- Query to get company numbers

Select contactno
from company
where company.company_name = "some name"

RA: $\pi(\sigma_{company\_name = \text{"some name"}}(company))$

TRC: $\{t \mid \exists c \in company (t[contact\ no] = c[contact\ no] \wedge c[company\ name] = \text{"some name"})\}$

DRC: $\{<co> \mid \exists i, n, ch, c, s, ci, w, e, p, a, l, ca, ac (<i, n, ch, c, s, ci, co, w, e, p, a, l, ca, a> \in company \wedge ch = \text{"some name"})\}$

- Query for matching job qualification

Select jobtitle, description, minimum salary, maximum salary, experience
from users
where users.id_users = "some id"
inner join job_post
on users.qualification = job_post.qualification

RA: $\pi_{jobtitle, description, minimum\ salary, maximum\ salary, experience}(\sigma_{id\_users = \text{"some id"}}(users \bowtie job\_post))$

TRC: $\{t \mid \exists u \in users (u[id\_users] = \text{"some id"} \wedge \exists j \in job\_post (t[jobtitle] = j[jobtitle] \wedge t[description] = j[description] \wedge t[minimum\ salary] = j[minimum\ salary] \wedge t[maximum\ salary] = j[maximum\ salary] \wedge t[experience] = j[experience] \wedge u[qualification] = j[qualification]))\}$

DRC: $\{<jt, d, mins, mass, ex> \mid \exists iu, fn, ln, em, p, ad, ci, st, co, q, s, py, dob, age, desg, re, h, ac, ab, sk (<iu, fn, ln, em, p, ad, ci, st, co, q, s, py, dob, age, desg, re, h, ac, ab, sk> \in users \wedge iu = \text{"some id"} \wedge \exists ij, ic, jt, d, mins, mass, ex, jq, cd (<ij, ic, jt, d, mins, mass, ex, jq, cd> \in job\_post \wedge q = jq))\}$

- Query to get jobs in city

```
select j.companyname, j.jobtitle, j.description, j.minimumsalary, j.maximumsalary, j.experience
from job_post as j, (select id_jobpost, city
                     from job_post company
                     where job_post.id_company = company.id_company) as c
where j.id_jobpost = c.id_jobpost, c.city = "some city";
```

RA: $\pi_{companyname, jobtitle, description, minimumsalary, maximumsalary, experience}[\sigma_{city = \text{"some city"}}(job\_post \bowtie company))$

TRC: $\{t \mid \exists j \in job\_post (t[jobtitle] = j[jobtitle] \wedge t[description] = j[description] \wedge t[minimumsalary] = j[minimumsalary] \wedge t[maximumsalary] = j[maximumsalary] \wedge t[experience] = j[experience] \wedge \exists c \in company(j[id\_company] = c[id\_company] \wedge c[city] = \text{"some city"}))\}$

DRC: $\{\langle cn, jt, d, mins, maxs, ex \rangle \mid \exists ij, ic, q, cd (\langle ij, ic, jt, d, mins, maxs, ex, q, cd \rangle \in job\_post \wedge \exists n, c, st, ci, co, w, e, p, ab, l, crd, a (\langle ic, n, cn, c, st, ci, co, w, e, p, ab, l, crd, a \rangle \in company \wedge ci = \text{"some city"}))\}$

- Query to get user resume and email if applied

```
select id_user, email, resume
from users, apply_job_post
where apply_job_post.id_jobpost = "some jobpost id" and apply_job_post.id_user = users.id_user;
```

RA: $\pi_{id\_user, email, resume}(\sigma_{id\_jobpost = \text{"some jobpost id"}}(users \bowtie apply\_job\_post))$

TRC: $\{t \mid \exists u \in users (t[id\_user] = u[id\_user] \wedge t[email] = u[email] \wedge t[resume] = u[resume] \wedge \exists aj \in apply\_job\_post (aj[id\_jobpost] = \text{"some jobpost id"} \wedge u[id\_user] = aj[id\_user]))\}$

DRC: $\{\langle iu, e, re \rangle \mid \exists fn, ln, p, ad, ci, st, co, q, s, py, dob, age, d, h, a, ab, sk (\langle iu, fn, ln, e, p, ad, ci, st, co, q, s, py, dob, age, d, re, h, a, ab, sk \rangle \in users \wedge \exists ia, ij, ic, stat (\langle ia, ij, ic, iu, stat \rangle \in apply\_job\_post \wedge ij = \text{"some jobpost id"}))\}$

• Query for job greater than some salary for user

~~select company, jobtitle~~

select jobtitle, description, minimumsalary, maximumsalary, experience
from users
where users.id_user = "some userid"
inner join job_post
on users.qualification = job_post.qualification and job_post.maximumsalary > "some salary";

RA: $\pi_{jobtitle, description, minimumsalary, maximumsalary, experience}(\sigma_{id\_users = \text{"some user id"} \wedge maximumsalary > \text{"some salary"}}(users \bowtie job\_post))$

TRC: $\{t \mid \exists u \in users(u[id\_users] = \text{"some user id"} \wedge \exists j \in job\_post(u[qualification] = j[qualification] \wedge j[maximum salary] > \text{"some salary"} \wedge t[jobtitle] = j[job title] \wedge t[description] = j[description] \wedge t[minimum salary] = j[minimumsalary] \wedge k[maximumsalary] = j[maximumsalary] \wedge t[experience] = j[experience]))\}$

DRC: $\{\langle jt, d, mins, maxs, ex\rangle \mid \exists iu, fn, ln, e, p, ad, ci, st, co, q, s, pay, dob, age, desg, re, h, a, ab, sk(\langle iu, fn, ln, e, p, ad, ci, st, co, q, s, pay, dob, age, desg, re, h, a, ab, sk\rangle \in users \wedge \exists ij, ic, cd(\langle ij, ic, jt, d, mins, maxs, ex, q, cd\rangle \in job\_post \wedge maxs > \text{"some salary"}))\}$

• Query for users with applications gone out

select id_users, firstname, lastname
from users
where id_users in (select id_users from apply_job_post);

RA: $\pi_{id\_users, firstname, lastname}(users \bowtie apply\_job\_post)$

TRC: $\{t \mid \exists u \in users(t[id\_users] = u[id\_users] \wedge t[firstname] = u[firstname] \wedge t[lastname] = u[lastname] \wedge \exists aj \in apply\_job\_post(u[id\_users] = aj[id\_users]))\}$

DRC: $\{\langle iu, fn, ln\rangle \mid \exists e, p, ad, ci, st, co, q, s, pay, dob, age, desg, re, h, a, ab, sk(\langle iu, fn, ln, e, p, ad, ci, st, co, q, s, pay, dob, age, desg, re, h, a, ab, sk\rangle \in users \wedge \exists ia, ij, ic, stat(\langle ia, ij, ic, iu, stat\rangle))\}$

• Query to get cities with jobs available

```
select city
from company
where company.id_company in (select id_company from job_post);
```

RA: $\pi_{city}(company \bowtie job\_post)$

TRC: $\{t \mid \exists c \in company (t[city] = c[city] \wedge \exists j \in job\_post (c[id\_company] = j[id\_company]))\}$

DRC: $\{\langle ci \rangle \mid \exists ic, n, cn, c, st, ci, co, w, e, p, ab, L, cd, a (\langle ic, n, cn, c, st, ci, co, w, e, p, ab, L, cd, a \rangle \in company \wedge \exists ij, it, desc, mins, maxs, ex, q, cda (\langle ij, ic, it, desc, mins, maxs, ex, q, cda \rangle \in job\_post))\}$