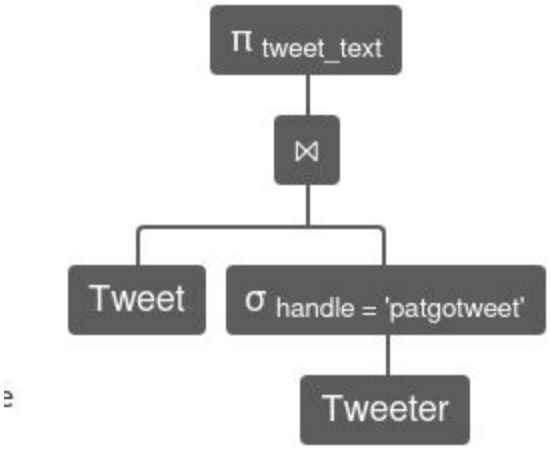
Last Name: First Name: Student ID:

1. [10pts] Find the text of all tweets that were posted by the tweeter with the handle ‘patgotweet’.

a) [6pts] Relational Algebra

π tweet_text (Tweet $\bowtie$ (σ handle = 'patgotweet' Tweeter))

b) [1pt] Parse Tree



c) [3pts] Result

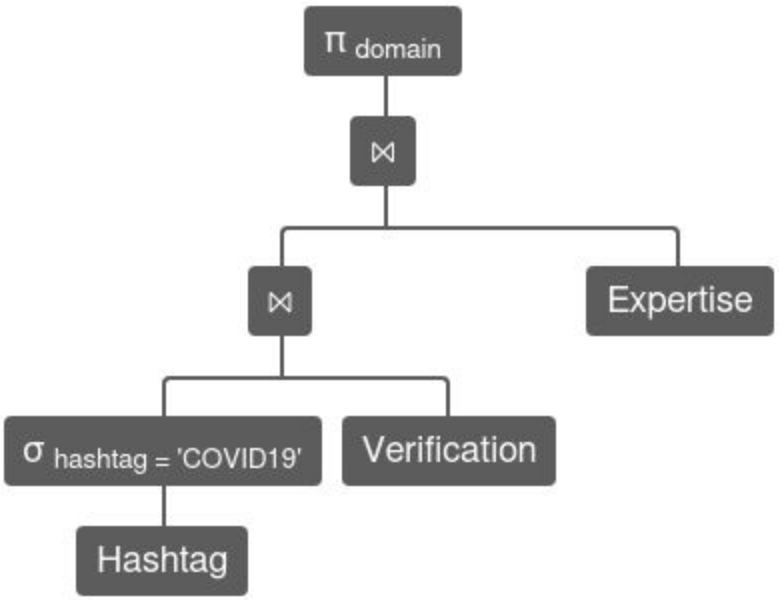
Tweet.tweet_text
@TheValuesVoter @MrsPerrin I’m in one of those states. It’s a big Trump state so Covid is all a hoax here and masks don’t work. It’s a strange place to live right now.... and a bit scary and frustrating.

2. [10pts] List the domains of expertise for checkers who have verified tweets that have the hashtag "*COVID19*". (**Note: The hashtag value is all in capital letters.)**

a) [6pts] Relational Algebra

π domain (σ hashtag = 'COVID19' Hashtag $\bowtie$ Verification $\bowtie$ Expertise)

