CS532 : Project 1

Group Members -
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SQL Queries -

SQL>
SQL> start Q1
SQL> SELECT concat(co.dept_code, co.course#) AS course_id, title FROM courses co , classes cl
  2 WHERE co.course# = cl.course# AND cl.year = 2018 AND cl.semester='Spring'
  3 /

COURSE_ID   TITLE
-- --------------------
CS432   database systems
Math221   calculus I
CS532   database systems

SQL>
SQL>
SQL> start Q2
SQL> SELECT firstname FROM students
  2 WHERE sid IN
  3 ((SELECT sid FROM enrollments en JOIN classes cl ON en.classid = cl.classid AND cl.dept_code = 'Math')
  4 INTERSECT
  5 (SELECT sid FROM enrollments en JOIN classes cl ON en.classid = cl.classid AND cl.dept_code = 'CS'))
  6 /

FIRSTNAME

Anne

SQL>
SQL>
SQL> start Q3
SQL> SELECT dept_code, course# FROM courses
  2 MINUS
  3 (SELECT dept_code, course# FROM classes WHERE year = 2017)
  4 /

DEPT   COURSE#
---- ----------
BIOL   425
CS   532
CS   552

Math   221

```
SQL>
SQL>
SQL> start Q4
SQL>   SELECT UNIQUE st.sid, st.firstname, st.gpa FROM students st, enrollments en
  2   WHERE  status != 'graduate' AND st.sid=en.sid AND en.lgrade = 'A'
  3  /
```

SID	FIRSTNAME	GPA
B003	Tracy	4
B001	Anne	3.17
B007	Becky	4

```
SQL>
SQL>
SQL> start Q5
SQL> SELECT firstname FROM students
  2  WHERE sid in
  3  ((SELECT st.sid FROM students st, enrollments en WHERE st.sid = en.sid)
  4  MINUS
  5  (SELECT st.sid FROM students st, enrollments en WHERE st.sid = en.sid AND en.lgrade = 'A'))
  6  /
```

FIRSTNAME

Terry
Barbara
Jack

```
SQL>
SQL>
SQL> start Q6
SQL> SELECT sid, firstname FROM students
  2  WHERE sid in
  3  ((SELECT sid FROM enrollments WHERE lgrade = 'A' AND lgrade IS NOT NULL)
  4  MINUS
  5  (SELECT e.sid FROM enrollments e WHERE e.sid = sid AND e.lgrade != 'A' AND e.lgrade IS NOT NULL))
  6  /
```

