University of Central Florida
CGS 2545
Database Concepts

DEPARTMENT OF ELECTRICAL ENGINEERING & COMPUTER SCIENCE
COMPUTER SCIENCE DIVISION

ER Model to Relational Model

- ER Model, when conceptualized into diagrams, gives a good overview of entity-relationship, which is easier to understand.
- ER diagrams can be mapped to relational schema, that is, it is possible to create relational schema using ER diagram.
- We cannot import all the ER constraints into relational model, but an approximate schema can be generated.

ER Model to Relational Model

- There are several processes and algorithms available to convert ER Diagrams into Relational Schema.
- Some of them are automated and some of them are manual.
- We may focus here on the mapping diagram contents to relational basics.

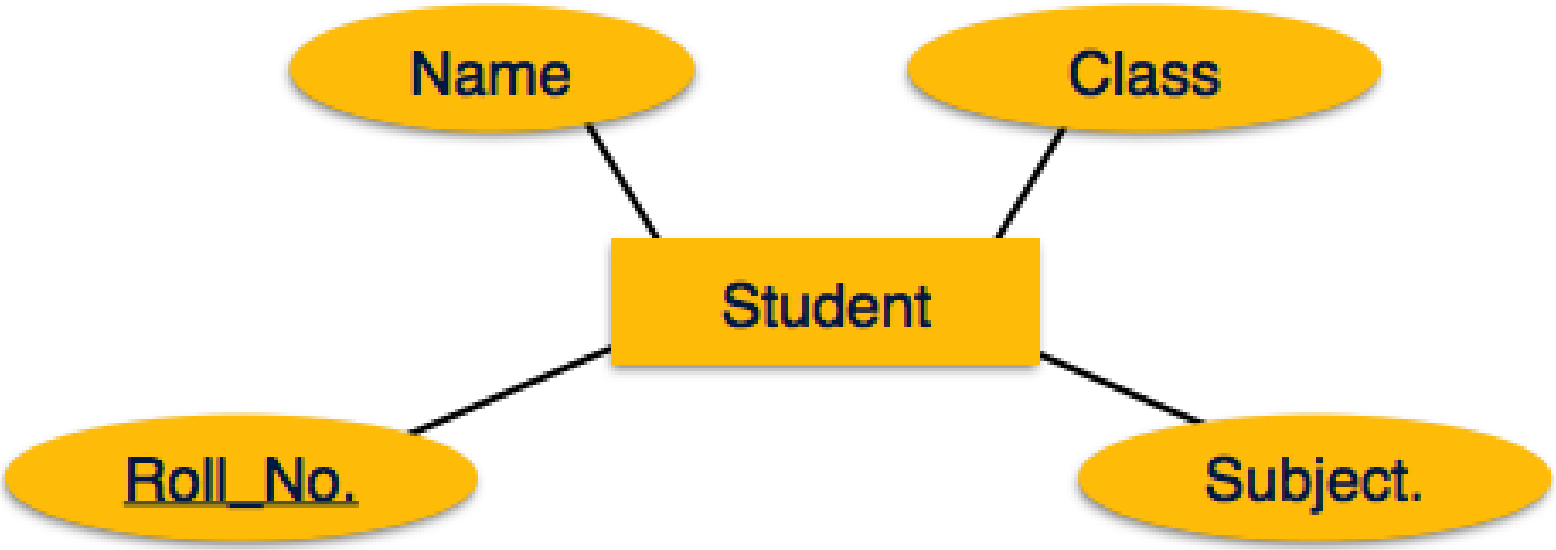
ER Model to Relational Model

- ER diagrams mainly comprise of
  - Entity and its attributes
  - Relationship, which is association among entities.

ER Model to Relational Model

- Mapping Entity
  - An entity is a real-world object with some attributes
  - Mapping Process (Algorithm)
    - Create table for each entity.
    - Entity's attributes should become fields of tables with their respective data types.
    - Declare primary key.