b) [1pt] Parse Tree



c) [3pts] Result

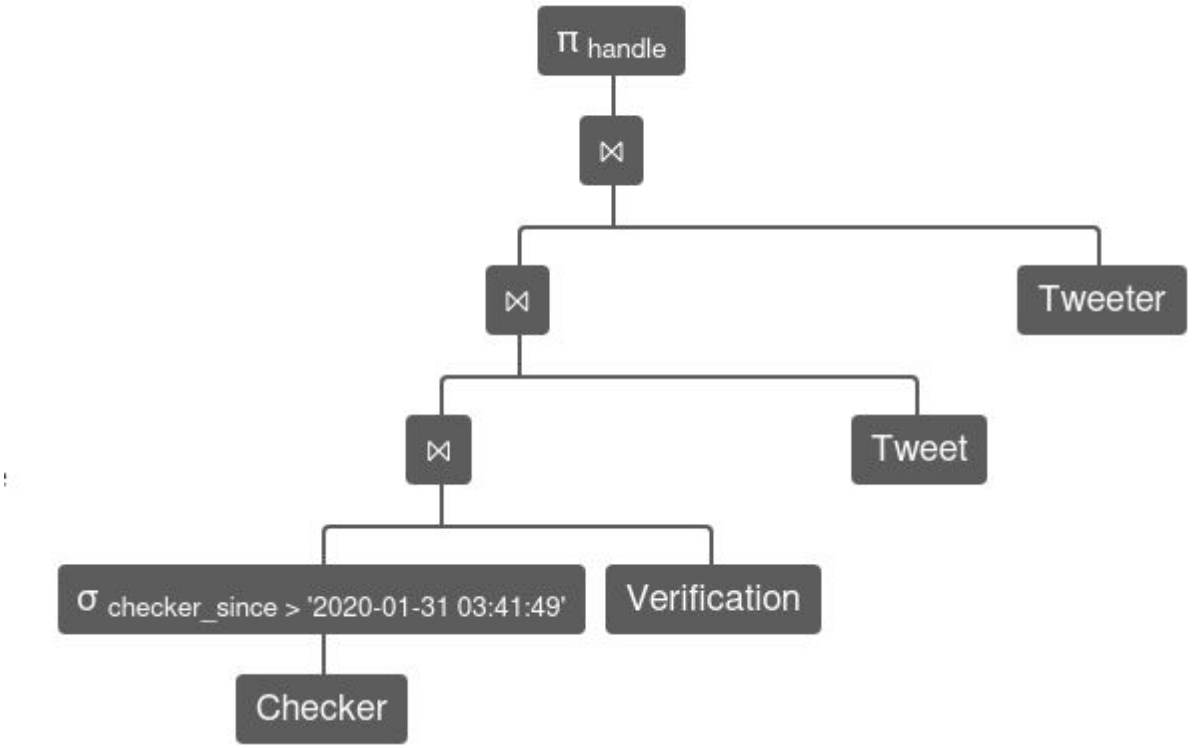
Expertise.domain
Health Service Quality
Public Health

3. [10pts] List the handles of Tweeters who have posted a tweet that has been verified by a Checker who has been a checker since “2020-01-31 03:41:49”.

a) [6pts] Relational Algebra

π handle (σ checker_since > '2020-01-31 03:41:49' Checker ⋈ Verification ⋈ Tweet ⋈ Tweeter)

b) [1pt] Parse Tree



c) [3pts] Result

Tweeter.handle
NecessaryPaper
mptrottier
SandyInCalif
theblack_abyss
oceanviewmom

4. [15pts] List the evidence-providing users' ids and the associated checkers' ids where the users live in the state of CA and the checkers used evidence submitted by users who are not checkers themselves.

Example:

Let's say that we have the following evidence and info about who submitted it:

