

Quiz 3 Answers, Fall 2019

CSCI 4380 DB Sys

Question (9+16 points). You are given the following data model for bird watchers and birds (keys are underlined):

BirdWatchers(bwid, name, homestate, education, email, password)

Birds(birdname, scientificName, family, genus, ismigratory)

Habitat(birdname, state, howcommon)

Observations(oid, birdname, quantity, behavior, odate, otime, latitude, longitude, city, state, bwid)

Birds have scientific names, family genus and the migratory status (**ismigratory** values are True/False). Birds habitats are **states** that they are native in with a **howcommon** percentage value. Observations are by a bird watcher (**bwid**) and describe which bird was seen (**birdname**), where they were observed (**latitude**, **longitude**, **city**, **state**), when (**odate**, **otime**), in which **quantity** and the **behavior** of the birds (such as healthy, aggressive, indistress).

Write the following queries using SQL, using simplest possible expressions:

- (a) Return the name and scientific name of all birds who have been observed to display **behavior** that is 'aggressive' in at least 100 different observations with a given latitude value in 2019 by at least 50 different birdwatchers (remember: you can count distinct values and non-null values).

Answer.

```
SELECT
    b.birdname
    , b.scientificname
FROM
    birds b
    , observations o
WHERE
    b.birdname = o.birdname
    and o.behavior = 'aggressive'
GROUP BY
    b.birdname
    , b.scientificname -- this is not necessary to include in the group by
HAVING
    count(o.latitude) >= 100
    and count(distinct o.bwid) >= 50 ;
```

- (b) Return the name of all birds with a habitat within the **state** of 'Florida' with **howcommon**=90 percent and have been observed in the **state** of 'Maine' in 2019, but were never observed in 'Maine' before this year (hint: use EXCEPT for this!)

Answer.

```
SELECT
    o.birdname
FROM
    observations o
    , habitat h
WHERE
    o.birdname = h.birdname
    and h.state = 'Florida'
    and h.howcommon = 90
    and o.state = 'Maine'
    and o.odate >= '01-01-2019'
EXCEPT
SELECT
    birdname
FROM
    observations
WHERE
    state = 'Maine'
    and odate < '01-01-2019';
```