CSE 344 – Midterm Review

Consider a schema for a picture tagging website:

```
Member(mid, name, age)
Picture(pid, year)
Tagged(mid, pid)
```

1. Return the names of all members that were tagged in both 2011 and 2014 sorted in alphabetic order.

```
SELECT x.name
FROM Member x, Tagged y1, Tagged y2, Picture z1, Picture z2
WHERE x.mid = y1.mid AND y1.pid = z1.pid AND z1.year = 2011
AND x.mid = y2.mid AND y2.pid = z2.pid AND z2.year = 2014
ORDER BY x.name
```

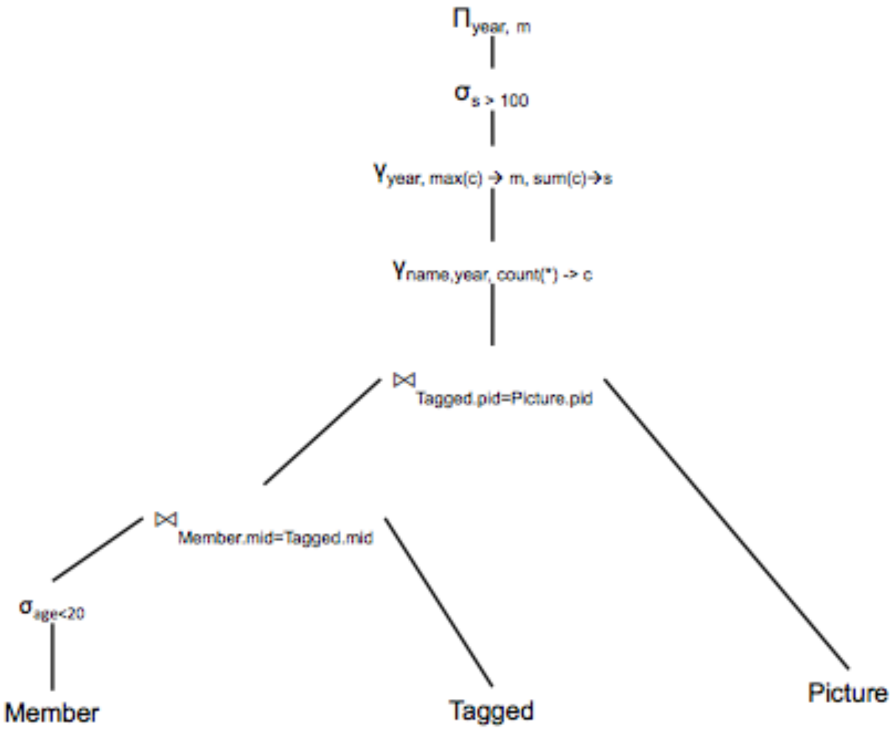
2. Return the name of all users who were never tagged in 2015.

```
SELECT distinct x.name
FROM Member x
WHERE NOT EXISTS
     (SELECT *
      FROM Tagged y, Picture z
      WHERE x.mid = y.mid
      AND y.pid = z.pid AND z.year = 2015);
```

```
Member(mid, name, age)
Picture(pid, year)
Tagged(mid, pid)
```

3. Write a Relational Algebra Expression (draw a tree) for the following query:

```
SELECT w.year, max(w.c) AS m
FROM
     (SELECT x.name, z.year, count(*) AS c
      FROM Member x, Tagged y, Picture z
      WHERE x.mid = y.mid AND y.pid = z.pid AND age < 20
      GROUP BY x.name, z.year) w
GROUP BY w.year
HAVING sum(w.c) > 100;
```


$\Pi_{year,\ m}$
$\sigma_{s > 100}$
$\gamma_{year,\ max(c) \rightarrow m,\ sum(c) \rightarrow s}$
$\gamma_{name, year,\ count(*) \rightarrow c}$
$\bowtie_{Tagged.pid=Picture.pid}$
$\bowtie_{Member.mid=Tagged.mid}$
$\sigma_{age<20}$
Member
Tagged
Picture

4. Write a query in datalog with negation that returns the mids and names of all members that were tagged only in pictures were Alice was also tagged.

```
aliceTagged(pid) :- Member(mid, ’Alice’,_),Tagged(mid, pid)
nonAnswer(mid) :- Tagged(mid,pid) not aliceTagged(pid)
answer(mid,name) :- Member(mid,name,_), not nonAnswer(mid)
```