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CSE-3330-001

3/6/2019

Assignment 5

1. **SELECT:** Retrieves tuples of a relation given a specific condition.

**PROJECT:** Retrieves attributes of a given relation.

**UNION:** Retrieves tuples of two relations that are either in one relation or the other.

**INTERSECTION:** Retrieves tuples of two relations that are in both relations.

**MINUS:** Retrieves tuples that are in the first tuple, but not in the second.

**CROSS (CARTESIAN) PRODUCT:** Retrieves all possible combinations of tuples of two given relations.

**DIVISION:** Retrieves the common tuples given two relations and conditions.

**THETA JOIN:** Retrieves the combination of two tuples from two relations given a condition. (Operators: =, <, >, <=, >=, !=)

**EQUI JOIN:** Retrieves combination of two tuples from two relations given a condition or attributes using = operator only.

**NATURAL JOIN:** Retrieves combination of two tuples from two relations given a condition using = operator only.

1. **Union compatibility** is when two relations have the same number of attributes and the attributes of the two relations have the same types. Union, Intersection, and Difference need to be union compatible because they make Boolean comparisons between two relations, and you can’t make a comparison of values that have different types.
2. If you have a certain attribute you want to modify that is has the exact same value as another attribute, you would have to rename the attribute you want to modify to something unique, then modify it.
3. **Theta join, Equi join, Natural join**. (See #1 for definitions of each)
4. Inner join only adds matching attributes from two tables. Outer join adds all attributes from a given table (left, right, or full) then adds attributes from other table. The attributes of the second table will either be its own values or NULL depending on if the attributes match with first table.
5. A) BOOK (The Lost Tribe) ÷ LIBRARY\_BRANCH(Sharpstown)

B) πTitle, Branch\_name,, No\_of\_copies((BOOK × LIBRARY\_BRANCH) \* BOOK\_COPIES)

C) πName, Date\_out(BORROWER BOOK\_LOANS = “NULL” BOOK\_LOANS)

D) COUNT(<Book\_id, Branch\_id>Ʒ)



A)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **P** | **Q** | **R** | **A** | **B** | **C** |
| 10 | a | 5 | 10 | b | 6 |
| 10 | a | 5 | 10 | b | 5 |
| 25 | a | 6 | 25 | c | 3 |

B)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **P** | **Q** | **R** | **A** | **B** | **C** |
| 15 | b | 8 | 10 | b | 6 |
| 15 | b | 8 | 10 | b | 5 |

C)

|  |  |  |
| --- | --- | --- |
| **P** | **Q** | **R** |
| 10 | a | 5 |
| 15 | b | 8 |
| 25 | a | 6 |
| 10 | b | 6 |
| 25 | c | 3 |
| 10 | b | 5 |

D)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **P** | **Q** | **R** | **A** | **B** | **C** |
| 10 | a | 5 | 10 | b | 5 |

1. A) (πFname, Lname(EMPLOYEE))÷ EMPLOYEE(333445555)

B) A <Essn, Pno>Ʒ

B πPnumber(PROJECT)

πFname, Lname (EMPLOYEE( A ÷ B))

C) A πSsn(EMPLOYEE)

B πEssn(WORKS\_ON)

A – B

D) A <Dno, AVG(Salary)>Ʒ

πDname(DEPARTMENT \* A)

E) A σMAX(Salary)EMPLOYEE

B πDno(A)

πFname, Lname(EMPLOYEE EMPLOYEE,Dno = B A)

F) A <Ssn, Essn = “888665555”>Ʒ

B πSsn(A)

πFname, Lname(B)

G) A σDno = 5EMPLOYEE

B A A.Ssn = WORKS\_ON.Essn WORKS\_ON

C σPno = 1 AND Hours > 10B

πFname, Lname(C)

F) A πMgr\_ssn(DEPARTMENT)

B σA NOT IN DEPENDENTDEPENDENT

πFname, Lname(B)