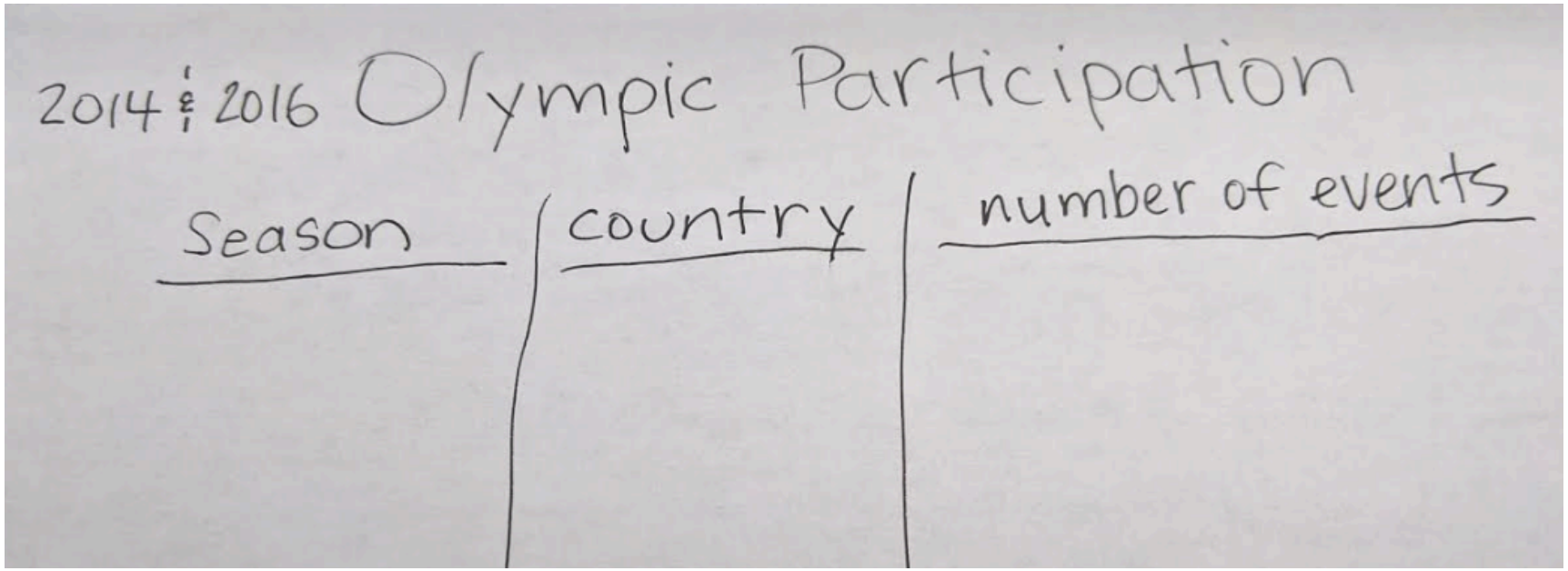
Reporting in SQL

You can create data formatted as a report in a SQL query. To plan your query, first understand what fields should be on the report. It can be helpful to sketch this out.



You know how to query the summer_games and winter_games tables to get a COUNT of events.
And you know how to JOIN the countries data to get the country name.

But how can you fill in the season report field?

Get the info you need from the summer_games table.
Get the info you need from the winter_games table.
UNION them together!

```
SELECT
    'summer' AS season,
    country,
    COUNT(DISTINCT event) AS events
FROM summer_games AS s
JOIN countries AS c
ON s.country_id = c.id
GROUP BY country
UNION ALL
SELECT
    'winter' AS season,
    country,
    COUNT(DISTINCT event) AS events
FROM winter_games AS w
JOIN countries AS c
ON w.country_id = c.id
GROUP BY country
ORDER BY country, season;
```

Create an alias called season and populate that field with a text string indicating which Olympic games – summer or winter

