

Outer Joins

Database Development 2021
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Keywords

- ▷ LEFT
- ▷ RIGHT
- ▷ OUTER JOIN
- ▷ FULL
- ▷ +

Why

- ▷ In a standard JOIN we need to only get the elements from the specified tables that match exactly on the PRIMARY KEY / FOREIGN KEY path.
- ▷ Sometimes we need to get the ones from the other table that don't have a corresponding match.
- ▷ We are creating gaps in the resulting data
- ▷ These gaps can help us identify patterns in our data because of the inconsistencies.

LOJ

- ▶ We generally do these as LEFT OUTER JOIN simply because the first table specified or derived resultset is the one that has ALL the matching conditions and you are performing the JOIN to get what matches in the next table as well as explicitly identify what is NOT included.

How

- ▶ Same basic JOIN structure just adding the directionality then the OUTER keyword to the JOIN clause
 - ▶ SELECT ... table_a LEFT OUTER JOIN table_b ...
 - ▶ SELECT ... table_a RIGHT OUTER JOIN table_b ...

Demo Query

```
*SELECT
  cou.course_no,
  cou.description,
  loj.course_no AS pre_req,
  loj.description AS pre_desc
FROM
  course cou
LEFT OUTER JOIN
  course loj
ON
  loj.course_no = cou.prerequisite
ORDER BY
  cou.course_no;
```

```
*SELECT
  stu.first_name,
  stu.last_name,
  zip.city
FROM
  student stu
RIGHT OUTER JOIN
  zipcode zip
ON
  stu.zip = zip.zip;
```

JOIN Results

```
SELECT
  emp.empno emp_id,
  emp.ename emp_name,
  emp.job emp_job,
  emp.mgr emp_mgr,
  emp.hiredate emp_hiredate,
  emp.sal emp_sal,
  emp.commission emp_comm,
  emp.deptno dept_id,
  emp.dname dept_name,
  emp.loc emp_loc
FROM emp
LEFT OUTER JOIN emp_dept ON emp.deptno = dept.deptno
ORDER BY emp_id;
```

Query completed in 0.004 seconds

COURSE_ID	COURSE_NAME	PREREQ_ID	PREREQ_NAME
101	Introduction to SQL	101	Introduction to SQL
102	Advanced SQL	101	Introduction to SQL
103	Database Design	101	Introduction to SQL
104	PL/SQL	101	Introduction to SQL
105	Oracle Forms	101	Introduction to SQL
106	Oracle Reports	101	Introduction to SQL
107	Oracle Applications	101	Introduction to SQL
108	Oracle eBusiness Suite	101	Introduction to SQL
109	Oracle Fusion Middleware	101	Introduction to SQL
110	Oracle Cloud	101	Introduction to SQL

10 rows selected.

LEFT OUTER JOIN Results

```
SELECT
  emp.empno emp_id,
  emp.ename emp_name,
  emp.job emp_job,
  emp.mgr emp_mgr,
  emp.hiredate emp_hiredate,
  emp.sal emp_sal,
  emp.commission emp_comm,
  emp.deptno dept_id,
  emp.dname dept_name,
  emp.loc emp_loc
FROM emp
LEFT OUTER JOIN emp_dept ON emp.deptno = dept.deptno
ORDER BY emp_id;
```

Query completed in 0.002 seconds

COURSE_ID	COURSE_NAME	PREREQ_ID	PREREQ_NAME
101	Introduction to SQL	101	Introduction to SQL
102	Advanced SQL	101	Introduction to SQL
103	Database Design	101	Introduction to SQL
104	PL/SQL	101	Introduction to SQL
105	Oracle Forms	101	Introduction to SQL
106	Oracle Reports	101	Introduction to SQL
107	Oracle Applications	101	Introduction to SQL
108	Oracle eBusiness Suite	101	Introduction to SQL
109	Oracle Fusion Middleware	101	Introduction to SQL
110	Oracle Cloud	101	Introduction to SQL

10 rows selected.

Alternatives to LOJ

- ▶ The results of an OUTER JOIN can also be achieved by using the less widely method of doing separate queries (one with a correlated subquery), and then performing a UNION ALL on the results
- ▶ This can make the resulting query more confusing to read by humans because of the combination of inner/outer across multiple values

FULL OUTER

- ▶ Say you want to get all the matching rows AND all the incomplete matches from both the left and right tables
- ▶ This calls for the FULL OUTER JOIN

Oracle Special 🤔🤔

- ▶ Oracle has a special operator just for OUTER JOIN
- ▶ You use the + sign in the WHERE clause on the side that will have the non matching values
- ▶ This is instead of the LEFT or RIGHT keyword
- ▶ You also do not use the JOIN keyword 🤔
 - ▶ This means no ON clause either!!
