

CASE

DB2 Advanced SQL for JAVA Developers

CASE

Chapter 1:

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1: 1

Objectives

You will learn:

- The use of SQL CASE expression.
- WHEN clause.
- Raise an Error in CASE statement.
- Coding UNION and UNION ALL clauses.
- UNION keyword in UPDATE statement.
- Unions in views.

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1: 2

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SQL CASE Expression

- A case expression allows an expression to be selected based on the evaluation of one or more conditions.
- The value of the case expression is the value of the first result expression that evaluates to true.
 - If no expression in the case evaluates to true, then the result is the result expression of the ELSE or Null when the ELSE keyword is not present.

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1: 3

SQL CASE Expression

- CASE expressions provide the capability for if-then-else type processing inside of SQL statements.
- The sequence of the CASE conditions can affect the answer.
 - The first WHEN check that delivers a match is used.

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1: 4

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CASE Restrictions

- If more than one WHEN condition is true, the first one processed that matches is used.
- If there are no WHEN matches, the value in the ELSE clause applies.
- If there are no WHEN matches and there is no ELSE clause, the result is NULL.
- There must be at least one non-null result in a CASE statement.
 - In the event that there is not a non-null result, one of the NULL results must be inside of a CAST expression.
- All result values must be of the same type.

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1: 5

CASE Expression Characteristics

- The keyword CASE begins a case expression.
- The data type of the expression prior to the first WHEN keyword must be comparable to the data types of each expression that follows the WHEN keywords.
- There are two forms of the WHEN clause:
 - Simple-when-clause
 - Searched-when-clause

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1: 6

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Simple WHEN Clause

- Simple-when-clause specifies that the value of the expression prior to the first WHEN keyword is tested for equality with the value of each expression that follows the WHEN keywords.

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1: 7

Simple WHEN - Example

```
SELECT
  EMPNO
  , LASTNAME
  , CASE SUBSTR(WORKDEPT,1,1)
      WHEN 'A' THEN 'ADMINISTRATION'
      WHEN 'B' THEN 'HUMAN RESOURCES'
      WHEN 'C' THEN 'DESIGN'
      WHEN 'D' THEN 'OPERATIONS'
      ELSE 'UNKNOWN DEPARTMENT'
  END AS DIVISION
FROM EMPLOYEE ;
```

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1: 8

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Searched WHEN Clause

- Searched-when-clause specifies a search condition to be applied to each row or group of table data presented for evaluation.

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1: 9

Searched WHEN - Example

```
UPDATE SC246300.EMPLOYEE
  SET SALARY = CASE
    WHEN JOB IN ('MANAGER' , 'SUPRVSR')
      THEN SALARY * 1.10
    WHEN JOB IN ('DBA' , 'SYS PROG')
      THEN SALARY * 1.08
    WHEN JOB = 'PRGRMR'
      THEN SALARY * 1.05
    ELSE SALARY * 1.035
  END ;
```

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1: 10

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Result-expression

- Result-expression specifies an expression that follows the THEN and ELSE keywords.
- It specifies the result of a searched-when-clause or a simple-when-clause that is true, or a result if no case is true.

```
WHEN 'D' THEN 'OPERATIONS'  
ELSE 'UNKNOWN DEPARTMENT'
```

- All result-expressions must be compatible.

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1: 11

Three Updates versus One Update with a CASE Expression

```
UPDATE SC246300.EMPLOYEE  
SET SALARY = SALARY * 1.10  
WHERE JOB IN ('MANAGER' , 'SUPRVSR') ;
```

```
UPDATE SC246300. EMPLOYEE  
SET SALARY = SALARY * 1.08  
WHERE JOB IN ('DBA' , 'SYS PROG') ;
```

```
UPDATE SC246300. EMPLOYEE  
SET SALARY = SALARY * 1.05  
WHERE JOB = 'PRGRMR' ;
```

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1: 12

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Three Updates versus One Update with a CASE Expression

```
UPDATE SC246300.EMPLOYEE
  SET SALARY = SALARY * 1.035
  WHERE JOB NOT IN ('MANAGER' , 'SUPRVSR' ,
                  'DBA' , 'SYS PROG' , 'PRGRMR') ;
```

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1: 13

CASE Expression and Only One Pass of the Data

```
UPDATE SC246300.EMPLOYEE
  SET SALARY = CASE
    WHEN JOB IN ('MANAGER' , 'SUPRVSR')
      THEN SALARY * 1.10
    WHEN JOB IN ('DBA' , 'SYS PROG')
      THEN SALARY * 1.08
    WHEN JOB = 'PRGRMR'
      THEN SALARY * 1.05
    ELSE SALARY * 1.035
  END ;
```

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1: 14

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Avoid Division by Zero

```
SELECT EMPNO, WORKDEPT, SALARY + COMM
FROM EMPLOYEE
WHERE
(CASE
  WHEN SALARY = 0 THEN 0
  ELSE COMM / (SALARY + COMM)
END) > 0.25 ;
```

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1: 15

UNION ALL Clauses

```
SELECT CLERK, CUSTKEY, 'CURRENT' AS STATUS, ORDERPRIORITY
FROM ORDER
WHERE ORDERSTATUS = '0'
```

```
UNION ALL
SELECT CLERK, CUSTKEY, 'OVER 30' AS STATUS,
ORDERPRIORITY
FROM ORDER
WHERE ORDERSTATUS = '1'
```

```
UNION ALL
SELECT CLERK, CUSTKEY, 'OVER 60' AS STATUS
,ORDERPRIORITY
FROM ORDER
WHERE ORDERSTATUS = '2' ;
```

