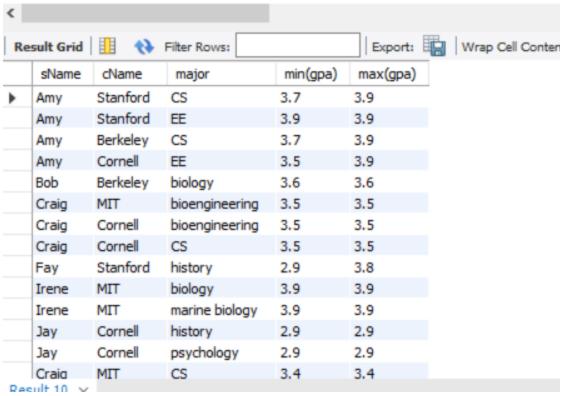
## Will Colvill Lab 6 Aggregate Functions

1.

2.

```
select max(gpa) as Max, min(gpa) as Min
        from Student s join Apply a on s.sID = a.sID
  2
        where major = 'CS';
  3
  4
        select max(gpa) - min(gpa) as Spread
        from Student s join Apply a on s.sID = a.sID
  6
        where major = 'CS';
  7
  8
  9
                                       Export: Wrap Cell Content:
Result Grid
            Filter Rows:
   Max
        Min
  3.9
        3.4
          select max(gpa) - min(gpa) as Spread
    5 •
          from Student s join Apply a on s.sID = a.sID
    6
          where major = 'CS';
    7
    8
    9
                                         Export: Wrap Cell
  Spread
 0.5
```

- select sName, cName, major, min(gpa), max(gpa) 9 •
- from Student s join Apply a on s.sID = a.sID 10
- group by cName, major; 11

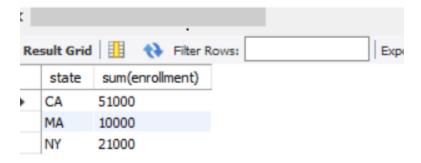


3.

select state, sum(enrollment) 13 •

from college 14

group by state; 15



4.

```
select avg(gpa) as Average_GPA
    17 •
            from Student s join Apply a on s.sID = a.sID
    18
            where major = 'CS';
    19
                                            Export: Wrap
   Result Grid
                Filter Rows:
      Average_GPA
      3.714285714285714
5.
        21 • ⊝ select distinct (select avg(GPA) as avgGPA from Student
        22
                       where sID in (
                          select sID from Apply where major = 'CS')) -
        23
                      (select avg(GPA) as avgGPA from Student
        24
   0
        25
                       where sID not in (
                          select sID from Apply where major = 'CS')) as d
        26
        27
               from Student;
       Export: Wrap Cell Content: TA
          d
         0.19428571428571573
6.
```

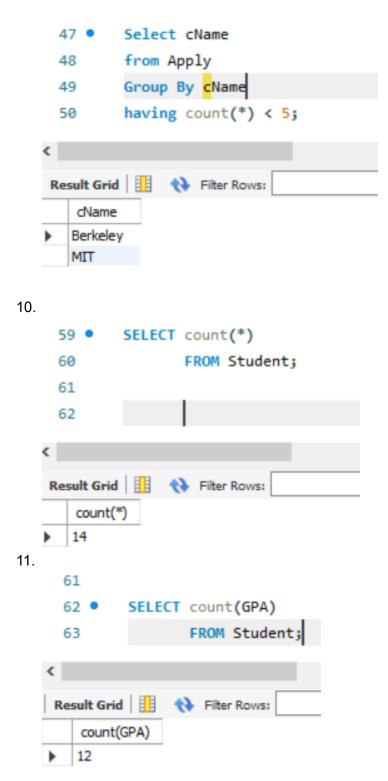
```
28
           select count(*)
     29 •
           from Student;
     30
     31
           SELECT COUNT(DISTINCT
     32 •
           WHEDE chame ITVE 'C
    count(*)
     12
7.
         SELECT COUNT(DISTINCT sID) FROM Apply
         WHERE cName LIKE 'Cornell';
   33
                                    Export: Wrap Cel
  COUNT(DISTINCT
     sID)
    3
```

8.

```
select sid, count(distinct cname)
 35 •
        from Apply
 36
        group by sid;
 37
Export:
        count(distinct
   sid
        cname)
  123
        3
  234
        1
  345
        2
  543
        1
        1
  678
  765
        2
  876
        2
  987
        2
```

9.

38 select sname, s.sid, count(distinct cname) 39 from Apply a join Student s on a.sid = s.sid 40 group by sname; 41 Export: Wrap Cell Result Grid Filter Rows: count(distinct sname sid cname) Amy 123 Bob 234 1 Craig 345 Fay 678 Helen 987 2 876 Irene 2 Jay 765 2



It is different because count does not add null values to the count

```
SELECT count(*)
   59 •
                  FROM Student;
   60
   61
           SELECT count(GPA)
   62 •
                  FROM Student;
   63
   64
   tesult Grid
                 Filter Rows:
     count(GPA)
    12
12.
           SELECT count(*)
   59 •
                  FROM Student;
   60
   61
           SELECT count(GPA)
   62 •
                  FROM Student;
   63
   64
  tesult Grid
                 Filter Rows:
     count(GPA)
     12
```

It deleted the values where the gpa was null