the example shown in the slide, the length of the first name in the `EMPLOYEES` table is compared to the length of the last name in the `EMPLOYEES` table. When the lengths of the names are equal, a null value is displayed. When the lengths of the names are not equal, the length of the first name is displayed.

Using the `COALESCE` Function

- The `COALESCE` function returns the first non-null expression in the list.
- COALESCE (*expr1*, *expr2, ... exprn*)

- In the syntax:
  - *`expr1`* returns this expression if it is not null
  - *`expr2`* returns this expression if the first expression is null and this expression is not null
  - *`exprn`* returns this expression if the preceding expressions are null

- Note that all expressions must be of the same data type.



Using the COALESCE Function

```
SELECT last name, employee id,
COALESCE(TO_CHAR(commission_pct),TO_CHAR(manager_id),
          'No commission and no manager')
FROM employees;
```

	LAST_NAME	EMPLOYEE_ID	COALESCE(TO_CHAR(COMMISSION_PCT),TO_CHAR(MANAGER_ID),'NOCOMMISSIONANDNOMANAGER')
1	King	100	No commission and no manager
2	Kochhar	101	100
3	De Haan	102	100
4	Hunold	103	102

...

13	Abel	174	.3
14	Taylor	176	.2
15	Grant	178	.15

If the `manager_id` value is not null, it is displayed.
If the `manager_id` value is null, the `commission_pct` is displayed.
If the `manager_id` and `commission_pct` values are null,
“No commission and no manager” is displayed.

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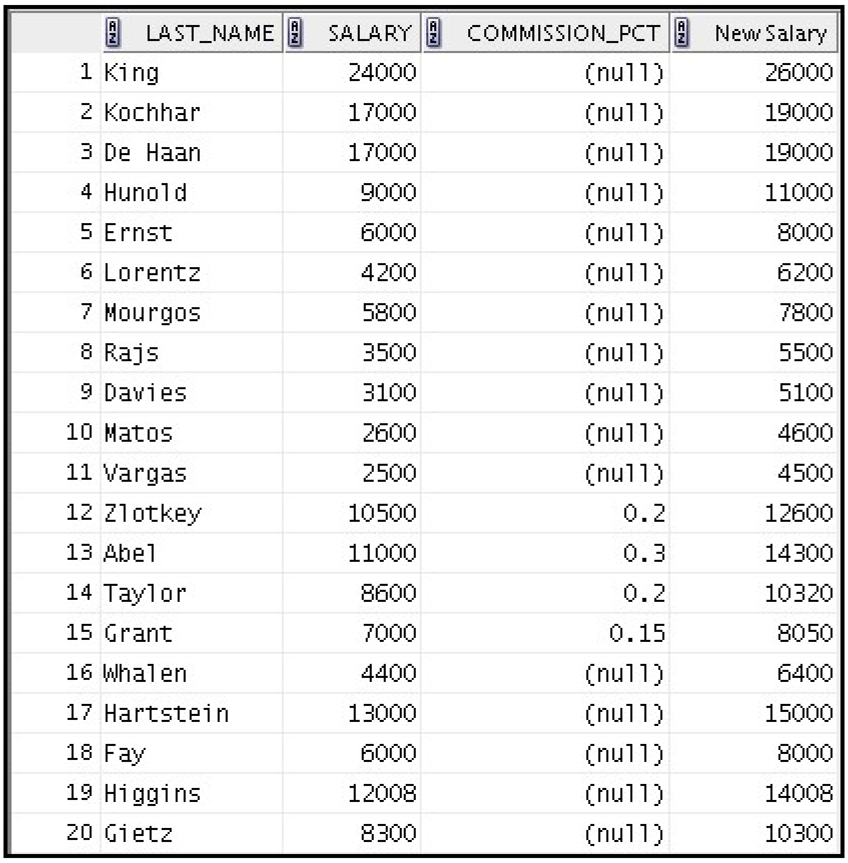
In the example shown in the slide, if the `manager_id` value is not null, it is displayed. If the `manager_id` value is null, the `commission_pct` is displayed. If the `manager_id` and `commission_pct` values are null, “No commission and no manager” is displayed. Note that `TO_CHAR` function is applied so that all expressions are of the same data type.



