

# CASE

## DB2 Advanced SQL for JAVA Developers

# CASE

## Chapter 1:

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1: 1

## Objectives

You will learn:

- The use of CASE in a variety of SQL statements.
- Techniques for using the CASE clause.
- Coding UNION and UNION ALL clauses.
- Coding UNION in IN clauses.

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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

- 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

```
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

- Searched-when-clause specifies a search condition to be applied to each row or group of table data presented for evaluation, and the result when that condition is true.

```
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: 9

### Searched WHEN

```
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 vs One Update with a CASE Expression

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

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

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

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

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1: 12

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### 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: 13

### 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: 14

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### 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: 15

### 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: 16

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### 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: 17

### Pivoting Tables

```
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: 18

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### UNION

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### UNION/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: 20

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### UNION in Basic Predicates

- 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: 21

### Unions in IN Predicates

- 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: 22

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### Unions in IN Predicates

- 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: 23

### Unions in Selects of INSERT Statements

```
INSERT INTO SC246300.INVITATION_CARDS
(PHONENO,STATUS,SEX,BIRTHDATE,CITYKEY,FIRSTNAME,
LASTNAME ,ADDRESS)

SELECT PHONENO ,'U' ,SEX ,BIRTHDATE ,CITYKEY
,FIRSTNME
,LASTNAME ,ADDRESS
FROM EMPLOYEE
WHERE YEAR(BIRTHDATE) > 1968
```

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1: 24

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### Unions in Selects of INSERT Statements

#### UNION

```
SELECT PHONENO , 'U' , SEX , BIRTHDATE  
    , CITYKEY , FIRSTNAME  
    , LASTNAME , ADDRESS  
FROM CUSTOMER  
WHERE YEAR(BIRTHDATE) > 1968
```

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1: 25

### Unions in UPDATE

- Example:
  - The UNION keyword can also 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: 26

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### Unions 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.