# PostgreSQL Aggregation

## Aggregation

### Student data

| id | name    | website                      | github_username | points | gender | graduated | cohort_id |
|----|---------|------------------------------|-----------------|--------|--------|-----------|-----------|
| 1  | Kyle    | http://kyleluck.com/         | kyleluck        | 5      | M      | FALSE 0   | 1 ===     |
| 2  | Anthony | NULL                         | Athompsonjr26   | 7      | M      | FALSE 🗘   | 1 ===     |
| 3  | Matt    | http://matthewbrimmer.com/   | mbrimmer83      | 6      | M      | FALSE 🗘   | 1 ===     |
| 4  | Kirk    | NULL                         | NULL            | 9      | M      | FALSE 🗘   | 2         |
| 5  | Carolyn | NULL                         | NULL            | 12     | F      | FALSE 🗘   | 2         |
| 6  | Dominic | NULL                         | NULL            | 7      | M      | FALSE 🗘   | 2         |
| 8  | Johnny  | http://github.johnnycopes.io | hunetsohueo     | 5      | М      | FALSE 🗘   | NULL I    |

#### The count function

```
select count(*) from student;

( ② ) Load Query... Save Query...

count
```

#### Number of Students that have a website?

| id | name    | website                      | github_username | points | gender | graduated | cohort_id |
|----|---------|------------------------------|-----------------|--------|--------|-----------|-----------|
| 1  | Kyle    | http://kyleluck.com/         | kyleluck        | 5      | M      | FALSE 0   | 1 ===     |
| 2  | Anthony | NULL                         | Athompsonjr26   | 7      | M      | FALSE 🗘   | 1 ===     |
| 3  | Matt    | http://matthewbrimmer.com/   | mbrimmer83      | 6      | M      | FALSE 🗘   | 1 ===     |
| 4  | Kirk    | NULL                         | NULL            | 9      | M      | FALSE 🗘   | 2         |
| 5  | Carolyn | NULL                         | NULL            | 12     | F      | FALSE 🗘   | 2         |
| 6  | Dominic | NULL                         | NULL            | 7      | M      | FALSE 🗘   | 2         |
| 8  | Johnny  | http://github.johnnycopes.io | hunetsohueo     | 5      | M      | FALSE 🗘   | NULL III  |

#### Number of Students that have a website?

```
select
count(website)
from student;

Cancel Execute Statement
```

#### The sum function

```
select sum(points) from student;

Cancel Execute Statement

sum

51
```

### More functions

- avg
- max
- min

## group by

```
select cohort_id, sum(points) from student group by cohort_id;
         Load Query...
                    Save Query...
                                                                                          Execute Statement
cohort_id sum
 NULL
          5
         18
    2
```

28

## group by

```
select cohort_id,
       sum(points) as total_points,
       avg(points) as average_points,
       count(*) as num_students
from student group by cohort_id;
                   Save Query...
         Load Query...
                                                                                         Execute Statement
cohort_id total_points average_points
                        num_students
 NULL
          18
                              3
    2
          28 9.333333333333333
                              3
```

# order by

select \* from student order by points;

| < @ | > Load Query | Save Query                   |                 |        |        |           | Cancel    | Execute Statement |  |  |
|-----|--------------|------------------------------|-----------------|--------|--------|-----------|-----------|-------------------|--|--|
|     |              |                              |                 |        |        |           |           |                   |  |  |
| id  | name         | website                      | github_username | points | gender | graduated | cohort_id |                   |  |  |
| 1   | Kyle         | http://kyleluck.com/         | kyleluck        | 1      | М      | TRUE      | 1         |                   |  |  |
| 8   | Johnny       | http://github.johnnycopes.io | hunetsohueo     | 6      | М      | FALSE     | NULL      |                   |  |  |
| 3   | Matt         | http://matthewbrimmer.com/   | mbrimmer83      | 7      | М      | FALSE     | 1         |                   |  |  |
| 2   | Anthony      | NULL                         | Athompsonjr26   | 8      | М      | FALSE     | 1         |                   |  |  |
| 6   | Dominic      | NULL                         | NULL            | 8      | М      | FALSE     | 2         |                   |  |  |
| 4   | Kirk         | NULL                         | NULL            | 10     | М      | FALSE     | 2         |                   |  |  |
| 5   | Carolyn      | NULL                         | NULL            | 13     | F      | FALSE     | 2         |                   |  |  |

returns same result set, by with a specified order

# Descending Order (desc)

select \* from student order by points desc;