Join to the countries table to get the country name

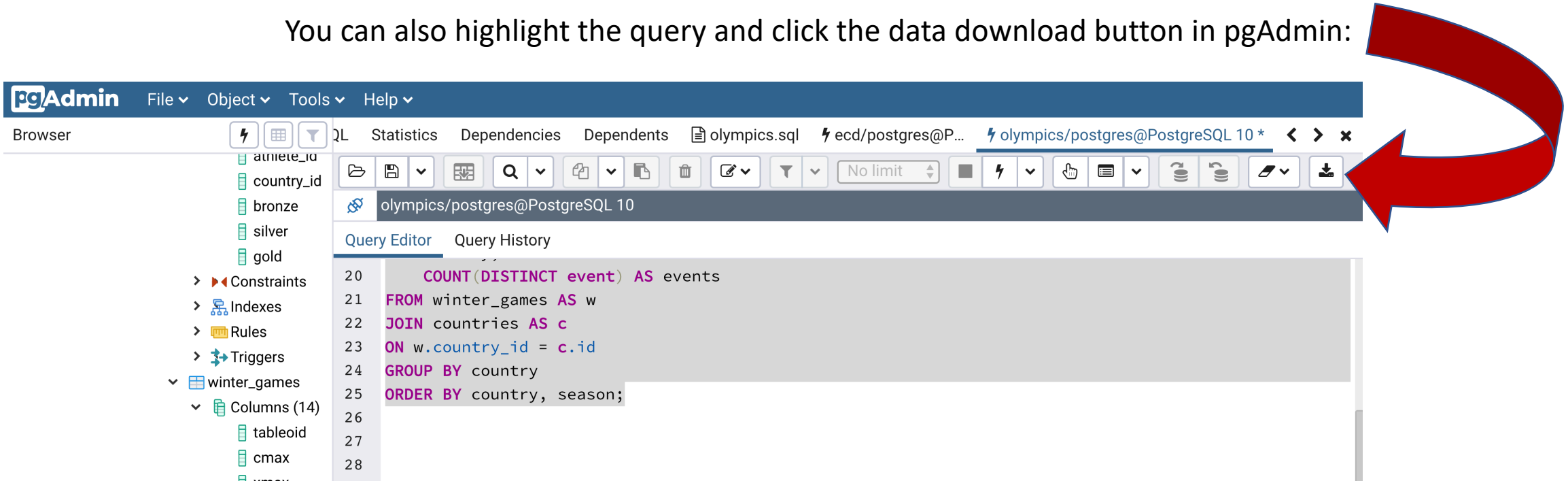
Combine the queries with UNION ALL

Mirror the summer_games table query, but fill season with winter for the winter_games

At the very end, you can ORDER BY country and season to put form the results for the report

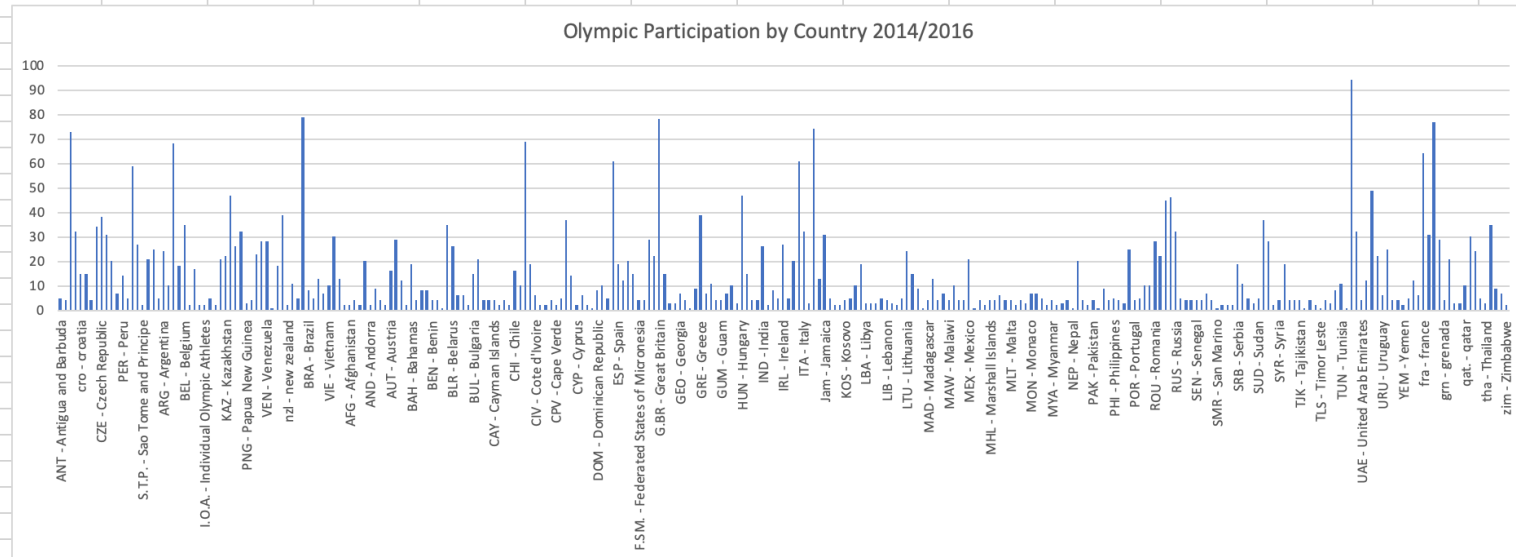
	season text	country character varying (255)	events bigint
1	summer	ANT - Antigua and Barbuda	5
2	summer	CAM - Cambodia	4
3	summer	CAN - Canada	73
4	winter	CAN - Canada	32
5	summer	cro - croatia	15
6	winter	cro - croatia	15
7	summer	COK - Cook Islands	4