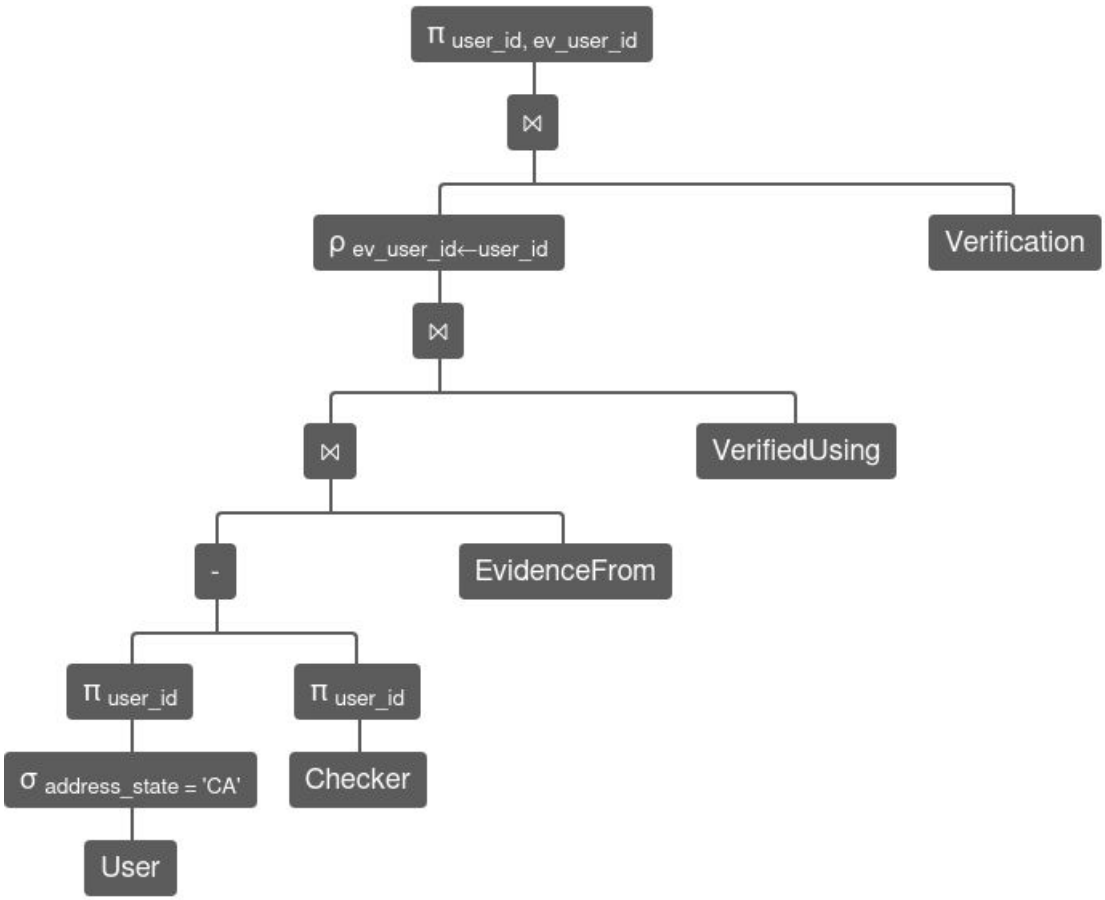
ev_id	**url**	**Submitted by**
0	"http://foo.com"	checker0
1	"http://baz.org"	user1
2	"http://baz.org"	user2

In your query (relational algebra), you need to consider only the evidence submitted by user1 and user2 (i.e., ev_id =1 and ev_id = 2, respectively) if they live in California. Your result should not include ev_id = 0 as it was submitted by a checker (namely checker0).

a) [9pts] Relational Algebra

π user_id, ev_user_id ((ρ ev_user_id <- user_id ((π user_id σ address_state = 'CA' (User) - π user_id (Checker)) $\bowtie$ EvidenceFrom $\bowtie$ VerifiedUsing)) $\bowtie$ Verification)