SID	FIRSTNAME
B003	Tracy
B006	Terry
B007	Becky

```
SQL>
SQL>
SQL> start Q7
SQL> SELECT dept_code, course# FROM
  2  (SELECT dept_code, course#, COUNT(*) AS count1 FROM classes GROUP BY dept_code, course#)
  3  WHERE count1 IN (SELECT MAX(COUNT(*)) AS count1 FROM classes GROUP BY dept_code, course#)
  4  /
```

```
DEPT   COURSE#
---- ----------
CS       432
Math     314


SQL>
SQL>
SQL> start Q8
SQL> SELECT classid, dept_code, course#, (limit - class_size) AS seats_available FROM classes
  2  WHERE year = 2018 AND semester = 'Spring' AND limit != class_size
  3  /

CLASS DEPT    COURSE# SEATS_AVAILABLE
----- ---- ---------- ---------------
c0001 CS        432           1
c0006 CS        532           1


SQL>
SQL>
SQL> start Q9
SQL> SELECT st.* FROM students st
  2  JOIN (SELECT sid FROM enrollments GROUP BY sid HAVING COUNT(classid) > 4) en ON en.sid = st.sid
  3  /

SID FIRSTNAME        LASTNAME        STATUS        GPA EMAIL
---- --------------- --------------- ---------- ---------- --------------------
B001 Anne            Broder          junior         3.17 broder@bu.edu


SQL>
SQL>
SQL> start Q10
SQL> SELECT cl.* FROM classes cl JOIN (SELECT classid FROM enrollments GROUP BY classid HAVING
COUNT(classid) < 3) en
  2  ON en.classid = cl.classid WHERE  cl.dept_code = 'CS' AND cl.year = 2018 AND cl.semester ='Spring'
  3  /

CLASS DEPT   COURSE#     SECT#     YEAR SEMEST     LIMIT CLASS_SIZE
----- ---- ---------- ---------- ---------- ------ ---------- ----------
c0001 CS        432          1    2018 Spring       35        34


SQL>
SQL>
SQL> start Q11
SQL> SELECT sid, firstname FROM students
  2  WHERE sid IN (SELECT sid FROM enrollments WHERE classid IN
  3  (SELECT classid FROM classes WHERE dept_code = 'CS' AND course# > 400) GROUP BY sid
  4  HAVING COUNT(*) =
  5  (SELECT COUNT(*) FROM classes WHERE dept_code = 'CS' AND course# > 400))
  6  /

SID  FIRSTNAME
---- --------------
B001 Anne
```

```
SQL>
SQL>
SQL> start Q12
SQL>  (SELECT  temp2.title FROM enrollments en INNER JOIN
  2   (SELECT cl.course#, temp1.title, cl.classid FROM classes cl INNER JOIN
  3   (SELECT co.course#, co.title FROM courses co) temp1
  4   ON temp1.course# = cl.course# ) temp2
  5   ON temp2.classid = en.classid
  6   WHERE sid = 'B001')
  7   MINUS
  8   (SELECT  temp2.title FROM enrollments en INNER JOIN
  9   (SELECT cl.course#, temp1.title, cl.classid FROM classes cl INNER JOIN
 10   (SELECT co.course#, co.title FROM courses co) temp1
 11   ON temp1.course# = cl.course# ) temp2
 12   ON temp2.classid = en.classid
 13   WHERE sid = 'B002')
 14  /

TITLE
--------------------
data structure
database systems

SQL>
SQL>
SQL> start Q13
SQL> SELECT firstname FROM students
  2   WHERE sid IN (SELECT sid FROM enrollments WHERE classid IN
  3   ( SELECT classid FROM enrollments WHERE sid = 'B005'))
  4  /

FIRSTNAME
---------------
Anne
Jack
Terry

SQL>
SQL>
SQL> start Q14
SQL> SELECT dept_code, course#, semester, year FROM classes GROUP BY dept_code, course#, semester, year
HAVING COUNT(course#) >= 2
  2  /

DEPT    COURSE# SEMEST      YEAR
---- ---------- ------ ----------
Math     314 Fall       2017

SQL>
SQL>
SQL> start Q15
SQL> SELECT sid, firstname FROM students
  2  WHERE sid IN
```

```
  3  (SELECT sid FROM enrollments en JOIN (SELECT classid, MIN(lgrade) AS lgrade FROM enrollments GROUP
BY classid) en_new
  4  ON en_new.classid = en.classid AND en_new.lgrade = en.lgrade)
  5  /
```

```
SID  FIRSTNAME
---- ---------------
B001 Anne
B002 Terry
B003 Tracy
B004 Barbara
B006 Terry
B007 Becky

6 rows selected.
```

```
SQL>
SQL>
SQL> start Q16
SQL>     SELECT temp2.course#, temp2.title, temp2.dept_code, NVL(en.lgrade , 'To be assigned') AS grade FROM
enrollments en INNER JOIN
  2   (SELECT cl.classid, cl.course#, temp1.title, cl.dept_code FROM classes cl INNER JOIN
  3   (SELECT co.course#, co.title FROM courses co) temp1
  4   ON temp1.course# = cl.course#) temp2
  5   ON temp2.classid = en.classid
  6   WHERE en.sid = 'B003'
  7   /
```

```
  COURSE# TITLE              DEPT GRADE
---------- ------------------- ---- --------------
     432 database systems    CS   A
     240 data structure      CS   To be assigned
```

```
SQL>
SQL>
SQL> start Q17
SQL> SELECT co.dept_code, co.course#, co.title FROM courses co INNER JOIN
  2   (SELECT cl.classid, cl.course#, temp2.sid FROM classes cl INNER JOIN
  3   (SELECT UNIQUE (en.sid), en.classid FROM enrollments en INNER JOIN
  4   (SELECT st.sid, st.gpa FROM students st WHERE gpa > 3.25) temp1
  5   ON en.sid = temp1.sid) temp2
  6   ON temp2.classid = cl.classid) temp3
  7   ON temp3.course# = co.course#
  8   WHERE co.title LIKE '%systems%'
  9   /
```

```
DEPT    COURSE# TITLE
---- ---------- --------------------
CS        532 database systems
CS        432 database systems
```

```
SQL>
SQL>
SQL> start Q18
```

```
SQL>  SELECT firstname, st.sid, NVL(sum1,0) FROM students st LEFT JOIN
  2   (SELECT en.sid, SUM(temp.credits) AS sum1 FROM enrollments en INNER JOIN
  3   (SELECT cl.classid, cl.course#, cc.credits FROM classes cl INNER JOIN
  4   (SELECT course#, credits FROM course_credit) cc
  5   ON cl.course# = cc.course#) temp
  6   ON en.classid = temp.classid
  7   WHERE en.lgrade IS NOT NULL GROUP BY sid) cl
  8   ON st.sid = cl.sid
  9  /

FIRSTNAME      SID  NVL(SUM1,0)
--------------- ---- -----------
Anne           B001    23
Terry          B002    4
Tracy          B003    4
Barbara        B004     8
Jack           B005    3
Terry          B006    3
Becky          B007     4
Tom            B008     0

8 rows selected.

SQL>
SQL>
SQL> start Q19
SQL> SELECT AVG(SUM1)  AS avergae_credits FROM students st INNER JOIN
  2   (SELECT en.sid, SUM(temp.credits) AS SUM1 FROM enrollments en INNER JOIN
  3   (SELECT cl.classid, cl.course#, cc.credits FROM classes cl INNER JOIN
  4   (SELECT course#, credits FROM course_credit) cc
  5   ON cl.course# = cc.course#) temp
  6   ON en.classid = temp.classid
  7   WHERE en.lgrade IS NOT NULL GROUP BY sid) cl
  8   ON st.sid = cl.sid
  9  /

AVERGAE_CREDITS
---------------
         7

SQL>
SQL>
SQL> start Q20
SQL> SELECT sid, sum1 / cnt AS cgpa FROM (SELECT sid, SUM(grade) AS sum1, COUNT(classid) AS cnt FROM
enrollments en
  2  INNER JOIN (SELECT lgrade, ngrade AS grade FROM grades) gr ON gr.lgrade = en.lgrade GROUP BY sid)
ORDER BY cgpa DESC
  3  /

SID     CGPA
---- ----------
B003     4
B007     4
B006     4
```

project1.txt[03/15/18 8:57:58 PM]

```
B001 3.16666667
B005        3
B002        3
B004      2.5
```

7 rows selected.

```
SQL>
SQL> spool off
```