

## Quiz 4 Answers, Fall 2018

### CSCI 4380 Database Systems

**Question (Points: a-8 b-8 c-9).** You are given the following data model for elections:

Parties(name, url, description, foundedon)  
Elections(id, name, etype, state, howoften)  
Person(id, fname, lname, bio, birthday, numtotal)  
Candidates(personid, eid, year, partyname, ballotposition, numvotes)

Keys are underlined. There are many parties (even though some small) and many elections. Each election has a **name** and a **etype**. **elections.type** is either 'state' or 'federal'. For state elections there is a state listed (e.g. 'NY'. Attribute **elections.howoften** lists how many years this election occurs regularly.

People run as candidates for different elections, which is stored in the **Candidates** relation. Each candidate runs for a specific party. If they are independent, **candidates.partyname** is NULL. Ballotposition is a number (1,2,3) that shows where they appear on the ballot. If they are not on any ballot (write-in candidate), then ballotposition is zero.

Write the following queries using SQL:

- (a) Delete all election tuples for elections with no listed candidates.

**Answer here.**

```
delete from elections
where eid not in (select eid from candidates) ;
```

- (b) Update the people relation. Set the **numtotal** attribute to the total number of elections this person has run as a candidate in.

**Answer here.**

```
update people p
set numtotal = (select count(distinct c.eid)
                from candidates c
                where c.personid = p.id)
```

We will also accept (slightly different interpretation):

```
update people p
set numtotal = (select count(*)
                from candidates c
                where c.personid = p.id)
```

- (c) You are given the following new relation:

ElectionWinner(personid, eid, year)

Insert into this relation all tuples for election winners. A person has won the election, if they got the highest votes and no one else has the same number of votes.

**Answer here.**

```
insert into electionwinner
select
    c.personid, c.eid, c.year
from
    candidates c
where not exists
    (select 1
     from candidates c2
     where c2.personid <> c.personid
        and c.eid=c2.eid and c.year=c.year
        and c2.numvotes >= c.numvotes);
```

left join solution

```
insert into electionwinner
select
    c.personid, c.eid, c.year
from
    candidates c
left join candidates c2
    on c2.personid <> c.personid
    and c.eid=c2.eid
    and c.year=c.year
    and c2.numvotes >= c.numvotes
where
    c2.personid is null ;
```