*Kyoto Computer Gakuin – Advanced Topics in Database Technologies Roberto Espinoza –* [*r\_espinoza@kcg.edu*](mailto:r_espinoza@kcg.edu)

Advanced Topics in Database Technologies

– Practical Assignment - Relational Algebra I –

**For all exercises below, use the COMPANY database provided in class.**

**Remember to consult the relational diagram to find the correct relationship between tables.**

1. Write a relational algebra expression that is equivalent to the SQL statement below:

SELECT \* FROM project WHERE dnum = 4 AND plocation = 'Houston';

* σ dnum = 4 AND plocation = "Houston"Project

1. Write a relational algebra expression that is equivalent to the SQL statement below:

SELECT e.Fname, e.Lname FROM employee AS e;

* e.Fname, e.Lname

eemployee

1. Write an SQL statement that is equivalent to the relational algebra expression below:

𝜎 𝐼𝑛𝑐𝑜𝑚𝑒>30000 (𝜌𝐸(𝑁𝑎𝑚𝑒,𝐼𝑛𝑐𝑜𝑚𝑒) (𝜋𝐹𝑛𝑎𝑚𝑒,𝑆𝑎𝑙𝑎𝑟𝑦(𝐸𝑀𝑃𝐿𝑂𝑌𝐸𝐸)))

* SELECT Fname, Salary FROM EMPLOYEE AS E

WHERE Income>30000;

1. Write a relational algebra expression that is equivalent to the SQL statement below:

SELECT \* FROM employee, dependent WHERE employee.ssn = dependent.essn;

* σemployee.ssn = dependent.essn (employee dependent)

1. Write a relational algebra expression that is equivalent to the SQL statement below: SELECT ssn as emp\_code, dependent\_name FROM employee, dependent WHERE dependent\_name = fname;

* ssn→emp\_code, dependent\_name

σdependent\_name = fname (employee x dependent)

1. Write a relational algebra expression that is equivalent to the SQL statement below:

SELECT Fname, Lname, Hours FROM employee, works\_on

WHERE employee.ssn = works\_on.essn;

* Fname, Lname, Hours

σemployee.ssn = works\_on.essn(employee x works\_on)

1