

Chapter 8 Set Operators



UNION Operator

- Combines the results of two separate queries into a single result set with duplicate rows removed
- Each query must return the same number of columns and the columns must be of compatible data type
- The rows of the result set will automatically be sorted
 - why?

```
SQL> SELECT ln, fn, phone
      FROM writer
      UNION
      SELECT last_name, first_name, phone
      FROM student;
```

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UNION Operator

- Can include a column of *literals* to identify which rows are from each table

```
SQL> SELECT phone, ln, 'Writer' as Type
      FROM writer
      UNION
      SELECT phone, last_name, 'Student'
      FROM student
      UNION
      SELECT phone, last_name, 'Instructor'
      FROM instructor;
```

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Column Aliases and Set Operations

- Column names/aliases from the **topmost** SELECT statement are used for the result set

```
SQL> SELECT ln, fn, phone
       FROM writer
       UNION
       SELECT last_name, first_name, phone
       FROM student;
```

```
SQL> SELECT ln "Last", fn "First"
       FROM writer
       UNION
       SELECT last_name, first_name
       FROM student;
```

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ORDER BY and Set Operations

- If used, ORDER BY must appear in the **last** query
 - can use a number to refer to the **position** of the sort column
 - you must use number if column names are different in the queries

```
SQL> SELECT phone, ln, 'Writer' as Type
       FROM writer
       UNION
       SELECT phone, last_name, 'Student'
       FROM student
       UNION
       SELECT phone, last_name, 'Instructor'
       FROM instructor
       ORDER BY 2;
```

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UNION ALL Operator

- A UNION query in which duplicate rows are retained
- Does not automatically sort rows

```
SQL> SELECT zip
       FROM student
       UNION
       SELECT zip
       FROM instructor;
```

148 rows

```
SQL> SELECT zip
       FROM student
       UNION ALL
       SELECT zip
       FROM instructor;
```

278 rows

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MINUS Operator



- Identifies rows in one set that don't exist in another
- Oracle eliminates duplicate rows from each set before determining the difference
- Each of the queries must return the same number of columns and the columns must be of compatible data type
- eg: Which instructors haven't been assigned to a section?

```
SQL> SELECT instructor_id FROM instructor
      MINUS
      SELECT instructor_id FROM section;
```

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MINUS Operator



- Be careful which SELECT appears above the MINUS operator and which appears below it

```
SQL> SELECT instructor_id FROM section
      MINUS
      SELECT instructor_id FROM instructor;
```

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INTERSECT Operator



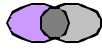
- Identifies rows that are common to both sets
- Oracle eliminates duplicate rows from each set before determining the intersection
- Each query must return the same number of columns and the columns must be of compatible data type
- Doesn't matter which SELECT appears above the INTERSECT operator and which appears below it
- eg: Which instructors have been assigned to a section?

```
SQL> SELECT instructor_id FROM section
      INTERSECT
      SELECT instructor_id FROM instructor;
```

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INTERSECT Operator



- Similar to an equijoin
 - an equijoin produces a result set consisting of rows in one table that have a **matching row** in another table

```
SQL> SELECT distinct i.instructor_id
FROM instructor i, section s
WHERE i.instructor_id = s.instructor_id;
```

- an equijoin can display **additional fields** from either table

```
SQL> SELECT i.instructor_id, last_name, section_id
FROM instructor i, section s
WHERE i.instructor_id = s.instructor_id
ORDER BY i.instructor_id;
```

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Set Operations Practice

- Preliminaries:
 - Which salutations are present in the instructor table?
 - Which salutations are present in the student table? Note the .s
- Show a non-duplicated list of all salutations, whether from the instructor or student table (strip off the .s!).
- Which salutations are common to both the instructor and student tables?
- Which salutations are present in the instructor table but not in the student table?
- Which salutations are present in the student table but not in the instructor table?

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