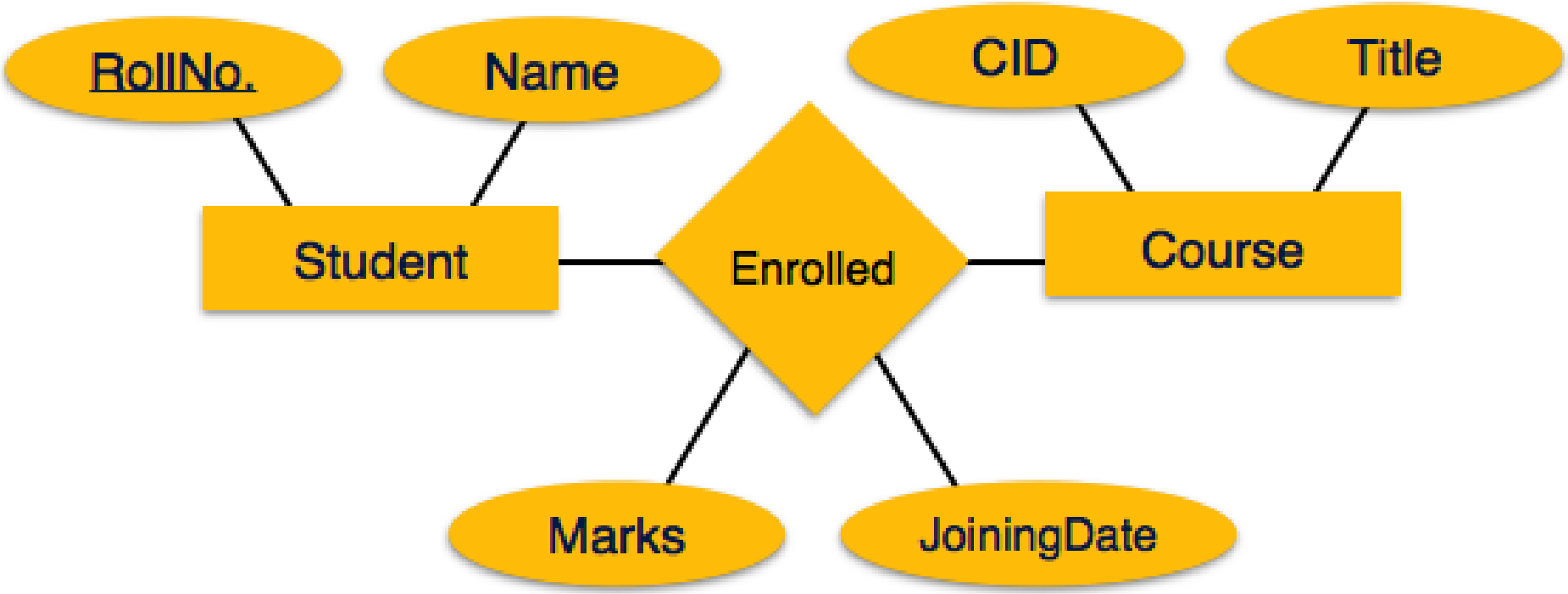
ER Model to Relational Model



ER Model to Relational Model

- Mapping Relationship
  - A relationship is an association among entities.
  - Mapping Process
    - Create table for a relationship.
    - Add the primary keys of all participating Entities as fields of table with their respective data types.
    - If relationship has any attribute, add each attribute as field of table.
    - Declare a primary key composing all the primary keys of participating entities.
    - Declare all foreign key constraints.

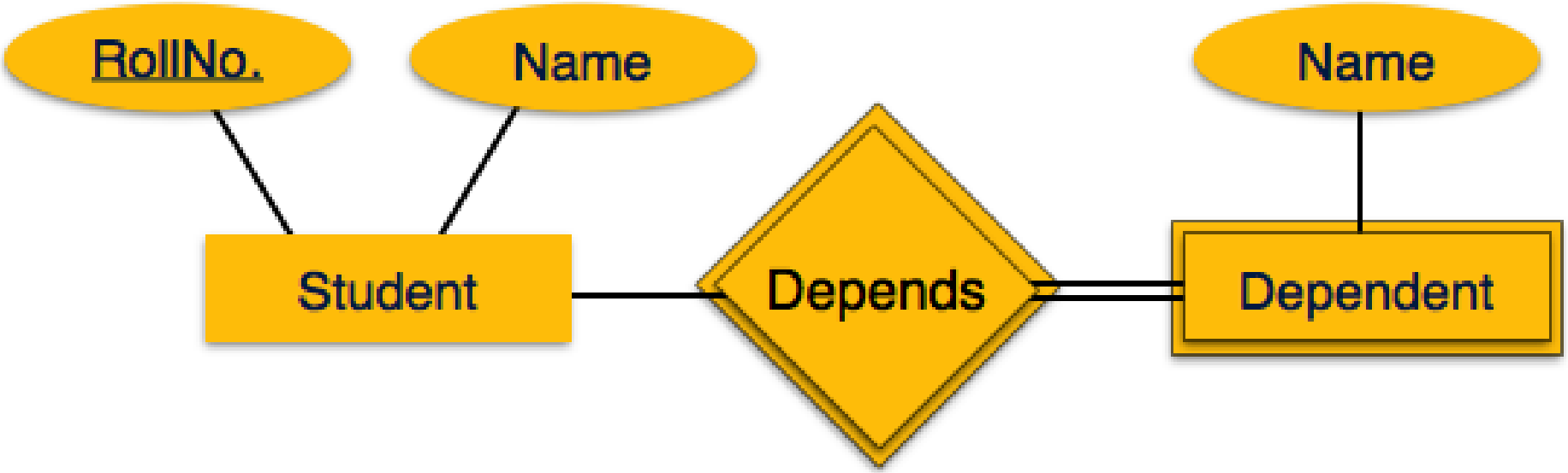
ER Model to Relational Model



ER Model to Relational Model

- Mapping Weak Entity Sets
  - A weak entity set is one which does not have any primary key associated with it.
  - Mapping Process
    - Create table for weak entity set.
    - Add all its attributes to table as field.
    - Add the primary key of identifying entity set.
    - Declare all foreign key constraints.

ER Model to Relational Model



ER Model to Relational Model

- Mapping Hierarchical Entities
  - ER specialization or generalization comes in the form of hierarchical entity sets.
  - Mapping Process
    - Create tables for all higher-level entities.
    - Create tables for lower-level entities.
    - Add primary keys of higher-level entities in the table of lower-level entities.
    - In lower-level tables, add all other attributes of lower-level entities.
    - Declare primary key of higher-level table and the primary key for lower-level table.
    - Declare foreign key constraints.

ER Model to Relational Model