University of Rochester   **Computation and Formal Systems (CSC173)**

Homework 1
Amy Murphy
10 Sept 2002

You will not hand in the answers to this homework assignment. Instead, at the beginning of class on **17 September 2002** you will be asked to solve one of the problems as a closed notes, closed book quiz. The question to be solved will be randomly selected.

Title	Author	Genre	NumCopies
Solaris	Lem	SF	2
Ender's Game	Card	SF	2
Ender's Shadow	Card	SF	1
Once and Future King	White	F	1
Best Karate	Nakayama	NF	1
Leonardo da Vinci	Arasse	NF	1
Leonardo da Vinci	Marani	NF	1
Name of the Rose	Eco	F	2

UserName	Title	Author
alm	Ender's Game	Card
dw	Leonardo da Vinci	Arasse
gpp	Name of the Rose	Eco
mls	Ender's Game	Card

UserName	Last	First
alm	Murphy	Amy
gpp	Picco	Gian
dw	Walters	Dennis
mls	Scott	Michael
kmz	Zenke	Kay

1. What attribute(s) constitute possible keys for each of the three given relations? State any assumptions you must make.

2. What relation results from doing a natural join of the relation U-L-F with U-T-A?

3. What relation is obtained by selecting from the relation T-A-G-N where (Author == Card OR Genre == NF)?

4. What relation results from doing a projection of the relation T-A-G-N onto the attributes Author and Genre?

5. If the T-A-G-N relation is stored in a hashtable where the Author's last name is the key of the hash table, what is the running time of a query for all book titles by a specified author? What is the running time of a query requesting the all the book titles of which there are two or more copies?

6. How would you determine how many copies of the book titled Name of the Rose by Eco remain in the library? I'm not interested in the answer, I'm interested in the process to get the answer.