

# CS532 : Project 1

**Name :** Shriram Suryawanshi (**CS532**)

**B-Number:** B00734421 (Spring 2018)

**Name :** Vinen Furtado (**CS532**)

**B-Number:** B00717015 (Spring 2018)

## CS532 : Project 1

### Group Members -

Name : Shriram Suryawanshi (B00734421)

Name : Vinen Furtado (B00717015)

### 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

```
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
```

B001	3.16666667
B005	3
B002	3
B004	2.5

7 rows selected.

SQL>

SQL> spool off