

SQL Project

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```
SQL> set echo on
SQL> spool project1.txt
SQL> start query1
SQL> SELECT s.FIRSTNAME FROM students s WHERE EXISTS (SELECT 1 FROM
enrollments e JOIN classes c ON e.CLASSID = c.CLASSID JOIN courses cr
ON c.DEPT_CODE = cr.DEPT_CODE AND c.COURSE# = cr.COURSE# WHERE e.SID =
s.SID AND cr.DEPT_CODE = 'CS' ) AND EXISTS (SELECT 1 FROM enrollments
e JOIN classes c ON e.CLASSID = c.CLASSID JOIN courses cr ON
c.DEPT_CODE = cr.DEPT_CODE AND c.COURSE# = cr.COURSE# WHERE e.SID =
s.SID AND cr.DEPT_CODE = 'Math' );
```

FIRSTNAME

Anne
Terry

```
SQL> start query2
SQL> SELECT c.dept_code, c.course# FROM courses c LEFT JOIN classes cl
ON c.course# = cl.course# AND cl.year = 2022 WHERE cl.year IS NULL;
```

DEPT COURSE#

CS 552
BIOL 425

```
SQL> start query3
SQL> SELECT s.LASTNAME FROM students s LEFT JOIN (SELECT e.SID FROM
enrollments e JOIN classes c ON e.CLASSID = c.CLASSID JOIN grades g ON
e.LGRADE = g.LGRADE WHERE g.NGRADE = 4) a ON s.SID = a.SID WHERE a.SID
IS NULL AND EXISTS (SELECT 1 FROM enrollments e WHERE e.SID = s.SID);
```

LASTNAME

Smith
Callan

```
SQL> start query4
SQL> SELECT SID, FIRSTNAME FROM STUDENTS s WHERE SID not in (SELECT
SID FROM ENROLLMENTS e WHERE lgrade != 'A') AND SID IN (SELECT SID
FROM ENROLLMENTS);
```

SID FIRSTNAME

B003 Tracy
B006 Terry

B007 Becky

SQL> start query5

```
SQL> SELECT c.DEPT_CODE, c.COURSE# FROM classes cl JOIN courses c ON
cl.DEPT_CODE = c.DEPT_CODE AND cl.COURSE# = c.COURSE# GROUP BY
c.DEPT_CODE, c.COURSE# HAVING COUNT(*) = (SELECT MAX(cnt) FROM (SELECT
COUNT(*) AS cnt FROM classes GROUP BY DEPT_CODE, COURSE# )) ORDER BY
c.DEPT_CODE, c.COURSE#;
```

DEPT COURSE#

```
-----
CS      432
Math    314
```

SQL> start query6

```
SQL> SELECT students.sid, students.lastname FROM students JOIN
enrollments ON students.sid = enrollments.sid GROUP BY students.sid,
students.lastname HAVING COUNT(*) > 3;
```

SID LASTNAME

```
-----
B001 Broder
```

SQL>

SQL> start query7

```
SQL> SELECT * FROM classes c WHERE c.semester = 'Spring' AND c.year =
2022 AND c.dept_code = 'CS' AND (SELECT COUNT(*) FROM enrollments e
WHERE e.classid = c.classid) < 3;
```

CLASS	DEPT	COURSE#	SEC#	YEAR	SEMEST	LIMIT	CLASS_SIZE
-----	-----	-----	-----	-----	-----	-----	-----
c0001	CS	432	1	2022	Spring	35	34

SQL> start query8

```
SQL> SELECT s.sid, s.firstname FROM students s INNER JOIN enrollments e
ON s.sid = e.sid INNER JOIN classes c ON e.classid = c.classid INNER
JOIN courses cr ON c.dept_code = cr.dept_code AND c.course# =
cr.course# WHERE cr.dept_code = 'Math' AND c.course# LIKE '2__' GROUP
BY s.sid, s.firstname HAVING COUNT(DISTINCT cr.course#) = (SELECT
COUNT(*) FROM courses WHERE dept_code = 'Math' AND course# LIKE
'2__');
```

SID FIRSTNAME