b) [3pt] Parse Tree



c) [3pts] Result

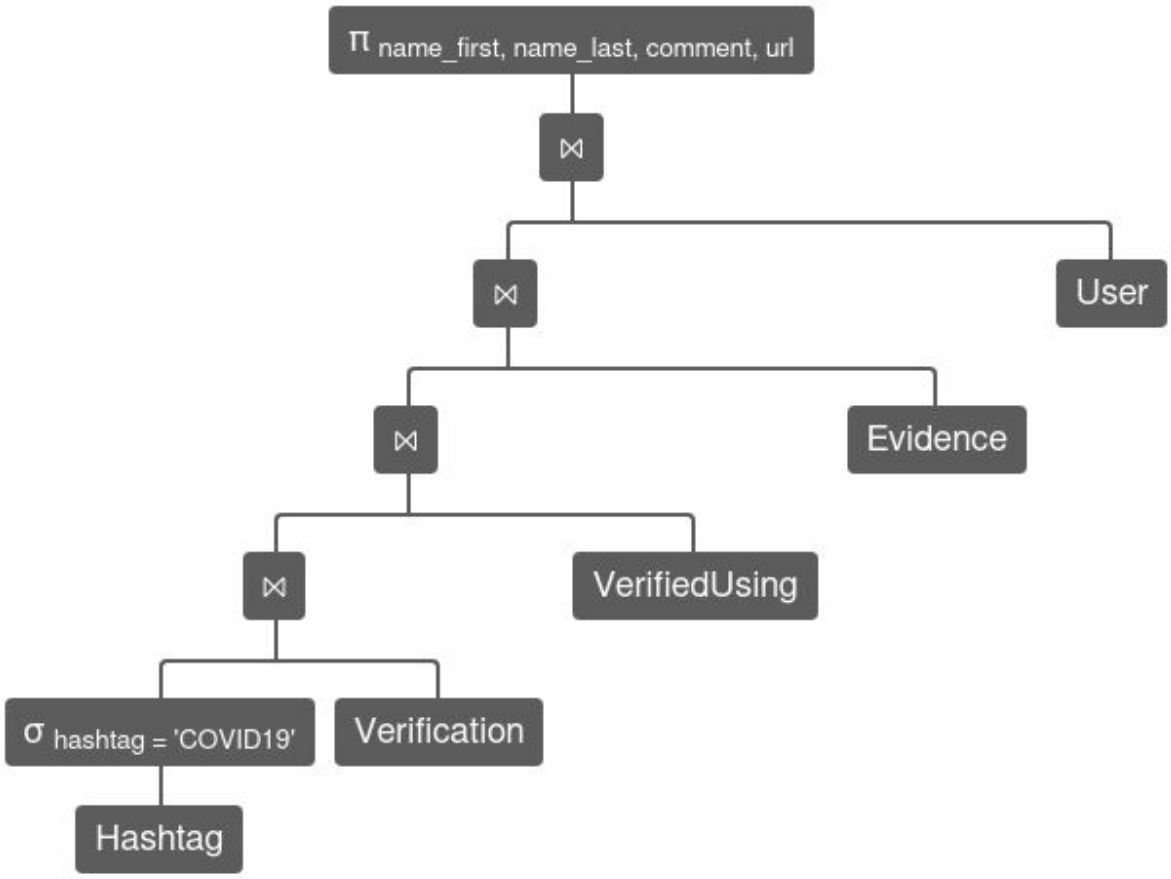
Verification.user_id	User.ev_user_id
0	44
3	44
6	44
15	44
22	44
21	44

5. [15pts] Find the evidence URLs, verification comments, and checkers' first and last names for checkers who verified tweets that contain the hashtag "COVID19". (**Again: "COVID19" is in all caps**.)

a) [9pts] Relational Algebra

π name_first, name_last, comment, url (σ hashtag = 'COVID19' Hashtag $\bowtie$ Verification $\bowtie$ VerifiedUsing $\bowtie$ Evidence $\bowtie$ User)

b) [3pt] Parse Tree



c) [3pts] Result

User.name_first	User.name_last	Verification.comment	Evidence.url
Jonathan	Howard	Masks works! Check the CDC	http://states-covid-numbers.org
Jonathan	Howard	Masks works! Check the CDC	http://florida-covid19.gov
Jonathan	Howard	Masks works! Check the CDC	https://cdc.gov
Antonio	Olson	Masks works! Check the CDC	http://states-covid-numbers.org
Antonio	Olson	Masks works! Check the CDC	http://florida-covid19.gov
Antonio	Olson	Masks works! Check the CDC	https://cdc.gov
Gina	Miranda	Masks works! Check the CDC	http://states-covid-numbers.org
Gina	Miranda	Masks works! Check the CDC	http://florida-covid19.gov
Gina	Miranda	Masks works! Check the CDC	https://cdc.gov
Courtney	White	Masks works! Check the CDC	http://covid-is-not-hoax.net
Courtney	White	Masks works! Check the CDC	http://mask-works.info
Courtney	White	Masks works! Check the CDC	https://cdc.gov

6. [15pts] Find the email addresses of all users who have submitted evidence about tweets that have either the hashtag “MaskUp” or the hashtag “COVID19”. **(Note: Hashtags are case-sensitive.)**

a) [9pts] Relational Algebra

//Using SELECT - OR

π email ((σ hashtag = 'COVID19' $\vee$ hashtag = 'MaskUp' Hashtag) $\bowtie$ About $\bowtie$ EvidenceFrom $\bowtie$ User)

