Week 01

Part 1. SQL and NULLs

1. How many airplanes have listed speeds? What is the minimum listed speed and the maximum listed speed?

Code:

select count(speed) speeds_count,

  min(speed) min_speed,

 max(speed) max_speed

 from planes;

Results:

speeds_count	min_speed	max_speed
23	90	432

2. What is the total distance flown by all of the planes in January 2013? What is the total distance flown by all of the planes in January 2013 where the tailnum is missing?

select sum(distance) distance

from flights

where year = 2013

and month = 1;

select count(*) missing_tailnums

from flights

where year = 2013

and month = 1

and tailnum is null;

Distance	missing_tailnums
27188805	155

3. What is the total distance flown for all planes on July 5, 2013 grouped by aircraft manufacturer? Write this statement first using an INNER JOIN, then using a LEFT OUTER JOIN. How do your results compare?

INNER JOIN			LEFT OUTER JOIN	
manufacturer	Distase		manufacturer	Distance
AIRBUS	195089		NULL	127671
AIRBUS INDUSTRIE	78786		AIRBUS	195089
AMERICAN AIRCRAFT INC	2199		AIRBUS INDUSTRIE	78786
BARKER JACK L	937		AMERICAN AIRCRAFT INC	2199
BOEING	335028		BARKER JACK L	937
BOMBARDIER INC	31160		BOEING	335028
CANADAIR	1142		BOMBARDIER INC	31160
CESSNA	2898		CANADAIR	1142
DOUGLAS	1089		CESSNA	2898
EMBRAER	77909		DOUGLAS	1089
GULFSTREAM AEROSPACE	1157		EMBRAER	77909
MCDONNELL DOUGLAS	7486		GULFSTREAM AEROSPACE	1157
MCDONNELL DOUGLAS AIRCRAFT CO	15690		MCDONNELL DOUGLAS	7486
MCDONNELL DOUGLAS CORPORATION	4767		MCDONNELL DOUGLAS AIRCRAFT CO	15690
			MCDONNELL DOUGLAS CORPORATION	4767

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When we use INNER JOIN, we don't count null manufacturers. When we used LEFT OUTER JOIN, these null values were counted.

4. Write and answer at least one question of your own choosing that joins information from at least three of the tables in the flights database.

Which airline has the oldest aircraft and what are the most common origin and destination airports?

Common origins

select ai.name Airport, a.name Airline, count(*)

from flights f

LEFT OUTER JOIN planes p on p.tailnum = f.tailnum

LEFT OUTER JOIN airlines a on a.carrier = f.carrier

left outer join airports ai on ai.faa = f.origin

WHERE p.YEAR = (SELECT min(year) from planes)

group by ai.name, a.name

order by 3 desc

Airport	Airline	Flights Origins
John F Kennedy Intl	American Airlines Inc.	22

Common destinations

select ai.name Airport, a.name Airline, count(*)

from flights f

LEFT OUTER JOIN planes p on p.tailnum = f.tailnum

LEFT OUTER JOIN airlines a on a.carrier = f.carrier

left outer join airports ai on ai.faa = f.dest

WHERE p.YEAR = (SELECT min(year) from planes)

group by ai.name, a.name

order by 3 desc;

Airport	Airline	Flights Destinations
San Francisco Intl	American Airlines Inc.	13
Miami Intl	American Airlines Inc.	8
San Diego Intl	American Airlines Inc.	1