Chapter 5 – Week6

Entity Relationship Model Continued

FRIDAY October 22nd

Announcements

- Lab3
  - Due Friday October 22nd
- Assignment 1 – due Oct 23rd

Final Exam

RECAP

- Draw an ER model
- Read an ER model
- Map ER model to relational

Draw an ER model – general approach

1. Information for logical design (database modeling) comes from the problem statement, expert knowledge of the application domain, and general knowledge of the real world – Requirements gathering.
2. Identify entity and relationship first, and determine structural constraints of the relationships.
3. Add attributes to further describe the basic entity and relationship sets.
4. Identify keys or discriminators of the entity sets.

Read an ER model

- Look for
  - Strong entity types (with key attributes)
  - Composite attributes
  - Multi-valued attributes
  - Weak entity types (with partial attributes)
  - Cardinality of relationships
  - Partial or total participation
  - Recursive relationships

Map ER Model to Relational model

Input: ER Model

Output: Relational Model

General Idea:

- Each entity type (ET) becomes a relation.
- Only the simple components of any composite attribute are taken.
- Each 1:1 and 1:N relationship adds an attribute (as foreign key) to an existing ET.
- Each M:N relationship becomes a new relation
- Each multi-valued attribute becomes a new relation

Worksheet 6

Next week

- Improve an existing design

What if we don't start with ER Model?

SID	Name	Grade	Course#	Text	Major	Dept
S1	Joseph	A	CIS800	b1	CIS	CIS
S1	Joseph	B	CIS820	b2	CIS	CIS
S1	Joseph	A	CIS872	b5	CIS	CIS
S2	Alice	A	CIS800	b1	CS	MCS
S2	Alice	A	CIS872	b5	CS	MCS
S3	Tom	B	CIS800	b1	Acct	Acct
S3	Tom	B	CIS872	b5	Acct	Acct
S3	Tom	A	CIS860	b1	Acct	Acct

- Is there any redundant data?
- Can we insert a new Course# with a new textbook?
- What should be done if 'CIS' is changed to 'MIS'?
- What would happen if we remove all CIS800 students?