Module 6 - Assignment 2 – Joins

BY RANDY LEON

1. [Warm-up Exercise] 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'.
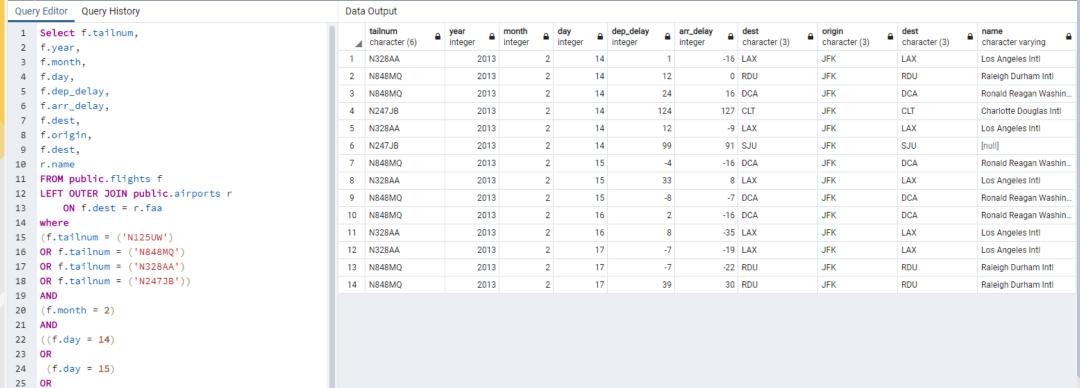
Your select statement should return the following information:
tailnum
flight date information
departure delay
arrival delay
3 digit destination code

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Query Editor   Query History

```
1   Select f.tailnum,
2   f.year,
3   f.month,
4   f.day,
5   f.dep_delay,
6   f.arr_delay,
7   f.dest,
8   f.origin,
9   f.dest
10  FROM public.flights f
11  where
12  (f.tailnum = ('N125UW')
13  OR f.tailnum = ('N848MQ')
14  OR f.tailnum = ('N328AA')
15  OR f.tailnum = ('N247JB'))
16  AND
17  (f.month = 2)
18  AND
19  ((f.day = 14)
20  OR
21   (f.day = 15)
22  OR
23  (f.day = 16)
24  OR
```

Data Output

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

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

```sql
1   Select f.tailnum,
2   f.year,
3   f.month,
4   f.day,
5   f.dep_delay,
6   f.arr_delay,
7   f.dest,
8   f.origin,
9   f.dest,
10  r.name
11  FROM public.flights f
12  LEFT OUTER JOIN public.airports r
13      ON f.dest = r.faa
14  where
15  (f.tailnum = ('N125UW')
16  OR f.tailnum = ('N848MQ')
17  OR f.tailnum = ('N328AA')
18  OR f.tailnum = ('N247JB'))
19  AND
20  (f.month = 2)
21  AND
22  ((f.day = 14)
23  OR
24   (f.day = 15)
25  OR
26  (f.day = 16)
27  OR
28  (f.day = 17))
```

Data Output

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

Only 14 rows were returned because that is the amount of common rows in a left outer join.

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

```sql
1   Select f.tailnum,
2   f.year,
3   f.month,
4   f.day,
5   f.dep_delay,
6   f.arr_delay,
7   f.dest,
8   f.origin,
9   f.dest,
10  r.name
11  FROM public.flights f
12  LEFT JOIN public.airports r
13      ON f.dest = r.faa
14  where
15  (f.tailnum = ('N125UW')
16  OR f.tailnum = ('N848MQ')
17  OR f.tailnum = ('N328AA')
18  OR f.tailnum = ('N247JB'))
19  AND
20  (f.month = 2)
21  AND
22  ((f.day = 14)
23  OR
24   (f.day = 15)
25  OR
26  (f.day = 16)
27  OR
28  (f.day = 17));
```

