

PROJECT 1:

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SQL> start query1

SQL> select concat(dept\_code, course#) as course\_id, title from Courses  
where course# in (select course# from Classes where year=2020 and  
semester = 'Fall');

COURSE_ID	TITLE
CS432	database systems
Math314	discrete math

SQL> start query2

SQL> (select lastname from Students s, Enrollments e,Classes c where  
s.sid = e.sid and e.classid = c.classid and c.dept\_code = 'CS') intersect  
(select lastname from Students s, Enrollments e,Classes c where s.sid =  
e.sid and e.classid = c.classid and c.dept\_code = 'Math');

LASTNAME
Broder

SQL> start query3

SQL> select c1.dept\_code,c1.course# from Courses c1,Classes c2 where  
c1.course# = c2.course# and c2.year not in 2020;

DEPT	COURSE#
CS	240
CS	432
CS	532

SQL> start query4

SQL> select s.sid, s.lastname, s.gpa from Students s where s.status not  
in 'graduate' and s.sid in (select e.sid from Enrollments e where s.sid =  
e.sid and e.lgrade = 'B');

SID	LASTNAME	GPA
B002	Buttler	3.7
B001	Broder	3.6

SQL> start query5

SQL> select firstname from Students where (sid,firstname) in ((select  
s.sid,s.firstname from Students s,Enrollments e where s.sid = e.sid and  
e.lgrade not in 'C') minus (select s.sid,s.firstname from Students  
s,Enrollments e where s.sid = e.sid and e.lgrade in 'C'));

FIRSTNAME
Terry
Tracy

Jack  
Terry  
Becky

```
SQL> start query6
SQL> (select s.sid,s.firstname from Students s,Enrollments e where s.sid
= e.sid and e.lgrade <= 'A') minus (select s.sid,s.firstname from
Students s,Enrollments e where s.sid = e.sid and e.lgrade <> 'A');
```

SID	FIRSTNAME
B003	Tracy
B006	Terry
B007	Becky

```
SQL> start query7
SQL> select c4.dept_code, c4.course# from courses c3
2 right outer join classes c4 on c3.course# = c4.course# and
c3.dept_code=c4.dept_code
3 group by c4.dept_code, c4.course#
4 having count(c4.course#)=(select(max(count(c1.course#))) from
classes c1, courses c2 where c1.course# = c2.course# and
c1.dept_code=c2.dept_code group by c1.course#,c1.dept_code);
```

DEPT	COURSE#
CS	432
Math	314

```
SQL> start query8
SQL> select c.classid,c.dept_code,c.course#,limit-class_size as
seats_available from Classes c where c.semester = 'Fall' and c.year =
2020 and limit-class_size > 0;
```

CLASS	DEPT	COURSE#	SEATS_AVAILABLE
c0001	CS	432	1
c0002	Math	314	1
c0003	Math	314	3

```
SQL> start query9
SQL> select s.sid, s.firstname || ' ' || s.lastname as fullname from
Students s where (select count(*) from Enrollments e where s.sid = e.sid)
> 3;
```

SID	FULLNAME
B001	Anne Broder

```
SQL> start query10
SQL> select
c1.classid,c1.dept_code,c1.course#,c1.sect#,c1.year,c1.semester,c1.limit,
c1.class_size from Classes c1 inner join Enrollments e ON e.classid =
c1.classid where c1.dept_code = 'CS' having count(e.sid) <3 group by
```

```
c1.classid,c1.dept_code,c1.course#,c1.sect#,c1.year,c1.semester,c1.limit,
c1.class_size;
```

CLASS DE	COURSE#	SECT#	YEAR	SEMEST	LIMIT	CLASS_SIZE
c0001 CS	432	1	2020	Fall	35	34

```
SQL> start query11
SQL> select e.sid, s.firstname
  2   from enrollments e, students s
  3   where e.classid in (select cl.classid from classes cl, courses co
where co.dept_code=cl.dept_code and cl.course#=co.course# and
cl.dept_code='Math' and cl.course# like '3%') and e.sid=s.sid group by
e.sid, s.firstname;
```

SID	FIRSTNAME
B002	Terry
B001	Anne

```
SQL> start query12
SQL> select title from Courses where course# in ((select course# from
Classes natural join Enrollments where sid = 'B003') minus (select
course# from Classes natural join Enrollments where sid = 'B005'));
```

TITLE
database systems
data structure

```
SQL> start query13
SQL> select firstname from Students s where sid in (select sid from
Enrollments e where classid in (select classid from Classes where course#
in (select course# from Classes where classid in (select classid from
Enrollments where sid = 'B005'))));
```

FIRSTNAME
Anne
Jack
Terry

```
SQL> start query14
SQL> select c.dept_code , c.course#, x.year, x.semester from courses c
join (select course# ,year, semester from classes group by year,semester,
course# having count(course#) >1) x on c.course#=x.course# ;
```

DEPT	COURSE#	YEAR	SEMEST
Math	314	2020	Fall

```
SQL> start query15
SQL> select e.sid,s.firstname from Students s inner join enrollments e ON
e.sid = s.sid inner join (select classid, min(lgrade) as lgrade from
```

```
enrollments group by classid) x on e.classid = x.classid where e.lgrade =
x.lgrade group by e.sid,s.firstname;
```

```
SID  FIRSTNAME
```

```
----
```

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

6 rows selected.

```
SQL> start query16
```

```
SQL> select c1.dept_code, c1.course#, c1.title,
  2  case when e.lgrade = 'I' then 'To be assigned'
  3    when e.lgrade is null then 'To be assigned'
  4  else e.lgrade
  5  end    as grade
  6  from courses c1, students s, enrollments e, classes c where s.sid =
'B005' and e.sid=s.sid and e.classid=c.classid and
c1.dept_code=c.dept_code and c1.course#=c.course#;
```

```
DEPT    COURSE#  TITLE                                GRADE
```

```
-----
```

```
CS              532 database systems      B
```

```
SQL> start query17
```

```
SQL> select dept_code,course#,title from Courses where course# in (select
course# from Classes where classid in (select classid from Enrollments
where sid in (select sid from Students where gpa > 3.5))) and
upper(title) like '%DATA%';
```

```
DEPT    COURSE#  TITLE
```

```
-----
```

```
CS              432 database systems
CS              240 data structure
CS              532 database systems
```

```
SQL> start query18
```

```
SQL> select s.sid,s.lastname,sum(g.ngrade) as Total_Credits from Students
s inner join Enrollments e ON s.sid = e.sid inner join Grades g ON
e.lgrade = g.lgrade where e.lgrade is not null group by s.sid,s.lastname;
```

```
SID  LASTNAME          TOTAL_CREDITS
```

```
----
```

```
B005 Smith              3
B001 Broder             19
B002 Buttler            3
B003 Wang               4
B007 Lee                4
B004 Callan             6
B006 Zillman            4
```

7 rows selected.

SQL> start query19

SQL> select avg(c2.credits) as Average from Enrollments e inner join  
Classes c1 ON e.classid = c1.classid inner join Course\_credit c2 ON  
c1.course# = c2.course# where e.lgrade is not null;

AVERAGE
3.76923077

SQL> start query20

SQL> select s.sid,round((sum(g.ngrade)/count(ngrade)),2) as cgpa from  
Students s inner join Enrollments e ON s.sid = e.sid inner join Grades g  
ON e.lgrade = g.lgrade where e.lgrade is not null group by  
(s.sid,s.lastname) order by cgpa desc;

SID	CGPA
B006	4
B007	4
B003	4
B001	3.17
B005	3
B002	3
B004	3

7 rows selected.

SQL> spool off