You can also highlight the query and click the data download button in pgAdmin:



This creates a csv file with your query results. You can open the file with Excel, apply conditional formatting and/or create dashboards.

season	country	events
summer	ANT - Antigua and Barbuda	5
summer	CAM - Cambodia	4
summer	CAN - Canada	73
winter	CAN - Canada	32
summer	cro - croatia	15
winter	cro - croatia	15
summer	COK - Cook Islands	4
summer	COL - Colombia	34
summer	CZE - Czech Republic	38
winter	CZE - Czech Republic	31
summer	DEN - Denmark	20
winter	DEN - Denmark	7
summer	PER - Peru	14
winter	PER - Peru	5
summer	POL - Poland	59
winter	POL - Poland	27
summer	S.T.P. - Sao Tome and Principe	2
summer	SLO - Slovenia	21
winter	SLO - Slovenia	25
summer	ZAM - Zambia	5
summer	ARG - Argentina	24
winter	ARG - Argentina	10
summer	AUS - Australia	68
winter	AUS - Australia	18
summer	BEL - Belgium	35



COALESCE()

- accepts an unlimited number of arguments
- evaluates the arguments from left to right, returning the first non-null value it finds

What value will the following return?
COALESCE(NULL, 34, 6, NULL)

We can use COALESCE to return a substitute value when NULLs are found.

What will the following query return when ed is NULL?

```
SELECT company,
       project_type,
       COALESCE(ed, '$0') econ_dev_grant
from ecd;
```

	company text	project_type text	econ_dev_grant money
1	ALSAC St Jude Children's	Expansion	$36,000,000.00
2	Hankook Tire Co., Ltd	Recruitment	$0.00
3	Tyson Foods, Inc.	Expansion New Location	$6,000,000.00
4	Denso Manufacturing Tennessee, Inc.	Expansion	$20,000,000.00
5	Eastman Chemical Company	Expansion	$20,000,000.00
6	AllianceBernstein L.P.	Recruitment	$17,500,000.00

Exercises

1. Create a query to generate the report below.
    a. Display the country name, 4-digit year, count of Nobel prize winners when that count is at least 1, and country size according to the following business rule:
        large - population greater than 100 million
        medium – population between 50 and 100 million
        small – less than 50 million

    b. Sort the results so the country and year with the largest number of Nobel prize winners is at the top.

    c. Export the results, and then open the file with Excel. Create a chart to effectively communicate the findings.

	country character varying (255)	calendar_year text	nobel_prize_winners integer	country_size text
1	U.S.A. - United States	2009	10	large
2	U.S.A. - United States	2004	10	large
3	U.S.A. - United States	2011	9	large
4	U.S.A. - United States	2013	9	large

2. Create the report below using the olympics database. Show a row for each country and each year. Use COALESCE() to display unknown when **gdp** is NULL.

	country character varying (255)	calendar_year text	gdp_amount text
1	AFG - Afghanistan	2000	unknown
2	AFG - Afghanistan	2001	$2,461,665,938.00
3	AFG - Afghanistan	2002	$4,128,820,723.00
4	AFG - Afghanistan	2003	$4,583,644,246.00
5	AFG - Afghanistan	2004	$5,285,465,686.00
6	AFG - Afghanistan	2005	$6,275,073,572.00
7	AFG - Afghanistan	2006	$7,057,598,407.00