CECS 323 HOMEWORK: RELATIONAL ALGEBRA 3

OBJECTIVE: How to use the Relational Algebra join operator.

INTRODUCTION: The questions in this assignment all come from the same database that we have been using for practice in the lab. You can find the UML diagram here, and the relation scheme diagram here.

We will use the same Relational Algebra environment that we did in lab. If you need to review how to set that up, you can find the instructions here.

PROCEDURE: Create a Word document that performs the following queries in Relational Algebra. I have provided you with a pdf document containing the various Relational Algebra symbols here.

1. List the customerName of all customers who live in a state that does **not** have one of our offices. Consider that a state name is only unique within a given country. For instance, both Russia and the US have a state called Georgia. Do not worry about the sales representative connection between Employee and Customer. Just compare state to state and country to country between customer and offices.
2. List productCode, productName, and productVendor for each product that has **never** been ordered in June. Remember that we have the month function that returns the number of the month component of a data, and January is month number 1.
3. List the Customers that did not Order any products in 2015.
4. List all CustomerNames who have never had an order go to the 'Shipped' status.
5. **Using a set operator**, list the last names of those employees if there is at least one customer who also has a contact with that same last name.
6. List all people that we deal with (employees and customer contacts). Display first name, last name, customer name (or just the literal 'Employee' for employees).
7. List the names of each Product and the ProductLine which the product belongs to for all of the Products which are **not** 'Ships'.
8. List the Employee lastName, firstName, that employee's supervisor's lastName and firstName for those employees whose manager does not report to anyone.
9. List the Product productCode and productName for each product for which we do not have any orders whose quantityOrdered exceeds the quantityInStock for that product.
10. List all the states and countries that we are involved in. If the state has a customer in it, but no office, then list that state name in one column and

"Customer" in the other. If that state has an office with no customers, then list that state in one column and "Office" in the other. Finally, if the state has one or more customer and one or more office, list that state as "Both". List each state just once. Order by the state name. Be sure to consider that the state name could be null in some cases.

WHAT TO TURN IN:

- For each problem give me:
  - The original question.
  - The Relational Algebra statement.
  - A screenshot of the graphical representation of the Relational Algebra.
- Put all your output into a single Word document and upload that into the dropbox.
- Your team's filled out collaboration document. You can find a template for that here.