# CS345 - Final - Fall 2018 - 12/13/2018

Name (printed) Name (signed)

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## How to submit this final:

* This final contains 16 problems on 8 pages. Make sure to tackle each problem.
* For all problems, you need to insert the solution as a screenshot taken directly from MySQLWorkbench right here into this document. You also need to include the screenshot of the output produced – whenever your SQL code produces output (it doesn’t e.g. for problem 14).
* Please submit the printout of this final, in person, at the end of the time when the actual final happened, i.e. Thursday 12/13, 2:30 in my office in Engineering 219. If I’m not there, slide your paper copy under the door.
* Finally, I want you to submit ONE script, that contains all the problems’ solutions, on BBL. This script needs to have the solutions to the problems in the order suggested by the problem numbering, and made explicit by adding a comment ‘—xx.’ (where xx is the number of the problem) right before each code snippet.  
  I have created a ‘Final’ assignment, that will allow to make your submission.
* As always, if something is not clear, ambiguous or otherwise flawed, shoot me a message on slack.
* GOOD LUCK and thanks for a great semester!

## Comparisons and Boolean operators and more

1. Return the cyclist usac and full name for all cyclists who are older than 25.
2. Return the usac and name of cyclists whose first name starts with the letter ‘J’.
3. Return the usac and full name of cyclists, along with the race ID and name of all races they ever participated in and whose first name ends with the letter ‘e’ OR whose last name starts with the letter ‘O’. Of that group of cyclists only return those who are between 19 and 35 years old (exclusively) and were on ranks one or two.

Use a JOIN statement that has the smallest number of tables possible.

1. Who are the cyclists that were on ranks one, two or three in these races:

* Grand Canyon Memorial
* Gambling and Racing

Use a JOIN with the minimal number of tables necessary! Return the usac and full name of those cyclists, along with the race ID, race name and rank.

1. What were the races in which senior cyclists participated in? Return race ID and race name. Return each race only once.  
   Hint: Senior cyclists are cyclists with an age of 60 or older.

## Joins and order by

1. Write a query that returns information about races and cities. Return race ID, race name and city name. Use as small a number of tables as possible. Order the result by race name.
2. Return the usac and full name of cyclists who participated in races in Flagstaff or Las Vegas. Order by last name.
3. Write a query that returns all city names that don’t have a race. Use the minimal number of tables possible.
4. Return the cyclist usac of all cyclists who participated in any race in Sedona or Flagstaff. In preparation for a subquery problem later on, also return the race IDs.

## Group by

1. Return the number of participants of races per city.
2. Return the age of the oldest cyclist of each team, along with the team ID and the team name.
3. For each cyclist, return the cyclist usac and full name, along with the best rank ever achieved across all races.

## Subqueries

1. Write a query that returns all cyclists’ usac and full names who didn’t participate in a race in Sedona or Flagstaff!  
   Hint: one way to go about this is to use the query in problem 9 to create an ‘inner table’ by way of a subquery, that you then outer join with the cyclist table.
2. Create a view called ‘all\_data’ that returns the following pieces of information, with the very same names as listed below. Use this view for the queries to follow, but nowhere else.

* team\_id,
* team\_name,
* cyclist\_usac,
* cyclist\_first\_name,
* cyclist\_last\_name,
* cyclist\_age,
* race\_id,
* race\_name,
* race\_date,
* cyclist\_rank,
* city\_id,
* city\_name,
* city\_zip

1. What is the worst rank each team (team ID and team name) achieved in any race? Who achieved it (cyclist usac and full name) and in what city did it happen? Order by team ID! Write a correlated subquery in order to achieve this.
2. See the last question: write the same query, but use an INNER JOIN, instead of a correlated subquery.