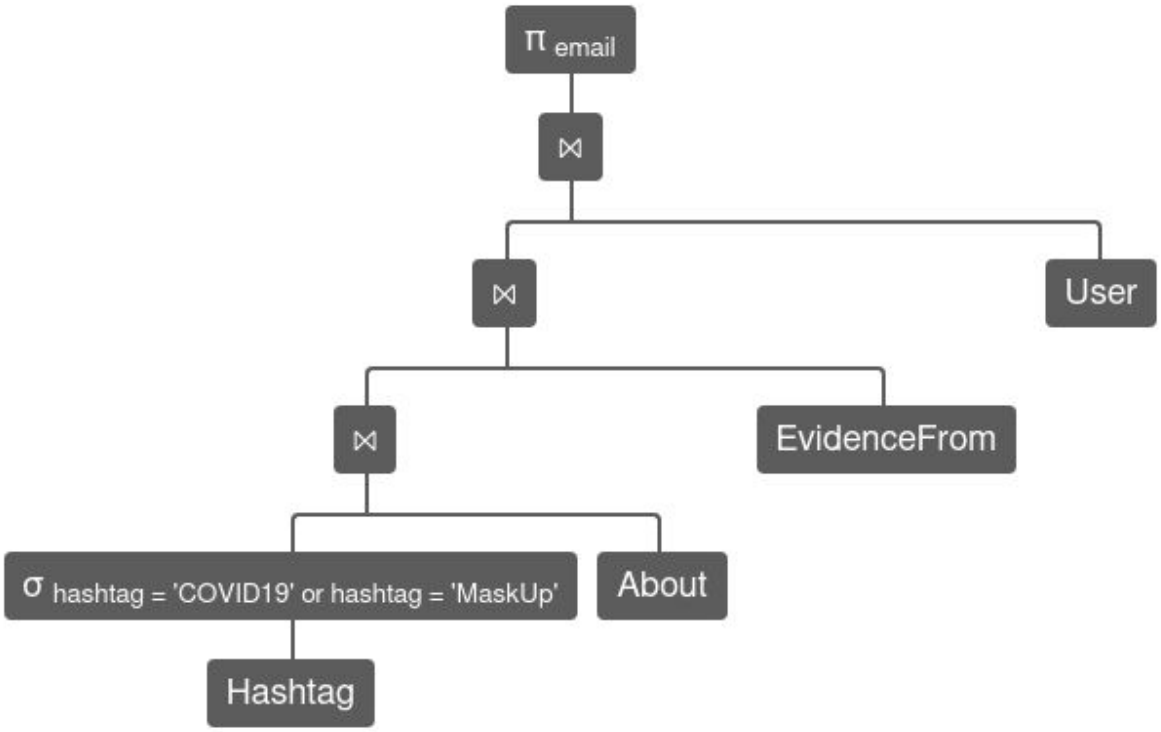
//Using UNION

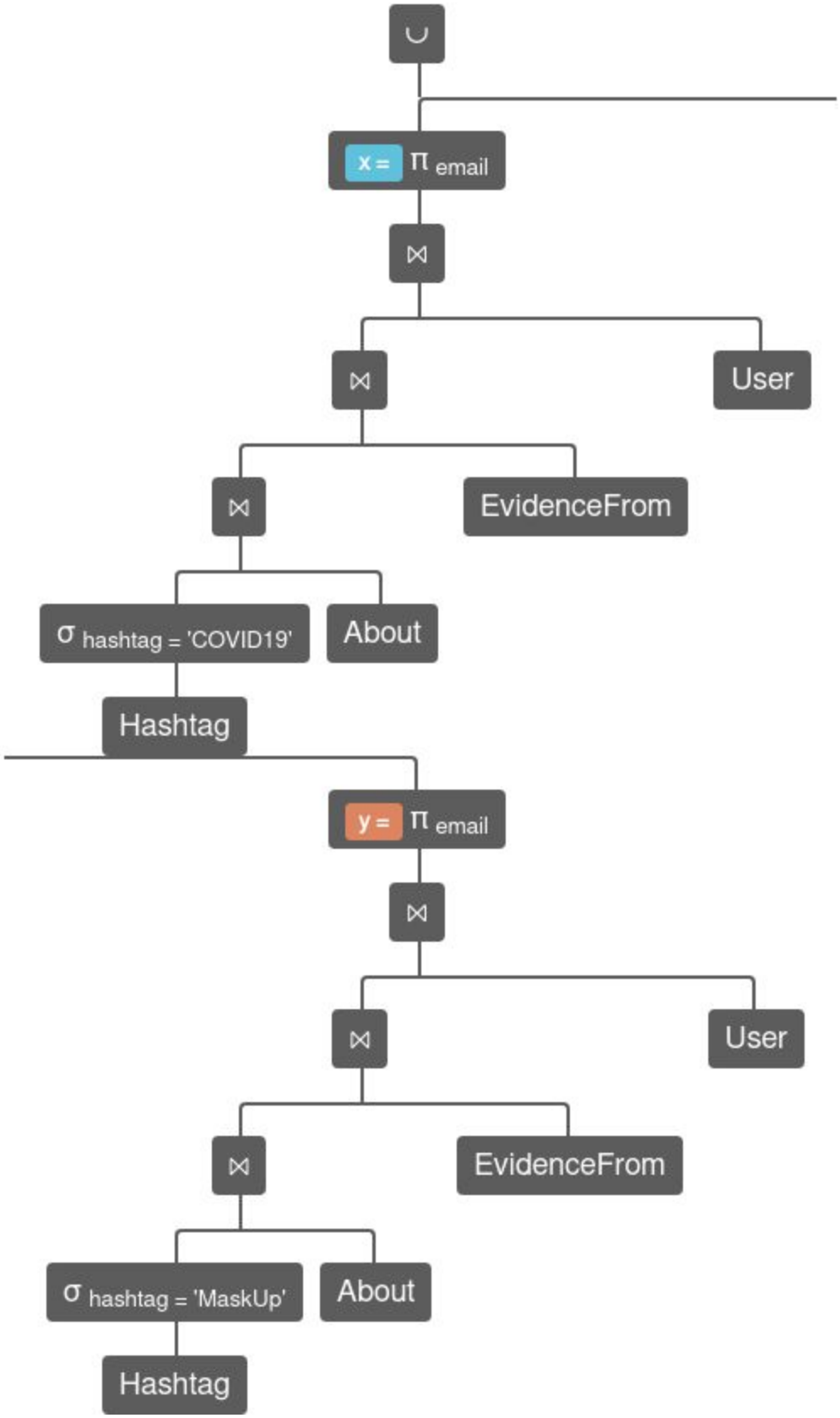
x= π email ((σ hashtag = 'COVID19' Hashtag) $\bowtie$ About $\bowtie$ EvidenceFrom $\bowtie$ User)

y= π email ((σ hashtag = 'MaskUp' Hashtag) $\bowtie$ About $\bowtie$ EvidenceFrom $\bowtie$ User)

x $\cup$ y

b) [3pt] Parse Tree




∪
x = π email
⋈
⋈
User
⋈
EvidenceFrom
σ hashtag = 'COVID19'
About
Hashtag
y = π email
⋈
⋈
User
⋈
EvidenceFrom
σ hashtag = 'MaskUp'
About
Hashtag

c) [3pts] Result

User.email
davis_holly86@hotmail.com
pau.miller@yahoo.com
bradshaw73051@gmail.com

7. [15pts] Find the user IDs, first names, and last names of checkers that have **all** the domains of expertise from the user with ID = 68. (Note: Your answer will include the "ID = 68" checker as well, of course.)

