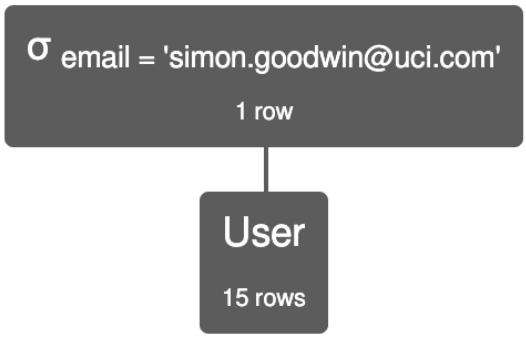
Last Name: Miri First Name: Arman Student ID: 07700006039

1. [10pts] Find all users whose email is ‘simon.goodwin@uci.com’.

a) [6pts] Relational Algebra

```
1 σemail='simon.goodwin@uci.com'(User)
```

b) [1pt] Parse Tree



σ email = 'simon.goodwin@uci.com' (User)

Execution time: 0 ms

c) [3pts] Result (1 Row)

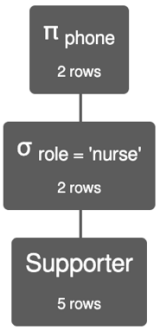
User.phlid	User.email	User.pswd
'4'	'simon.goodwin@uci.com'	'9e70aba2e1bd507590760523273689 95'

2. [10pts] List the phones of Supporters who have the role of ‘nurse’.

a) [6pts] Relational Algebra

```
πphone(σ role = 'nurse'(Supporter))
```

b) [1pt] Parse Tree



π phone (σ role = 'nurse' (Supporter))

Execution time: 2 ms

c) [3pts] Result (2 Rows)

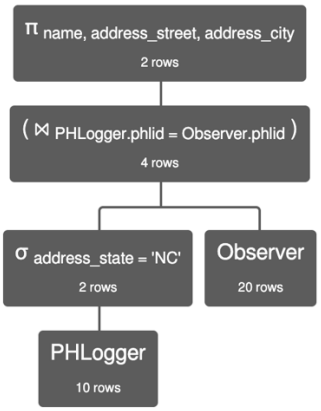
Supporter.phone
'(148) 250-5706'
'895.815.0501'

3. [10pts] List the name, street, and city of PHLoggers who reside in the state of ‘NC’ and are associated with an Observer.

a) [6pts] Relational Algebra

```
1 π name, address_street, address_city (σ address_state = 'NC'
  (PHLogger)⋈ PHLogger.phlid = Observer.phlid Observer)
```

b) [1pt] Parse Tree



π name, address_street, address_city (σ address_state = 'NC' (PHLogger) ⋈ PHLogger.phlid = Observer.phlid Observer)

Execution time: 1 ms

c) [3pts] Result (2 Rows)

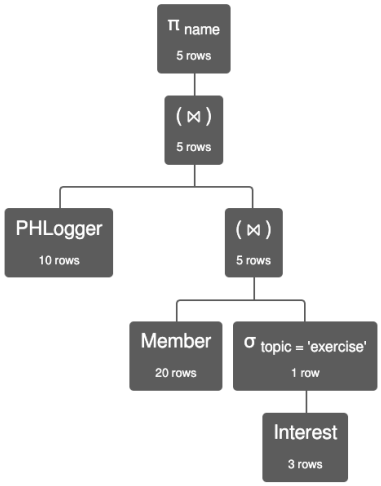
PHLogger.name	PHLogger.address_street	PHLogger.address_city
'Laree Schamberger'	'Alexander Cape'	'Beerview'
'Simon Goodwin'	'Ranae Pine'	'South Ashleymouth'

4. [15pts] List the names of PHLoggers who have a thought about an interest group with topic ‘exercise’.

a) [9pts] Relational Algebra

```
π name (PHLogger ⋈ (Member ⋈ σ topic = 'exercise' (Interest)))
```

b) [3pt] Parse Tree



π name (PHLogger ⋈ (Member ⋈ σ topic = 'exercise' (Interest)))

Execution time: 3 ms

c) [3pts] Result (5 Rows)

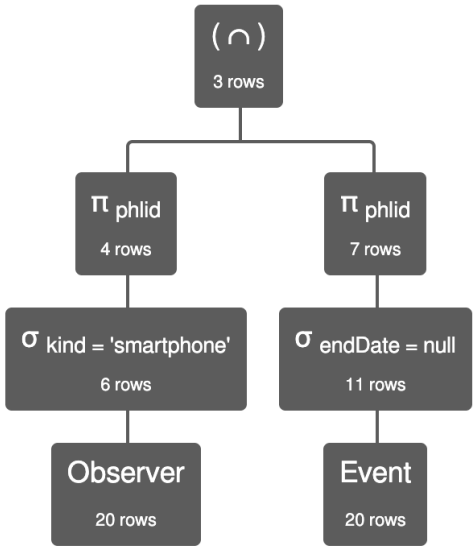
PHLogger.name
'Laree Schamberger'
'Hannah Veum'
'Jamey Brown'
'Twana Collier'
'Hans Ratke'