Load Query... Save Query...

| name    | website                                       | github_username   | points  | gender   | graduated  | cohort_id   |  |  |  |  |
|---------|---|---|---|--|--|---|--|--|--|--|
| Carolyn | NULL  | NULL  | 13  | F  | FALSE  | 2   |  |  |  |  |
| Kirk    | NULL  | NULL  | 10  | M  | FALSE  | 2   |  |  |  |  |
| Anthony | NULL  | Athompsonjr26   | 8   | M  | FALSE  | 1   |  |  |  |  |
| Dominic | NULL  | NULL  | 8   | M  | FALSE  | 2   |  |  |  |  |
| Matt    | http://matthewbrimmer.com/                    | mbrimmer83  | 7   | M  | FALSE  | 1   |  |  |  |  |
| Johnny  | http://github.johnnycopes.io                  | hunetsohueo   | 6   | M  | FALSE  | NULL  |  |  |  |  |
| Kyle    | http://kyleluck.com/                          | kyleluck  | 1   | M  | TRUE   | 1   |  |  |  |  |
|         | name Carolyn Kirk Anthony Dominic Matt Johnny | name website Carolyn NULL Kirk NULL Anthony NULL Dominic NULL Matt http://matthewbrimmer.com/ Johnny http://github.johnnycopes.io | name website github_username Carolyn NULL NULL Kirk NULL NULL Anthony NULL Athompsonjr26 Dominic NULL NULL Matt http://matthewbrimmer.com/ mbrimmer83 Johnny http://github.johnnycopes.io hunetsohueo | name website github_username points Carolyn NULL NULL 13 Kirk NULL NULL 10 Anthony NULL Athompsonjr26 8 Dominic NULL NULL 8 Matt http://matthewbrimmer.com/ mbrimmer83 7 Johnny http://github.johnnycopes.io hunetsohueo 6 | name website github_username points gender  Carolyn NULL NULL 13 F  Kirk NULL 10 M  Anthony NULL Athompsonjr26 8 M  Dominic NULL NULL 8 M  Matt http://matthewbrimmer.com/ mbrimmer83 7 M  Johnny http://github.johnnycopes.io hunetsohueo 6 M | name website github_username points gender graduated  Carolyn NULL NULL 13 F FALSE  Kirk NULL NULL 10 M FALSE  Anthony NULL Athompsonjr26 8 M FALSE  Dominic NULL NULL 8 M FALSE  Matt http://matthewbrimmer.com/ mbrimmer83 7 M FALSE  Johnny http://github.johnnycopes.io hunetsohueo 6 M FALSE |  |  |  |  |