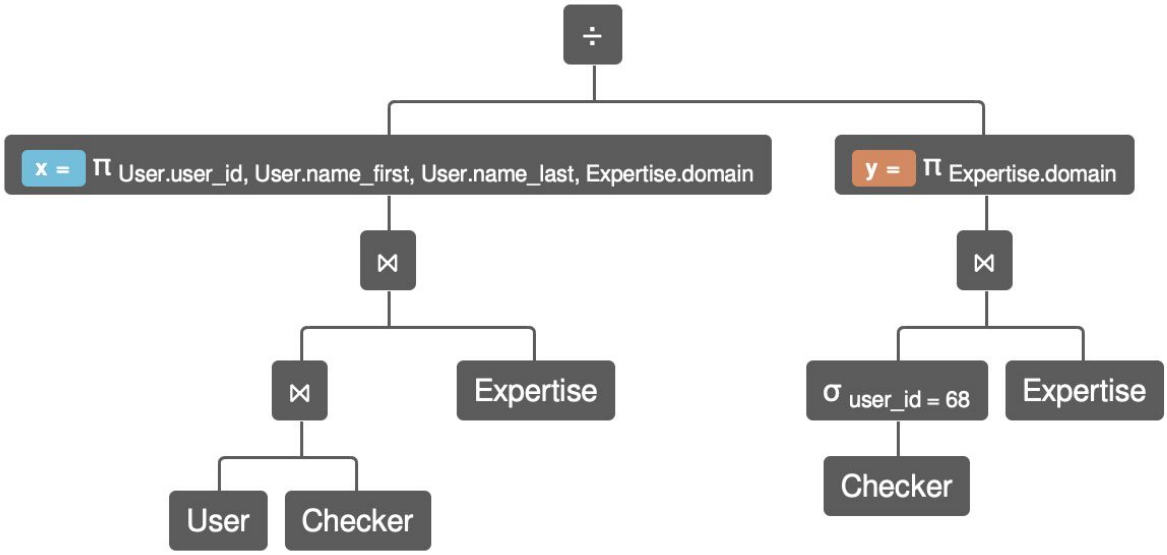
a) [9pts] Relational Algebra

y = π Expertise.domain ((σ user_id = 68 Checker) $\bowtie$ Expertise)

x = π User.user_id, User.name_first, User.name_last, Expertise.domain (User $\bowtie$ Checker $\bowtie$ Expertise)

x ÷ y

b) [3pt] Parse Tree



c) [3pts] Result

User.user_id	User.name_first	User.name_last
40	Lauren	Rhodes
68	Darren	Ortiz
87	Anthony	Monroe

8. [10pts] List the phone numbers of checkers who have either verified the tweet with the id “1321211561046933514” or who are experts in “Infectious Diseases”.

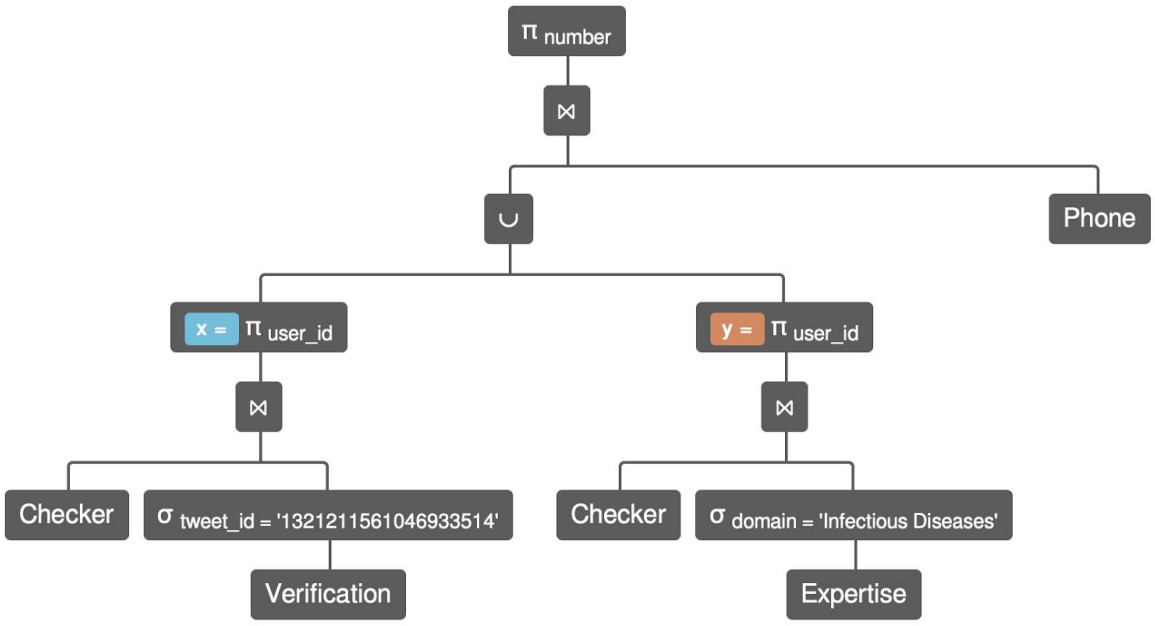
a) [6pts] Relational Algebra

x = π user_id (Checker $\bowtie$ σ tweet_id = '1321211561046933514' Verification)

y = π user_id (Checker $\bowtie$ σ domain = 'Infectious Diseases' Expertise)

π number ((x $\cup$ y) $\bowtie$ Phone)

b) [1pt] Parse Tree



c) [3pts] Result

Phone.number
001-070-249-0204
001-337-445-5627x321
193-407-5790x179
524.899.8641
164.768.4712x8904
403-156-1446