**Lecture 5: The E/R Model**

1. E/R Basics: Entities and Relations

**Database Design Process**

* E/R (enitiy and Relationship) is a visual syntax for DB design
* Very Important and used by companies big and small

Entities and Entity Sets

* Primitive unit of the E/R Model

Entities are individual objects, which are members of entity sets (example: specific person or product)

Entity Sets are the classes or types of objects in our model

* An entity set has attributes

**Keys**

Key- a minimal set of attributes that *uniquely identifies an entity*

E/R: Relationships

* A relationship is between two entities
* What is a relationship in terms of mathematical definition?
  + Subset of the cross product of A x B

1. E/R Design Considerations
2. One-to-one
3. Many-to-one
4. One-to-many
5. Many-to-many
6. Advanced E/R Concepts

* Subclasses
* Constraints
* Weak Entity Sets

Subclasses

* Some objects in a class may be special and worthy of their own class
  + Example: Products could breakdown into Software Products and Education Products

**Lecture 6: Design Theory**

**Normal Forms and Functional Dependencies**