Quiz 3, Fall 2019
CSCI 4380 DB Sys
Time: 20 minutes

Name 1: _____ **RIN:** _____
Name 2: _____ **RIN:** _____
Name 3: _____ **RIN:** _____

Rules.

- Open book and notes. Do not use any electronic tools including your computer.
- You can talk to anyone in class. If you know the answer, help someone else in class.
- Each quiz must be by at least two and at most three people by people in classroom right now. Put your name on one quiz only.
- Quiz ends on time. No late papers will be accepted. By signing your name above, you agree that you understand this and have contributed to this quiz personally. Unsigned quizzes will not be graded.

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, latitute, longitude, city, state, bwid)`

Birds have scientific names, family genus and the migratory status (`ismigratory` values are True/False). Birds habitats are `state`s 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 (`latitute, 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 `'aggresive'` 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).

(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!)