Assignment 2

EECS341 Spring 2019
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Due: Tuesday, Feb 12, 2019

- 1. Find the name and email of users who have made at least one post
- 2. Find the topic name, topic description, and subject of all posts and replies.
- 3. Find the name of users who have only posted in the topic “Computer Science”.
- 4. Translate from sql to relational algebra:
- 5. Translate from sql to relational algebra:

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1. Find the name and email of users who have made at least one post

$$\prod_{user.name,\ user.email}(\sigma_{user.login\ =\ post.login}(user \times post))$$

2. Find the topic name, topic description, and subject of all posts and replies.

$$\prod_{topic.name,\ topic.description,\ post.subject}(\sigma_{topic.name\ =\ post.topic\_name}(topic \times post))$$

3. Find the name of users who have only posted in the topic “Computer Science”.

For this problem, what we want is simply the **difference** between **name of all of the users who have posted in topic "Computer Science"** and **name of users who have posted in topic other than "Computer Science"**. We obtain the set of name of users who have only posted in the topic "Computer Science" by taking the difference as below:

$$\prod_{user.name}(\sigma_{post.topic\_name\ =\ 'Computer\ Science'\ \wedge\ user.login\ =\ post.login}(user \times post)) -$$
$$\prod_{user.name}(\sigma_{user.login\ =\ post.login}(user \times (post - \sigma_{post.topic\_name\ =\ 'Computer\ Science'}(post))))$$

4. Translate from sql to relational algebra:

```
SELECT u.name, p.subject, p.content
FROM post p, user u
WHERE p.login = u.login
AND u.name = ‘Finnegas’
AND p.timestamp < ‘2019-01-01’
```

$\prod_{u.name,\, p.subject,\, p.content}(\sigma_{p.login = u.login \wedge u.name = 'Finnegas' \wedge p.timestamp < '2019-01-01'}(\rho_u(user) \times \rho_p(post)))$

5. Translate from sql to relational algebra:

```
SELECT * FROM (SELECT * FROM topic) t
```

Basically the two `SELECT * FROM` syntax did not alter the set `topic`, so the outcome we finally get is simply renaming `topic` as `t` as below:

$$\rho_t(topic)$$