**IS 441 Week 3 Class Summary and Highlights**

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| Class outline:   1. Review Week 2’s class; 2. Exercise with Problem 2.23 on P. 100; | 1. Learn ternary relationship; 2. ER Diagram examples with problem 2-39 of Chap 2; |

1. Foreign Key:
   1. Foreign key exist to maintain relationship for a 1-M (one-to-many) relationship;
   2. Foreign key is always on the table/entity on the M-side (many-side, “child-side”);
   3. Foreign key references the primary key of the table/entity on the 1-side (one-side, “parent-side”).
2. Business rules and ER Diagram:
   1. Business rules must be reflected in the ERD; ERD must be based on business rules; the two cannot contradict (!)
   2. A change in business rule would lead to corresponding changes in the ERD;
   3. Some “rules of thumbs” (NOT exact “rules” but just “highly likely logical consequences”):
      1. A “1” cardinality is likely to become “M” in the long run;
      2. An optional cardinality is likely to become mandatory in the long run.
3. Ternary relationship:
   1. A ternary relationship is one that some important attributes are to be determined by ALL THREE participating entities, and cannot be determined by only one or only two entities.
      1. The book’s example: “Shipping mode” and “Unit cost” of parts shipped to warehouses from vendors: none of the three entities can singularly determine the two attribute values, neither can any combination of two entities: it takes all three entities to determine.
   2. A ternary relationship ALWAYS calls for an associative entity.
4. Associative entity:
   1. Two outstanding features calling for an associative entity: (1) M-M relationship; (2) relationship has its own attributes (that cannot be determined by either one of the two entities and MUST be determined by the TWO ENTITIES SIMULTANEOUSLY);
   2. Associative entity is ALWAYS on the Many-side, and thus
      1. Has the two foreign keys in it, referencing the two entities that it “associates” with, respectively;
      2. These two foreign keys **together** work as the primary key for the associative entity;
      3. The cardinality symbols on the two entities that the Associative entity “associates” are ALWAYS mandatory one
5. Cardinality symbols:

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| * 1. The two symbols closer to the center of a relationship are the minimal cardinality, determining whether the cardinality is …………mandatory or optional; | * 1. The two symbols on the “far ends” of a relationship are the maximal cardinality, determining whether the cardinality is many or one. |

Min; Optional or Mandatory

Max; determines One or Many