



# ER Model

## 1. Attributes

### 1.1. Single values vs Multivalued Attributes

#### 1.1.1. Complex Attributes

### 1.2. Stored vs Derived attributes

### 1.3. Simple vs Composite Attribute

### 1.4. Attributes with NULL Values

#### 1.4.1. Missing

#### 1.4.2. Unknown

#### 1.4.3. Not applicable

## 2. Entities

### 2.1. Types

#### 2.1.1. Strong

#### 2.1.2. Weak

### 2.2. Sets

### 2.3. Key attributes

## 3. Relationships

### 3.1. Degree

#### 3.1.1. Binary

#### 3.1.2. Ternary

#### 3.1.3. Higher degree

### 3.2. Cardinality Ratio

#### 3.2.1. 1:1

#### 3.2.2. 1:N

#### 3.2.3. N:M

### 3.3. Participation

#### 3.3.1. Total

#### 3.3.2. Partial

## 4. Exercises

### 4.1. 1

#### 4.1.1. 2

##### 4.1.1.1. schema

4.1.1.2. schema 2

## 5. Convert to relational schema

5.1. simple entity set

5.1.1. schema

5.1.1.1. Weak entity set

5.1.1.1.1. schema

5.2. Multivalued Entity set

5.2.1. schema

5.3. Complex entity set

5.4. Relationship set

5.4.1. Schema

5.5. Relationship set

5.5.1. schema

## 6. 2

6.1. 3

## 7. Minimal schema

7.1. a

7.1.1. inst dept{ID, name, dept name, salary}.

7.1.2. stud dept{ID, name, dept name, tot cred}.

7.1.3. course depts {course id, title, dept name, credits}

7.1.4. sec class{course id, sec id, semester, year, building, room number}.

7.1.5. sec time slot{course id, sec id, semester, year, building, room number, time slot id}.

7.2. many-to-one relationship set AB from entity set A to entity set B -----&----- A in the relationship is total ----->>Combine A and AB