Week 2 Hands On Labs

These ungraded hands-on-lab will help you build your skills working with combining information from multiple tables. Solutions to all problems are immediately available, but you'll learn the material more *durably* if you attempt each problem before consulting its solution.

All of the queries use tables in the flights database. You may find the data descriptions here helpful:

http://cran.r-project.org/web/packages/nycflights13/nycflights13.pdf

1. Write a SELECT statement that returns all of the rows and columns in the planes table

2. Using the weather table, concatenate the year, month, and day columns to display a date in the form "3/17/2013".

> See: http://www.postgresql.org/docs/9.1/static/functions-string.html
> PostgreSQL delimiter is ||. Note that PostgreSQL does not support computed columns directly; there are ways to implement this in a function or a view.

3. Order by planes table by number of seats, in descending order.

For your reference, here are the first few rows of the resultset…

	tailnum character(6)	year integer	type character varying	manufacturer character varying	model character varying	engines integer	seats integer	speed integer	engine character varying
1	N670US	1990	Fixed wing mult	BOEING	747-451	4	450		Turbo-jet
2	N57016	2000	Fixed wing mult	BOEING	777-224	2	400		Turbo-fan
3	N862DA	1999	Fixed wing mult	BOEING	777-232	2	400		Turbo-jet
4	N272AT		Fixed wing mult	BOEING	777-200	2	400		Turbo-jet
5	N78013	1999	Fixed wing mult	BOEING	777-224	2	400		Turbo-fan

4. List only those planes that have an engine that is 'Reciprocating'

5. List only the first 5 rows in the flights table

6. What was the longest (non-blank) air time?

	air_time integer
1	695

7. What was the shortest (non-blank) air time for Delta?

	air_time integer
1	26

8. Show all of the Alaska Airlines flights between June 1st, 2013 and June 3rd, 2013. Is the way the data is stored in the database helpful to you in making your query?

9. Show all of the airlines whose names contain 'America'

	carrier character(2)	name character varying
1	AA	American Airlines Inc.
2	VX	Virgin America

10. How many flights went to Miami?

	count bigint
1	11728

11. Were there more flights to Miami in January 2013 or July 2013? (Multiple queries are OK)

12. What is the average altitude of airports?

13. What is the average altitude of the three major New York airports?

	avg numeric
1	17.666666666666667

14. What is the average altitude for airports grouped by timezone. Which timezone has the highest altitude? Why?

	tz integer	avg numeric
1	-11	94.0000000000000000
2	-10	486.1538461538461538
3	-9	210.3378378378378378
4	-8	960.0789473684210526
5	-7	3848.4347826086956522
6	-6	981.9519230769230769
7	-5	502.6488888888888889
8	-4	665.3939393939393939
9	5	1688.0000000000000000
10	6	35.0000000000000000
11	7	94.0000000000000000
12	8	115.5000000000000000

15. Which of these four airplanes made the most flights out of New York City airports in 2013?
Plane tailnums: 'N125UW','N848MQ','N328AA','N247JB'

	tailnum character(6)	count bigint
1	N328AA	393
2	N247JB	350
3	N848MQ	175
4	N125UW	35

16. For each of these four planes, show the corresponding meta-data (model, manufacturer, engines, etc.) about each plane? What is surprising about the information returned? How do you think this could happen?

	tailnum character(6)	year integer	type character varying	manufacturer character varying	model character varying	engines integer	seats integer	speed integer	engine character varying
1	N125UW	2009	Fixed wing multi engine	AIRBUS	A320-214	2	182		Turbo-fan
2	N247JB	2006	Fixed wing multi engine	EMBRAER	ERJ 190-100 IGW	2	20		Turbo-fan
3	N328AA	1986	Fixed wing multi engine	BOEING	767-223	2	255		Turbo-fan

17. Write a SELECT statement that shows for all of the flights during the period February 14th to February 17th for each of the four planes above: 'N125UW','N848MQ','N328AA','N247JB'. Your select statement should return the following information: tailnum, flight date information, departure delay, arrival delay, 3 digit destination code

	tailnum character(6)	year integer	month integer	day integer	dep_delay integer	arr_delay integer	dest character(3)
1	N247JB	2013	2	14	124	127	CLT
2	N247JB	2013	2	14	99	91	SJU
3	N328AA	2013	2	14	1	-16	LAX
4	N328AA	2013	2	14	12	-9	LAX
5	N328AA	2013	2	15	33	8	LAX
6	N328AA	2013	2	16	8	-35	LAX
7	N328AA	2013	2	17	-7	-19	LAX
8	N848MQ	2013	2	17	39	30	RDU
9	N848MQ	2013	2	15	-8	-7	DCA
10	N848MQ	2013	2	16	2	-16	DCA
11	N848MQ	2013	2	14	24	16	DCA
12	N848MQ	2013	2	17	-7	-22	RDU
13	N848MQ	2013	2	14	12	0	RDU
14	N848MQ	2013	2	15	-4	-16	DCA