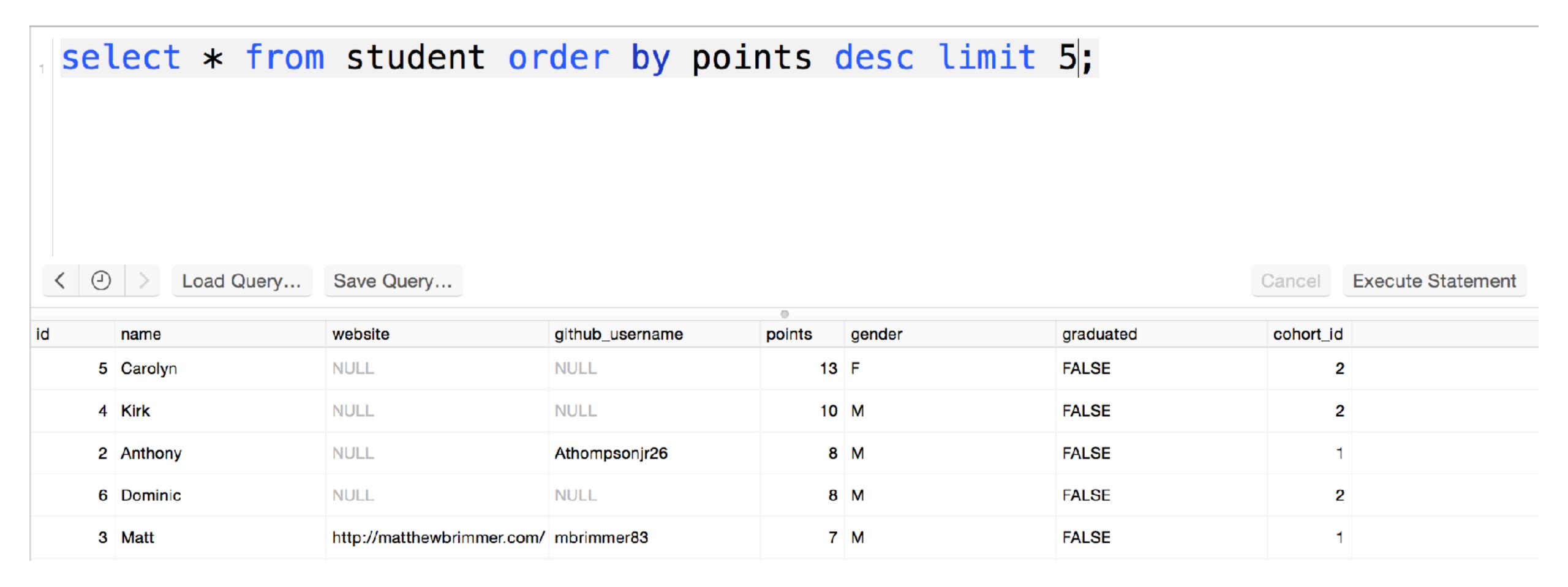
**Execute Statement** 

#### Order by more than one column

select \* from student order by cohort\_id, points desc;

| < ⊕ | > Load Query | Save Query                   |                 |        |        |           | Cancel    | Execute Statement |  |  |
|-----|--------------|------------------------------|-----------------|--------|--------|-----------|-----------|-------------------|--|--|
|     |              |                              |                 |        |        |           |           |                   |  |  |
| id  | name         | website                      | github_username | points | gender | graduated | cohort_id |                   |  |  |
| 2   | Anthony      | NULL                         | Athompsonjr26   | 8      | М      | FALSE     | 1         |                   |  |  |
| 3   | Matt         | http://matthewbrimmer.com/   | mbrimmer83      | 7      | М      | FALSE     | 1         |                   |  |  |
| 1   | Kyle         | http://kyleluck.com/         | kyleluck        | 1      | M      | TRUE      | 1         |                   |  |  |
| 5   | Carolyn      | NULL                         | NULL            | 13     | F      | FALSE     | 2         |                   |  |  |
| 4   | Kirk         | NULL                         | NULL            | 10     | М      | FALSE     | 2         |                   |  |  |
| 6   | Dominic      | NULL                         | NULL            | 8      | М      | FALSE     | 2         |                   |  |  |
| 8   | Johnny       | http://github.johnnycopes.io | hunetsohueo     | 6      | М      | FALSE     | NULL      |                   |  |  |

### limit



limit a result set to a fixed number of rows. Combine with order by descending to get top results

#### offset

select \* from student order by points desc limit 5 offset 1;

| <  | (-) | > Load Query | Save Query                   |                 |        |        |           | Cancel    | Execute Statement |  |  |
|----|-----|--------------|------------------------------|-----------------|--------|--------|-----------|-----------|-------------------|--|--|
|    |     |              |                              |                 |        |        |           |           |                   |  |  |
| id |     | name         | website                      | github_username | points | gender | graduated | cohort_id |                   |  |  |
|    | 4   | Kirk         | NULL                         | NULL            | 10     | M      | FALSE     | 2         |                   |  |  |
|    | 2   | Anthony      | NULL                         | Athompsonjr26   | 8      | М      | FALSE     | 1         |                   |  |  |
|    | 6   | Dominic      | NULL                         | NULL            | 8      | М      | FALSE     | 2         |                   |  |  |
|    | 3   | Matt         | http://matthewbrimmer.com/   | mbrimmer83      | 7      | М      | FALSE     | 1         |                   |  |  |
|    | 8   | Johnny       | http://github.johnnycopes.io | hunetsohueo     | 6      | М      | FALSE     | NULL      |                   |  |  |
|    |     |              |                              |                 |        |        |           |           |                   |  |  |