5. [15pts] Find the phlids of PHLoggers who own an Observer of kind ‘smartphone’ and are associated with an event that doesn’t have an end date.

a) [9pts] Relational Algebra

```
(π phlid ((σ kind = 'smartphone' (Observer))) ∩ (π phlid(σ endDate = NULL (Event))))
```

b) [3pt] Parse Tree



(π phlid (σ kind = 'smartphone' (Observer)) ∩ (π phlid (σ endDate = null (Event))))

Execution time: 2 ms

c) [3pts] Result (3 Rows)

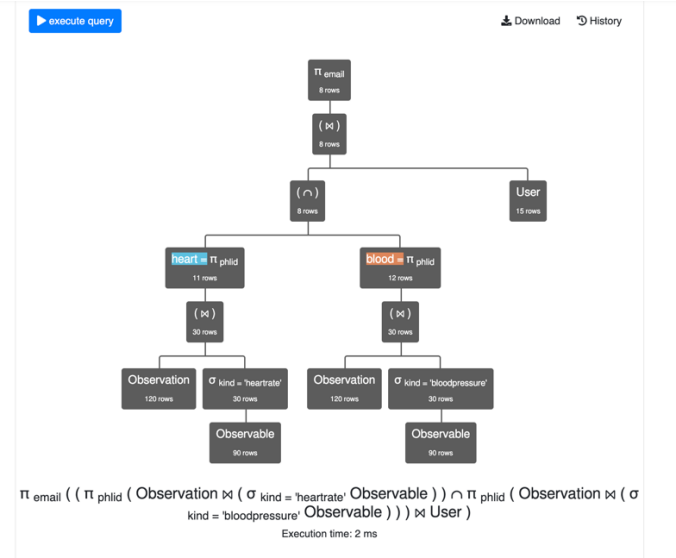
Observer.phlid
'4'
'9'
'7'

6. [20pts] List the emails of users who are associated with an Observable of kind ‘bloodpressure’ as well as an Observable of kind ‘heartrate’.

a) [12pts] Relational Algebra

```
1 heart = π phlid(Observation⋈(σ kind='heartrate' Observable))
2 blood = π phlid(Observation⋈(σ kind='bloodpressure' Observable))
3
4 π email ((heart ∩ blood) ⋈ User)
```

b) [5pt] Parse Tree



c) [3pts] Result (8 Rows)

User.email
'hannah.veum@uci.com'
'jamey.brown@uci.com'
'katrina.leannon@uci.com'
'ricky.deckow@uci.com'
'gilbert.nienow@uci.com'
'laree.schamberger@uci.com'
'sadie.beer@uci.com'
'titus.luettgen@uci.com'

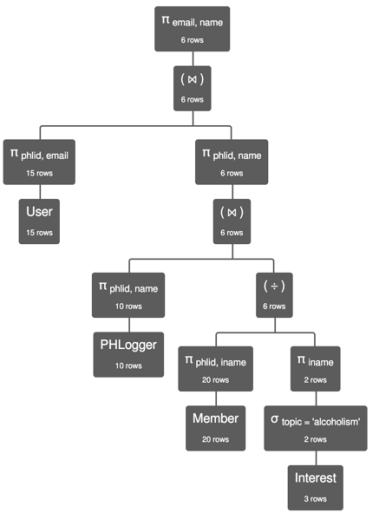
‹ 1 ›

7. [20pts] List the names and emails of PHLoggers who are members of all available interest groups with the topic of ‘alcoholism’.

a) [12pts] Relational Algebra (Hint: ***Use Division!***)

```
π email,name(π phlid,email (User) ⋈ (π phlid,name (π phlid,name
(PHLogger) ⋈ (π phlid,iname (Member) / (π iname (σtopic =
'alcoholism' (Interest)))))))
```

b) [5pt] Parse Tree



π email, name (π phlid, email (User) ⋈ (π phlid, name (π phlid, name (PHLogger) ⋈ (π phlid, iname (Member) ÷ (π iname (σ topic = 'alcoholism' (Interest)))))))

Execution time: 3 ms

c) [3pts] Result (6 Rows)

User.email	PHLogger.name
'laree.schamberger@uci.com'	'Laree Schamberger'
'gilbert.nienow@uci.com'	'Gilbert Nienow'
'jamey.brown@uci.com'	'Jamey Brown'
'hans.ratke@uci.com'	'Hans Ratke'
'dustin.schmidt@uci.com'	'Dustin Schmidt'
'katrina.leannon@uci.com'	'Katrina Leannon'