18. Add a join clause, to also show destination airport name. How many rows were returned?

	tailnum character(6)	year integer	month integer	day integer	dep_delay integer	arr_delay integer	dest character(3)	name character varying
1	N247JB	2013	2	14	124	127	CLT	Charlotte Douglas Intl
2	N328AA	2013	2	14	12	-9	LAX	Los Angeles Intl
3	N328AA	2013	2	14	1	-16	LAX	Los Angeles Intl
4	N328AA	2013	2	15	33	8	LAX	Los Angeles Intl
5	N328AA	2013	2	16	8	-35	LAX	Los Angeles Intl
6	N328AA	2013	2	17	-7	-19	LAX	Los Angeles Intl
7	N848MQ	2013	2	14	24	16	DCA	Ronald Reagan Washington Natl
8	N848MQ	2013	2	14	12	0	RDU	Raleigh Durham Intl
9	N848MQ	2013	2	17	-7	-22	RDU	Raleigh Durham Intl
10	N848MQ	2013	2	15	-4	-16	DCA	Ronald Reagan Washington Natl
11	N848MQ	2013	2	15	-8	-7	DCA	Ronald Reagan Washington Natl
12	N848MQ	2013	2	16	2	-16	DCA	Ronald Reagan Washington Natl
13	N848MQ	2013	2	17	39	30	RDU	Raleigh Durham Intl

19. Rewrite the join as a left join, and compare your results.

	tailnum character(6)	year integer	month integer	day integer	dep_delay integer	arr_delay integer	dest character(3)	name character varying
1	N247JB	2013	2	14	124	127	CLT	Charlotte Douglas Intl
2	N247JB	2013	2	14	99	91	SJU	
3	N328AA	2013	2	14	1	-16	LAX	Los Angeles Intl
4	N328AA	2013	2	14	12	-9	LAX	Los Angeles Intl
5	N328AA	2013	2	15	33	8	LAX	Los Angeles Intl
6	N328AA	2013	2	16	8	-35	LAX	Los Angeles Intl
7	N328AA	2013	2	17	-7	-19	LAX	Los Angeles Intl
8	N848MQ	2013	2	17	39	30	RDU	Raleigh Durham Intl
9	N848MQ	2013	2	15	-8	-7	DCA	Ronald Reagan Washington Natl
10	N848MQ	2013	2	16	2	-16	DCA	Ronald Reagan Washington Natl
11	N848MQ	2013	2	14	24	16	DCA	Ronald Reagan Washington Natl
12	N848MQ	2013	2	17	-7	-22	RDU	Raleigh Durham Intl
13	N848MQ	2013	2	14	12	0	RDU	Raleigh Durham Intl
14	N848MQ	2013	2	15	-4	-16	DCA	Ronald Reagan Washington Natl

20. Add a second left join clause to also show the number of seats in the planes

	tailnum character(6)	year integer	month integer	day integer	dep_delay integer	arr_delay integer	dest character(3)	name character varying	seats integer
1	N247JB	2013	2	14	124	127	CLT	Charlotte Douglas Intl	20
2	N247JB	2013	2	14	99	91	SJU		20
3	N328AA	2013	2	14	1	-16	LAX	Los Angeles Intl	255
4	N328AA	2013	2	14	12	-9	LAX	Los Angeles Intl	255
5	N328AA	2013	2	15	33	8	LAX	Los Angeles Intl	255
6	N328AA	2013	2	16	8	-35	LAX	Los Angeles Intl	255
7	N328AA	2013	2	17	-7	-19	LAX	Los Angeles Intl	255
8	N848MQ	2013	2	17	39	30	RDU	Raleigh Durham Intl	
9	N848MQ	2013	2	15	-8	-7	DCA	Ronald Reagan Washington Natl	
10	N848MQ	2013	2	16	2	-16	DCA	Ronald Reagan Washington Natl	
11	N848MQ	2013	2	14	24	16	DCA	Ronald Reagan Washington Natl	
12	N848MQ	2013	2	17	-7	-22	RDU	Raleigh Durham Intl	
13	N848MQ	2013	2	14	12	0	RDU	Raleigh Durham Intl	
14	N848MQ	2013	2	15	-4	-16	DCA	Ronald Reagan Washington Natl	

21. Rewrite your query, using table aliases. (Results unchanged from above). Do you find the code more readable with or without table aliases?

22. What are the names of the five airports that receive the most flights?

	name character varying	count bigint
1	Chicago Ohare Intl	17283
2	Hartsfield Jackson Atlanta Intl	17215
3	Los Angeles Intl	16174
4	General Edward Lawrence Logan Intl	15508
5	Orlando Intl	14082

23. What are American Airlines' destination cities from the New York airports?

	airport character varying
1	Austin Bergstrom Intl
2	Chicago Ohare Intl
3	Dallas Fort Worth Intl
4	Eagle Co Rgnl
5	Fort Lauderdale Hollywood Intl
6	General Edward Lawrence Logan Intl
7	George Bush Intercontinental
8	Lambert St Louis Intl
9	Los Angeles Intl
10	Mc Carran Intl
11	Miami Intl
12	Orlando Intl
13	Palm Beach Intl
14	San Diego Intl
15	San Francisco Intl
16	Seattle Tacoma Intl
17	Tampa Intl