```
-----
B007 Becky
```

SQL> start query9

```
SQL> SELECT c.title FROM enrollments e1 JOIN classes cl ON e1.classid
= cl.classid JOIN courses c ON cl.dept_code = c.dept_code AND
cl.course# = c.course# LEFT JOIN enrollments e2 ON cl.classid =
```

```
e2.classid AND e2.sid = 'B007' WHERE e1.sid = 'B004' AND e2.sid IS
NULL GROUP BY c.title;
```

TITLE

database systems
data structure

```
SQL> start query10
```

```
SQL> SELECT s.firstname FROM students s INNER JOIN enrollments e1 ON
s.sid = e1.sid INNER JOIN enrollments e2 ON e1.classid = e2.classid
WHERE e2.sid = 'B005' GROUP BY s.firstname, s.lastname HAVING
COUNT(DISTINCT e1.classid) > 0;
```

FIRSTNAME

Terry
Jack
Anne
Barbara
Tracy
Terry

6 rows selected.

```
SQL> start query11
```

```
SQL> SELECT dept_code, course#, semester, year FROM classes GROUP BY
dept_code, course#, semester, year HAVING COUNT(*) >= 2;
```

DEPT	COURSE#	SEMEST	YEAR
----	-----	-----	-----
Math	314	Spring	2022
CS	432	Spring	2022

```
SQL> start query12
```

```
SQL> SELECT s.SID, s.LASTNAME FROM students s INNER JOIN enrollments e
ON s.SID = e.SID INNER JOIN ( SELECT en.CLASSID, MAX(g.NGRADE) AS
MAX_GRADE FROM enrollments en INNER JOIN grades g ON en.LGRADE =
g.LGRADE GROUP BY en.CLASSID ) sub ON e.CLASSID = sub.CLASSID INNER
JOIN grades g ON e.LGRADE = g.LGRADE WHERE g.NGRADE = sub.MAX_GRADE
GROUP BY s.SID, s.LASTNAME HAVING COUNT(*) >= 1;
```

SID LASTNAME

B006 Zillman
B002 Buttler
B001 Broder
B007 Lee
B003 Wang
B004 Callan

6 rows selected.

SQL> start query13

```
SQL> SELECT c.dept_code, c.course#, cs.title, COALESCE(e.lgrade, 'To
be assigned') AS GRADE FROM students s JOIN enrollments e ON s.sid =
e.sid JOIN classes c ON e.classid = c.classid JOIN courses cs ON
c.course# = cs.course# WHERE s.sid = 'B005';
```

DEPT	COURSE#	TITLE	GRADE
CS	432	database systems	B
CS	240	data structure	To be assigned
CS	532	database systems	B

SQL> start query14

```
SQL> SELECT c.DEPT_CODE, c.COURSE#, c.TITLE FROM courses c WHERE
c.TITLE LIKE '%Data%' AND NOT EXISTS (SELECT s.SID FROM students s
WHERE s.GPA > 3.5 AND NOT EXISTS (SELECT e.CLASSID FROM enrollments e
WHERE e.SID = s.SID AND e.CLASSID IN (SELECT cl.CLASSID FROM classes
cl WHERE cl.DEPT_CODE = c.DEPT_CODE AND cl.COURSE# = c.COURSE#)));
```

no rows selected

SQL> start query15

```
SQL> SELECT enrollments.sid, ROUND(AVG(grades.ngrade), 2) AS cgpa FROM
enrollments LEFT JOIN grades ON enrollments.lgrade = grades.lgrade
GROUP BY enrollments.sid HAVING COUNT(grades.ngrade) > 0 ORDER BY cgpa
DESC;
```

SID	CGPA
B006	4
B003	4
B007	4
B002	3.5
B001	3
B005	3
B004	2.5

7 rows selected.

SQL> spool off