Homework #13

Name _____ Sec ____

Questions:	Answers:
1. Use the relations given below to evaluate the relational expressions or explain why the expression is invalid. a) $\sigma_{A<4}Q \cdot U$ b) $\pi_A\sigma_{B<A}Q$ c) $\pi_{BE}(R \cdot \pi_{CE}S)$ d) $Q \cup \pi_B R$ e) $\pi_{CDE}(\sigma_{B<2}R \cdot \rho_{C\leftarrow E}U) - S$ **Q:** A | B 5 | 1 6 | 1 4 | 2 3 | 4 **R:** B | C 1 | 4 2 | 4 2 | 5 3 | 6 3 | 9 **S:** C | D | E 4 | 1 | 1 4 | 2 | 1 3 | 3 | 2 2 | 4 | 2 **U:** C | D 1 | 2 2 | 4	
2. Use the relations given above in problem 1 to evaluate the relational expressions or explain why the expression is invalid. a) $\pi_E S \mid\cdot\mid U$ b) $Q \mid\cdot\mid R$ c) $\sigma_{B<2}Q \mid\cdot\mid R \mid\cdot\mid \rho_{C\leftarrow B}U$	a) πES⋈U ----- here natural join between relation S and U are used. natural join is performed when there are common attributes between the two relation with exactly same type. Natural join gives the values that are common in both the relation, so: E 2 b) Q⋈R ----- here the two relation have the common attribute as B and the common values are 1,2 and 4, so: A B C 5 1 4 6 1 4 4 2 4 4 2 5 c) this query will give error because the in relation U the attribute B is not present so C<-B is invalid, so there will be error

3. Using the database instance below and for each query to the right, give: (i) a relational algebra expression; (ii) an SQL query*; and (iii) a Datalog query and rule**.

*Execute SQL queries against the SnoopyDatabase, and hand in screenshots of your queries and the results of running your queries. (For details about how to do this, see **http://students.cs.byu.edu/~cs236ta/sharedLib/homework/SQLite3Essentials.html**.)

**Enter rules and execute Datalog queries against the SnoopyDatabase and hand in screenshots of your queries and the results of running your queries. (Use the Datalog interpreter at: http://students.cs.byu.edu/~cs236ta/sharedLib/homework/DatalogInterpreter.html)

SNAP

StudentID	Name	Address	Phone
12345	C. Brown	12 Apple St.	555-1234
67890	L. Van Pelt	34 Pear Ave.	555-5678
22222	P. Patty	56 Grape Blvd.	555-9999
33333	Snoopy	12 Apple St.	555-1234

CR

Course	Room
CS101	Turing Aud.
EE200	25 Ohm Hall
PH100	Newton Lab.

CDH

Course	Day	Hour
CS101	M	9AM
CS101	W	9AM
CS101	F	9AM
EE200	Tu	10AM

a) List the names of students whose phone number is 555-1234.

Name
C. Brown
Snoopy

i) ?Name (Phone = "555-1234" (SNAP))

b) Find the names and corresponding course numbers of all students who have a class in the Turing Aud.

Name	Course
C. Brown	CS101
L. Van Pelt	CS101
Snoopy	CS101

i) ?Name,Course(Room = "Turing Aud." (SNAP ? CSG ? CR))

c) Find the name and phone number of students taking any of the immediate prerequisites of CS120.

Name	Phone
C. Brown	555-1234
L. Van Pelt	555-5678
Snoopy	555-1234

i) ?Name,Phone (CP.Course = "CS120" (SNAP ? CSG ? CP))