	LAST_NAME	SALARY	COMMISSION_PCT	New Salary
1	King	24000	(null)	26000
2	Kochhar	17000	(null)	19000
3	De Haan	17000	(null)	19000
4	Hunold	9000	(null)	11000
5	Ernst	6000	(null)	8000
6	Lorentz	4200	(null)	6200
7	Mourgos	5800	(null)	7800
8	Rajs	3500	(null)	5500
9	Davies	3100	(null)	5100
10	Matos	2600	(null)	4600
11	Vargas	2500	(null)	4500
12	Zlotkey	10500	0.2	12600
13	Abel	11000	0.3	14300
14	Taylor	8600	0.2	10320
15	Grant	7000	0.15	8050
16	Whalen	4400	(null)	6400
17	Hartstein	13000	(null)	15000
18	Fay	6000	(null)	8000
19	Higgins	12008	(null)	14008
20	Gietz	8300	(null)	10300

Conditional Expressions

- The two methods that are used to implement conditional processing (`IF-THEN-ELSE` logic) in a SQL statement are the `CASE` expression and the `DECODE` function.
- **Note:** The `CASE` expression complies with the ANSI SQL. The `DECODE` function is specific to Oracle syntax.
- Provide the use of the `IF-THEN-ELSE` logic within a SQL statement.
- Use two methods:
  - `CASE` expression
  - `DECODE` function

CASE Expression

Facilitates conditional inquiries by doing the work of an IF-THEN-ELSE statement:

```
CASE expr WHEN comparison_expr1 THEN return_expr1
         [WHEN comparison_expr2 THEN return_expr2
          WHEN comparison_exprn THEN return_exprn
          ELSE else_expr]
END
```

CASE expressions allow you to use the IF-THEN-ELSE logic in SQL statements without having to invoke procedures.

In a simple CASE expression, the Oracle server searches for the first WHEN ... THEN pair for which expr is equal to comparison_expr and returns return_expr. If none of the WHEN ... THEN pairs meet this condition, and if an ELSE clause exists, the Oracle server returns else_expr. Otherwise, the Oracle server returns a null. You cannot specify the literal NULL for all the return_exprs and the else_expr.

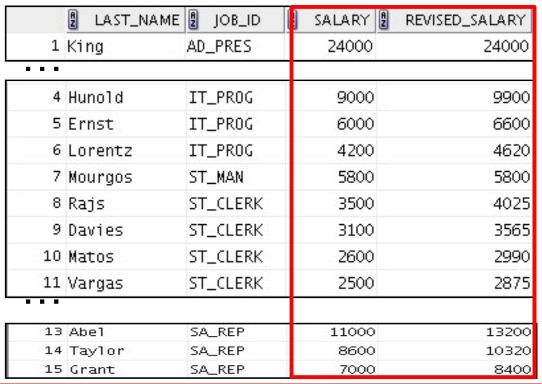
The expressions expr and comparison_expr must be of the same data type, which can be CHAR, VARCHAR2, NCHAR, or NVARCHAR2,NUMBER,BINARY_FLOAT,or BINARY_DOUBLE or must all have a numeric datatype. All of the return values (return_expr) must be of the same data type.

If all expressions have a numeric datatype, then Oracle determines the argument with the highest numeric precedence, implicitly converts the remaining arguments to that datatype, and returns that datatype.

Using the CASE Expression

Facilitates conditional inquiries by doing the work of an IF-THEN-ELSE statement:

```
SELECT last_name, job_id, salary,
       CASE job_id WHEN 'IT_PROG'  THEN  1.10*salary
                   WHEN 'ST_CLERK' THEN  1.15*salary
                   WHEN 'SA_REP'   THEN  1.20*salary
       ELSE      salary END     "REVISED_SALARY"
FROM   employees;
```



	LAST_NAME	JOB_ID	SALARY	REVISED_SALARY
1	King	AD_PRES	24000	24000
...				
4	Hunold	IT_PROG	9000	9900
5	Ernst	IT_PROG	6000	6600
6	Lorentz	IT_PROG	4200	4620
7	Mourgos	ST_MAN	5800	5800
8	Rajs	ST_CLERK	3500	4025
9	Davies	ST_CLERK	3100	3565
10	Matos	ST_CLERK	2600	2990
11	Vargas	ST_CLERK	2500	2875
...				
13	Abel	SA_REP	11000	13200
14	Taylor	SA_REP	8600	10320
15	Grant	SA_REP	7000	8400

In the SQL statement in the slide, the value of JOB_ID is decoded. If JOB_ID is IT_PROG, the salary increase is 10%; if JOB_ID is ST_CLERK, the salary increase is 15%; if JOB_ID is SA_REP, the salary increase is 20%. For all other job roles, there is no increase in salary.

The same statement can be written with the DECODE function.