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1: 16

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UNION ALL Clauses with One CASE Expression

```
SELECT CLERK ,CUSTKEY ,CASE
      WHEN ORDERSTATUS = '0' THEN 'CURRENT'
      WHEN ORDERSTATUS = '1' THEN 'OVER 30'
      WHEN ORDERSTATUS = '2' THEN 'OVER 60'
END AS STATUS,ORDERPRIORITY
FROM ORDER
```

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1: 17

Raise an Error in CASE Statement

```
SELECT EMPNO
      , CASE WHEN EDLEVEL < 16 THEN 'DIPLOMA'
            WHEN EDLEVEL < 18 THEN 'GRADUATE'
            WHEN EDLEVEL < 20 THEN 'POST GRADUATE'
      ELSE
            RAISE_ERROR ('70001',
                        'EDUCLVEL HAS VALUE GREATER THAN 20')
      END AS EDUCLEVEL
FROM EMPLOYEE ;
```

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1: 18

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Pivoting Tables - Example

```
SELECT CUSTKEY
, SUM(CASE
      WHEN TOTALPRICE BETWEEN 0 AND 99 THEN 1
      ELSE 0
      END) AS SMALL
, SUM(CASE
      WHEN TOTALPRICE BETWEEN 100 AND 250 THEN 1
      ELSE 0
      END) AS MEDIUM
, SUM(CASE
      WHEN TOTALPRICE > 250 THEN 1
      ELSE 0
      END) AS LARGE
FROM ORDER
GROUP BY CUSTKEY
```

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1: 19

UNION

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1: 20

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UNION and UNION ALL

- A UNION operation combines two sets of columns and removes duplicates.
- The UNION ALL expression does the same; however, does not remove the duplicates.
- Recursive SQL requires that there be a UNION ALL phrase between the two main parts of the statement.
- The UNION ALL, unlike the UNION, allows for duplicate output rows which results from recursive processing.

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1: 21

UNION in Basic Predicates - Example

- Having a customer with the same phone number in both the active table and the archive is not a problem.
 - The UNION eliminates the duplicates.

```
SELECT CITYKEY ,CITYNAME
FROM CITIES
WHERE CITYKEY =
  (SELECT CITYKEY FROM CUSTOMER
   WHERE PHONENO = :PHONENUM
   UNION
   SELECT CITYKEY FROM CUSTOMER_ARCH
   WHERE PHONENO = :PHONENUM
  ) ;
```

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1: 22

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UNION in an IN Predicate - Example

- The usage of the UNION in an IN predicate.

```
SELECT CITYKEY ,CITYNAME FROM CITIES A
WHERE EXISTS
  (SELECT 'DUMMY'
   FROM CUSTOMER
   WHERE CITYKEY=A.CITYKEY

  UNION ALL

  SELECT 'DUMMY'
   FROM EMPLOYEE
   WHERE CITYKEY=A.CITYKEY ) ;
```

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1: 23

UNION in an IN Predicate - Example

- The usage of the UNION in an IN predicate.

```
SELECT CITYKEY ,CITYNAME FROM CITIES A
WHERE CITYKEY IN
  (SELECT CITYKEY
   FROM CUSTOMER

  UNION ALL

  SELECT CITYKEY
   FROM EMPLOYEE ) ;
```

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1: 24

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UNION in Selects of INSERT Statements - Example

```
INSERT INTO INVITATION_CARDS
(PHONENO, STATUS, SEX, BIRTHDATE, CITYKEY, FIRSTNAME,
LASTNAME, ADDRESS)
  SELECT PHONENO, 'U', SEX, BIRTHDATE, CITYKEY
, FIRSTNAME, LASTNAME, ADDRESS
  FROM EMPLOYEE
  WHERE YEAR(BIRTHDATE) > 1968
UNION
  SELECT PHONENO, 'U', SEX, BIRTHDATE, CITYKEY
, FIRSTNAME
, LASTNAME, ADDRESS
  FROM CUSTOMER
  WHERE YEAR(BIRTHDATE) > 1968
```

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1: 25

UNION in Selects of INSERT Statements

- Rules for columns
 - R1 and R2 must have the same number of columns and the data type of the nth column of R1 must be compatible with the data type of the nth column of R2.
 - If UNION is specified without the ALL option, R1 and R2 must not include a LOB column.
 - The nth column of the result of UNION and UNION ALL is derived from the nth columns of R1 and R2.

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1: 26

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UNION Keyword in UPDATE Statement - Example

- The UNION keyword also can be used in the UPDATE statement.

```
UPDATE INVITATION_CARDS X
SET STATUS = (
  SELECT 'L' FROM EMPLOYEE Y
  WHERE
    CITYKEY = 22 AND
    Y.PHONENO = X.PHONENO AND
    Y.BIRTHDATE = X.BIRTHDATE
  UNION ALL
  SELECT 'L' FROM CUSTOMER Z
  WHERE
    CITYKEY = 22 AND
    Z.PHONENO = X.PHONENO AND
    Z.BIRTHDATE = X.BIRTHDATE
) ;
```

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1: 27

UNION in Views

- Starting with DB2 V7, the UNION or UNION ALL keywords can be used as part of the CREATE VIEW syntax.
- It is important to recognize that according to the standard SQL rules for views, if the UNION or UNION ALL keywords are used in the creation of a view, the view is read-only.

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1: 28