Data Output

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

They are identical results.
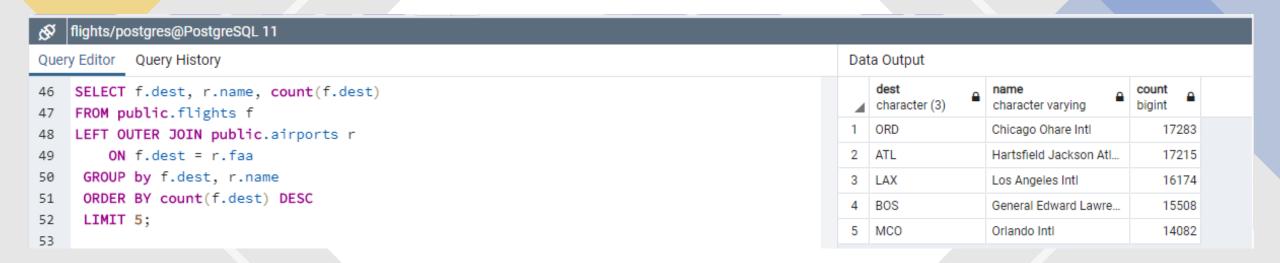
4. Add a second left join clause to also show the number of seats in the planes .

```sql
1  Select f.tailnum,
2  pl.seats,
3  f.year,
4  f.month,
5  f.day,
6  f.dep_delay,
7  f.arr_delay,
8  f.dest,
9  f.origin,
10 f.dest,
11 r.name
12 FROM public.flights f
13 LEFT OUTER JOIN public.airports r
14     ON f.dest = r.faa
15 LEFT JOIN public.planes pl
16     on f.tailnum = pl.tailnum
17 where
18 (f.tailnum = ('N125UW')
19 OR f.tailnum = ('N848MQ')
20 OR f.tailnum = ('N328AA')
21 OR f.tailnum = ('N247JB'))
22 AND
23 (f.month = 2)
24 AND
25 ((f.day = 14)
26 OR
27  (f.day = 15)
28 OR
```

Data Output

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

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

All of my code used aliases, it would be a lot harder for me to check track of my columns without aliases.

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

```
46  SELECT f.dest, r.name, count(f.dest)
47  FROM public.flights f
48  LEFT OUTER JOIN public.airports r
49      ON f.dest = r.faa
50   GROUP by f.dest, r.name
51  ORDER BY count(f.dest) DESC
52  LIMIT 5;
53
```

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Query Editor   Query History

Data Output

	dest character (3)	name character varying	count bigint
1	ORD	Chicago Ohare Intl	17283
2	ATL	Hartsfield Jackson Atl...	17215
3	LAX	Los Angeles Intl	16174
4	BOS	General Edward Lawre...	15508
5	MCO	Orlando Intl	14082

Chicago O Hare, Hartsfield Jackson, Los Angeles Intl, General Edward Lawrence, and Orlando Intl

7. What are American Airlines' destinations (airports) from the New York airports?

```sql
SELECT f.carrier, f.dest, f.origin, r.name
FROM flights f
LEFT OUTER JOIN public.airports r
    ON f.dest = r.faa
WHERE f.carrier = 'AA'
AND
((f.origin = 'EWR')
OR
(f.origin = 'LGA')
OR
f.origin = 'JFK')
;
```

	carrier character (2)	dest character (3)	origin character (3)	name character varying
1	AA	MIA	JFK	Miami Intl
2	AA	ORD	LGA	Chicago Ohare Intl
3	AA	DFW	LGA	Dallas Fort Worth Intl
4	AA	MIA	EWR	Miami Intl
5	AA	MIA	LGA	Miami Intl
6	AA	SJU	JFK	[null]
7	AA	ORD	LGA	Chicago Ohare Intl
8	AA	DFW	LGA	Dallas Fort Worth Intl
9	AA	ORD	LGA	Chicago Ohare Intl
10	AA	MCO	JFK	Orlando Intl
11	AA	MIA	LGA	Miami Intl
12	AA	FLL	JFK	Fort Lauderdale Hollyw...
13	AA	DFW	LGA	Dallas Fort Worth Intl
14	AA	DFW	EWR	Dallas Fort Worth Intl
15	AA	ORD	LGA	Chicago Ohare Intl
16	AA	LAX	JFK	Los Angeles Intl
17	AA	SFO	JFK	San Francisco Intl
18	AA	MIA	LGA	Miami Intl
19	AA	BOS	JFK	General Edward Lawre...
20	AA	STL	LGA	Lambert St Louis Intl
21	AA	MIA	JFK	Miami Intl
22	AA	ORD	LGA	Chicago Ohare Intl
23	AA	DFW	LGA	Dallas Fort Worth Intl
24	AA	SJU	JFK	[null]
25	AA	LAX	JFK	Los Angeles Intl

I received over 5000 results.