The following code is an example of the searched CASE expression. In a searched CASE expression, the search occurs from left to right until an occurrence of the listed condition is found, and then it returns the return expression. If no condition is found to be true, and if an ELSE clause exists, the return expression in the ELSE clause is returned; otherwise, a NULL is returned.

```
SELECT last_name,salary,
(CASE WHEN salary<5000 THEN 'Low'
      WHEN salary<10000 THEN 'Medium'
      WHEN salary<20000 THEN 'Good'
      ELSE 'Excellent'
END) qualified_salary
FROM employees;
```

Another example:

```
SELECT last_name, salary,
(CASE WHEN salary<5000 THEN 'Low'
     WHEN salary<10000 THEN 'Medium'
     WHEN salary<20000 THEN 'Good'
     ELSE 'Excellent'
END) qualified_salary
FROM employees;
```

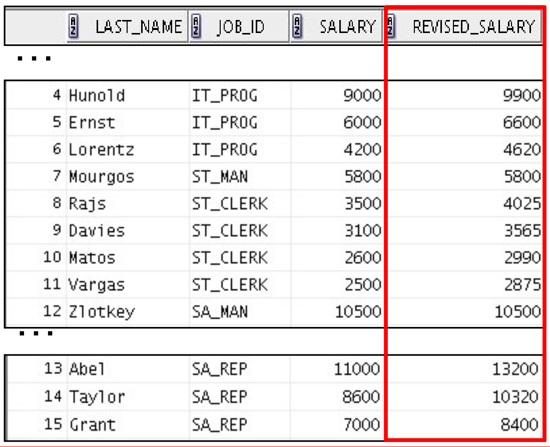
`DECODE` Function

- The `DECODE` function decodes an expression in a way similar to the `IF-THEN-ELSE` logic that is used in various languages.
- The `DECODE` function decodes *`expression`* after comparing it to each *`search`* value.
- If the expression is the same as *`search`*, *`result`* is returned.
- If the default value is omitted, a null value is returned where a search value does not match any of the result values.

```
DECODE(col|expression, search1, result1
                       [, search2, result2,...,]
                       [, default])
```

Using the `DECODE` Function

```
SELECT  last_name, job_id, salary,
        DECODE(job_id, 'IT_PROG',  1.10*salary,
                       'ST_CLERK', 1.15*salary,
                       'SA_REP',   1.20*salary,
              salary)
        REVISED_SALARY
FROM    employees;
```



	LAST_NAME	JOB_ID	SALARY	REVISED_SALARY
...				
4	Hunold	IT_PROG	9000	9900
5	Ernst	IT_PROG	6000	6600
6	Lorentz	IT_PROG	4200	4620
7	Mourgos	ST_MAN	5800	5800
8	Rajs	ST_CLERK	3500	4025
9	Davies	ST_CLERK	3100	3565
10	Matos	ST_CLERK	2600	2990
11	Vargas	ST_CLERK	2500	2875
12	Zlotkey	SA_MAN	10500	10500
...				
13	Abel	SA_REP	11000	13200
14	Taylor	SA_REP	8600	10320
15	Grant	SA_REP	7000	8400

If `JOB_ID` is `IT_PROG`, the salary increase is 10%;
if `JOB_ID` is `ST_CLERK`, the salary increase is 15%;
if `JOB_ID` is `SA_REP`, the salary increase is 20%.
For all other job roles, there is no increase in salary.

ORACLE

In the SQL statement in the slide, the value of `JOB_ID` is tested. If `JOB_ID` is `IT_PROG`, the salary increase is 10%; if `JOB_ID` is `ST_CLERK`, the salary increase is 15%; if `JOB_ID` is `SA_REP`, the salary increase is 20%. For all other job roles, there is no increase in salary.

The same statement can be expressed in pseudocode as an `IF-THEN-ELSE` statement:

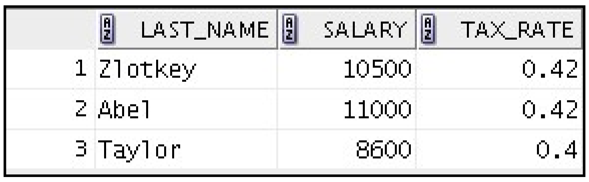
```
IF job_id = 'IT_PROG'    THEN  salary = salary*1.10
IF job_id = 'ST_CLERK'   THEN  salary = salary*1.15
IF job_id = 'SA_REP'     THEN  salary = salary*1.20
ELSE salary = salary
```

Using the `DECODE` Function

Display the applicable tax rate for each employee in department 80 based on the monthly salary:

```
SELECT last_name, salary,
       DECODE (TRUNC(salary/2000, 0),
                         0, 0.00,
                         1, 0.09,
                         2, 0.20,
                         3, 0.30,
                         4, 0.40,
                         5, 0.42,
                         6, 0.44,
                            0.45) TAX_RATE
FROM   employees
WHERE  department_id = 80;
```

This slide shows another example using the `DECODE` function. In this example, you determine the tax rate for each employee in department 80 based on the monthly salary.



