Quiz #1

CS 317 Data Management and Information Processing Spring'03
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Instructions:

Your quiz should have 6 questions which total to 110 points (100 credit) and partial credits will be given for incomplete answers. **Return** the exam paper with the notebook!!! You have 42 min. to complete the quiz. Plan your time wisely. Good luck!!

1. (10 pts.) Recall that ER model is the first formalization of the requirements specifications by the user. Given all the "building blocks" of an ER formalism (e.g. rectangles, ellipses, ...) WHAT is it that cannot be represented by them? In other words, what is it that cannot be "seen" on a given ER diagram?

2. (15 pts.) Define a *cardinality constraint*. List all the types of cardinality constraints that you are aware that a relationship can have.

3. (15 pts.) define the concept of a *weak entity set*.

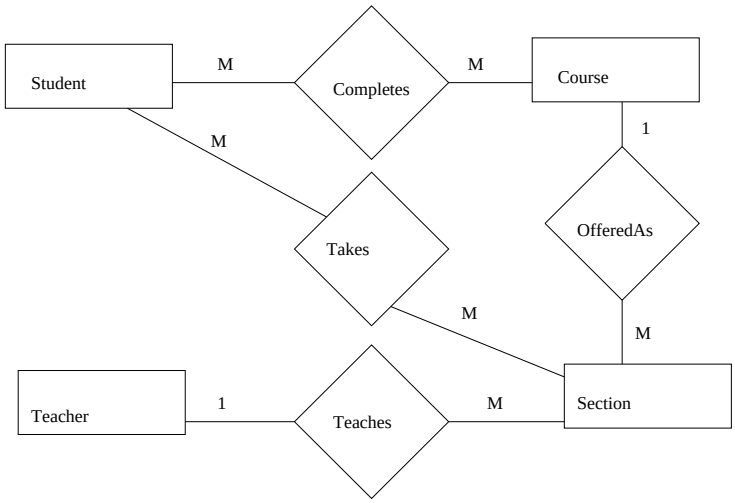

Figure 1: ER diagram for Problem 4.

4. (20 pts.) Consider the ER diagram given on Figure 1 (Note that there are no attributes...). Answer the following questions (and justify briefly your answer):
– Does every student have to take a section to complete corresponding course?
– Can a teacher teach more than one section of the same course?
– Does the *Section* entity class need a unique key?

5. (30 pts.) Consider the following description of a information management system of a given bank. The bank has several *branches* which have their *branch_id*, and each of them has an information about its location (city) and assets. A *customer* of the bank has information about it's *customer_id* and some personal information like name and address. Each customer may have: – one or more *loans*, each of which must have loan_number, ammount and origin_branch (basically, the branch at which the loan was taken) AND/OR; – one or more *accounts*, each of which is specified by the account_number and balance. For each particular loan, we want to record the information about the *payments* that were made on it (i.e. payment-number,date, ammount).

Draw an ER diagram for the requirements specifications above.

6. (20 pts.) For the ER diagram that you generated for Problem 5. above, specify the Relational Schemas which will capture *AT LEAST* two entity sets and the relatioship among them.