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CISP - 440

Assignment 9

11/15/2018

Part 0 - Functions.

Description:

The goal for this assignment is to demonstrate my knowledge in certain function types. In this assignment I am to demonstrate my ability to test if a relation is a function and determine its domain and range. In addition, I am expected to be able to determine if a function is one to one and/or onto.

Problem 3:

Express the relation given by Table 2.7.6 as a set of n-tuples.

TABLE 2.7.6
SUPPLIER

Dept	*Part No*	*Amount*
04	335B2	220
23	2A	14
04	8C200	302
66	42C	3
04	900	7720
96	20A8	200
96	1199C	296
23	772	39

This operation results in the following answer with size 3 tuples.

{(04, 335B2, 220), (23, 2A, 14), (04, 8C200, 302), (66, 42C, 3), (04, 900, 7720), (96, 20A8, 200), (96, 1199C, 296), (23, 772, 39)}

Problem 7:

Using tables 2.7.4 through 2.7.7. Find all part numbers.

To find all part numbers we can simple project a column in table 2.7.6.

(see next page)

TABLE 2.7.6
SUPPLIER

Dept	*Part No*	*Amount*
04	335B2	220
23	2A	14
04	8C200	302
66	42C	3
04	900	7720
96	20A8	200
96	1199C	296
23	772	39

Operation: **SUPPLIER[Part No];**

This results in the following...

Part No
335B2
2A
8C200
42C
900
20A8
1199C
772

Problem 12:

Using tables 2.7.4 through 2.7.7. Find all employees in department 04.

To perform this operation we will first have to select from Table 2.7.5 the manager who oversees department 04. Then we will have to perform a join on Table 2.7.4 on all employees who are under the selected manager. Lastly we can then project all employes in the resulting table.

TABLE 2.7.5
DEPARTMENT

Dept	*Manager*
23	Jones
04	Yu
96	Zamora
66	Washington

Operation 1: **TEMP1 = DEPARTMENT[Dept = 04];**

This results in the following…

TEMP1

Dept	Manager
04	Yu

TABLE 2.7.4
EMPLOYEE

ID	*Name*	*Manager*
1089	Suzuki	Zamora
5620	Kaminski	Jones
9354	Jones	Yu
9551	Ryan	Washington
3600	Beaulieu	Yu
0285	Schmidt	Jones
6684	Manacotti	Jones

Operation 2: **TEMP1 = TEMP1[Manager = Manager]EMPLOYEE**

This results in the following…

TEMP1

ID	Name	Manager	Dept
9354	Jones	Yu	04
3600	Beaulieu	Yu	04

Operation 3: **TEMP1[Name];**

This results in the following…

Name
Jones
Beaulieu

Problem 16:

Using tables 2.7.4 through 2.7.7. Find all managers of departments that produce parts for ABC Unlimited.

To perform this operation we will first have to select from table 2.7.7 all the instances of ABC Unlimited. Next, we can join the resulting table to table 2.7.6 on Part No. Third, we join Table 2.7.5 on Dept. Lastly, we project all of the resulting managers.

TABLE 2.7.7
BUYER

Name	*Part No*
United Supplies	2A
ABC Unlimited	8C200
United Supplies	1199C
JCN Electronics	2A
United Supplies	335B2
ABC Unlimited	772
Danny's	900
United Supplies	772
Underhanded Sales	20A8
Danny's	20A8
DePaul University	42C
ABC Unlimited	20A8

Operation 1: **TEMP1 = BUYER[Name = ABC Unlimited];**

This results in the following…

TEMP1

Name	Part No
ABC Unlimited	8C200
ABC Unlimited	772
ABC Unlimited	20A8

TABLE 2.7.6
SUPPLIER

Dept	*Part No*	*Amount*
04	335B2	220
23	2A	14
04	8C200	302
66	42C	3
04	900	7720
96	20A8	200
96	1199C	296
23	772	39

Operation 2: **TEMP1 = TEMP1[Part No = Part No]SUPPLIER**

This results in the following…

TEMP1

Dept	Part No	Amount	Name
04	8C200	302	ABC Unlimited
23	772	39	ABC Unlimited
96	20A8	200	ABC Unlimited

TABLE 2.7.5
DEPARTMENT

Dept	*Manager*
23	Jones
04	Yu
96	Zamora
66	Washington

Operation 3: **TEMP1 = TEMP1[Dept = Dept]DEPARTMENT;**

This results in the following…

TEMP1

Dept	Part No	Amount	Manager	Name
04	8C200	302	Yu	ABC Unlimited
23	772	39	Jones	ABC Unlimited
96	20A8	200	Zamora	ABC Unlimited

Operation 4: **TEMP1[Manager];**

This results in the following…

Manager
Yu
Jones
Zamora

Problem 20:

Using tables 2.7.4 through 2.7.7. Find all part numbers and amounts for Zamora's department.

To perform this operation we can select Zamora from Table 2.7.5 and join the dept column to the one on Table 2.7.6. Lastly, we can perform a project on both the numbers and amounts columns.

TABLE 2.7.5
DEPARTMENT

Dept	*Manager*
23	Jones
04	Yu
96	Zamora
66	Washington

Operation 1: **TEMP1 = DEPARTMENT[Manager = Zamora];**

This results in the following…

TEMP1

Dept	Manager
96	Zamora

TABLE 2.7.6
SUPPLIER

Dept	*Part No*	*Amount*
04	335B2	220
23	2A	14
04	8C200	302
66	42C	3
04	900	7720
96	20A8	200
96	1199C	296
23	772	39

Operation 2: **TEMP1 = TEMP1[Dept = Dept]SUPPLIER;**

This results in the following…

TEMP1

Dept	Manager	Part No	Amount
96	Zamora	20A8	200
96	Zamora	1199C	296

Operation 3: **TEMP1[Part No, Amount];**

This results in the following…

Part No	Amount
20A8	200
1199C	296

Conclusion

This assignment was relatively easy. Mostly because I have actually used relational databases in my personal coding projects before. As a result, I already had a basic understanding of Join, Select, and Project. Looking forward to the implementation of this subject!