	LAST_NAME	SALARY	TAX_RATE
1	Zlotkey	10500	0.42
2	Abel	11000	0.42
3	Taylor	8600	0.4

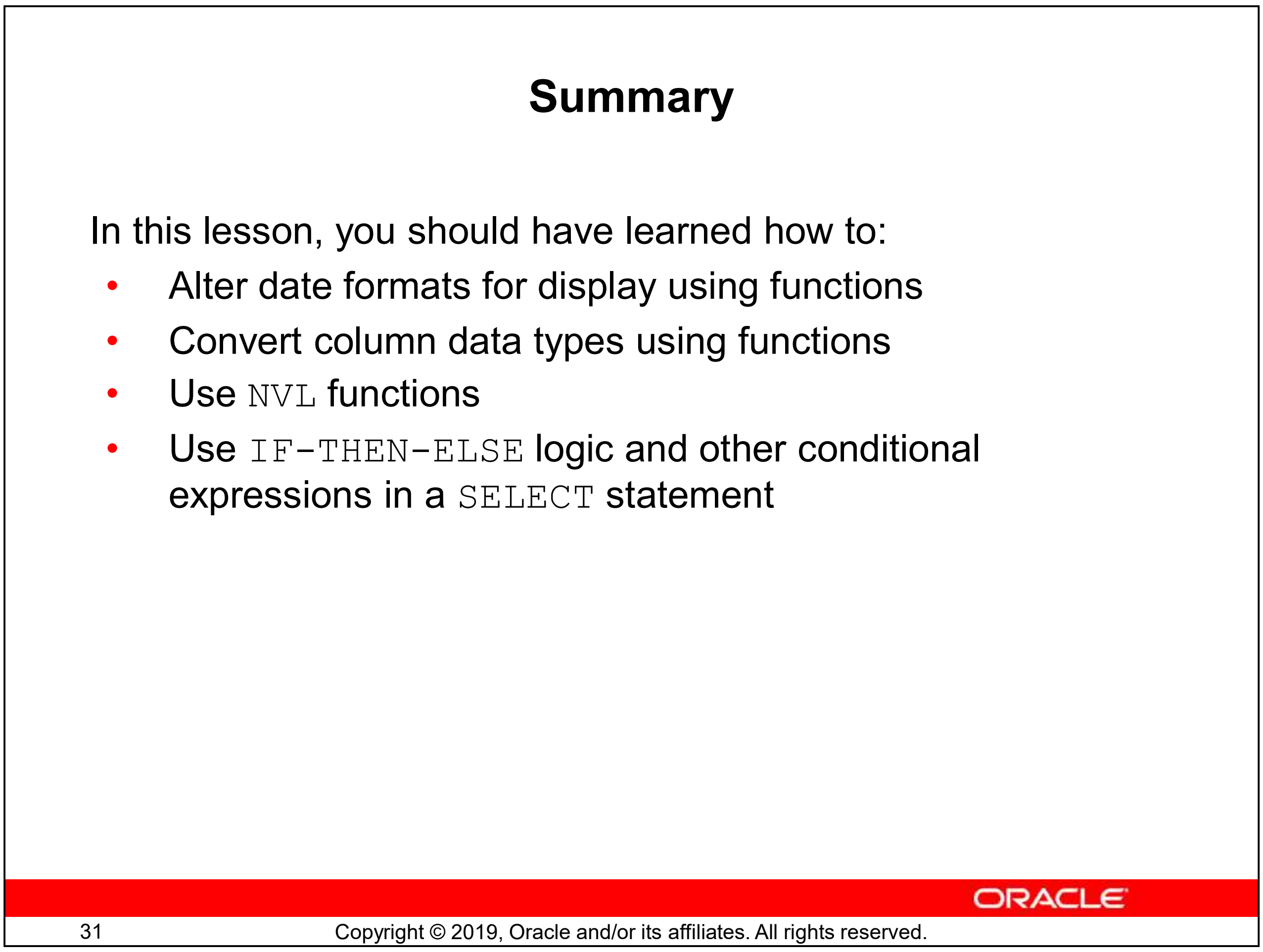
Quiz

The `TO_NUMBER` function converts either character strings or date values to a number in the format specified by the optional format model.

a. True

b. False

Answer: b



Summary

In this lesson, you should have learned how to:

- Alter date formats for display using functions
- Convert column data types using functions
- Use `NVL` functions
- Use `IF-THEN-ELSE` logic and other conditional expressions in a `SELECT` statement

Remember the following:

- Conversion functions can convert character, date, and numeric values: `TO_CHAR`, `TO_DATE`, `TO_NUMBER`
- There are several functions that pertain to nulls, including `NVL`, `NVL2`, `NULLIF`, and `COALESCE`.
- The `IF-THEN-ELSE` logic can be applied within a SQL statement by using the `CASE` expression or the `DECODE` function.