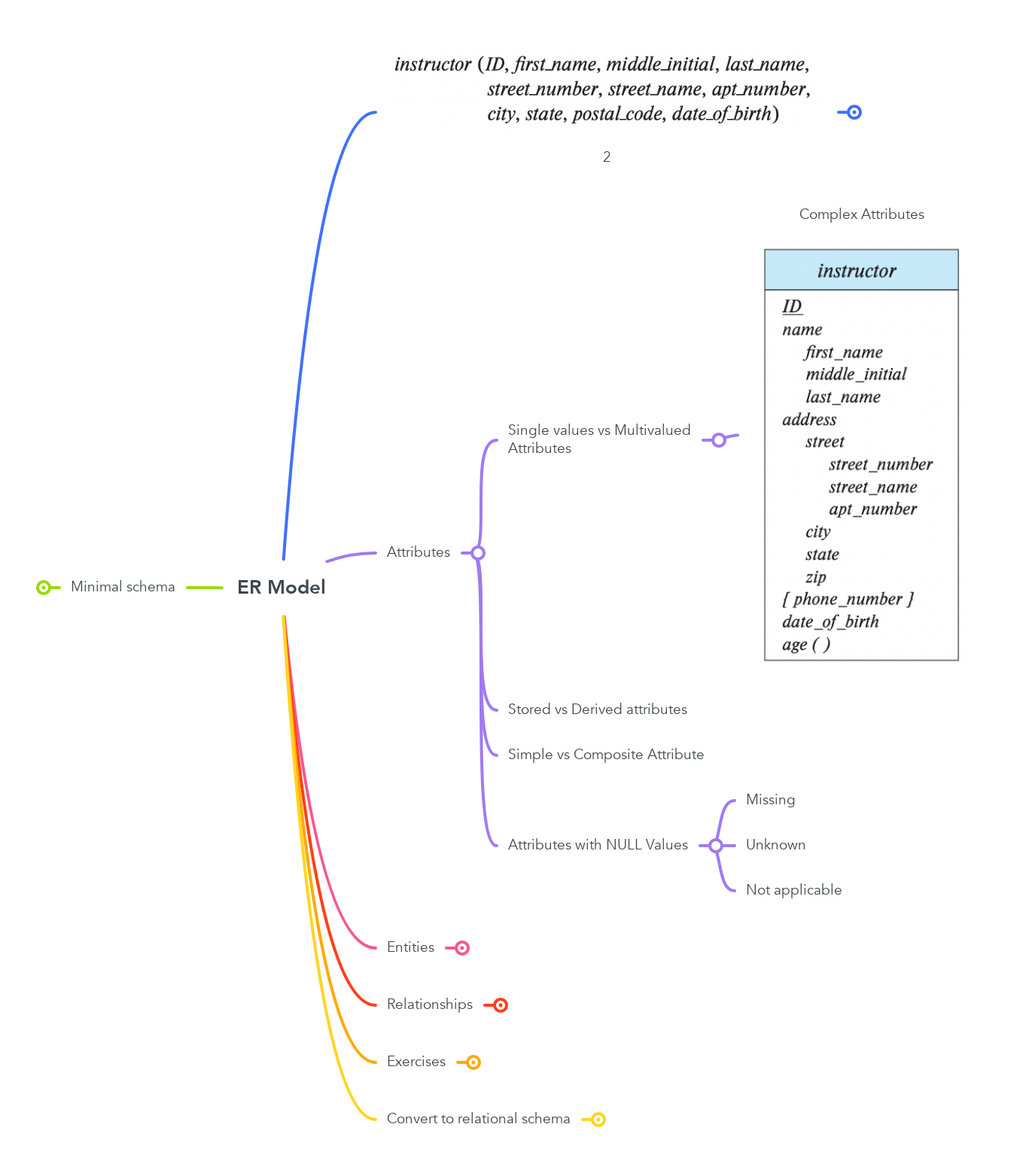


ER Model

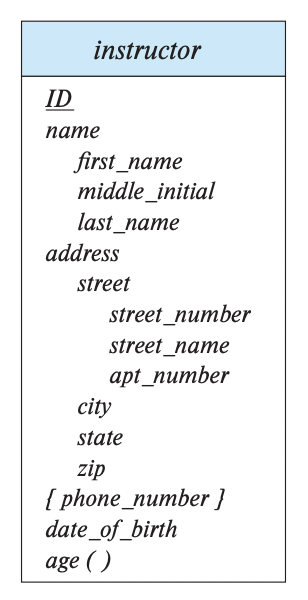


Contents

# Attributes

## Single values vs Multivalued Attributes

### Complex Attributes



## Stored vs Derived attributes

## Simple vs Composite Attribute

## Attributes with NULL Values

### Missing

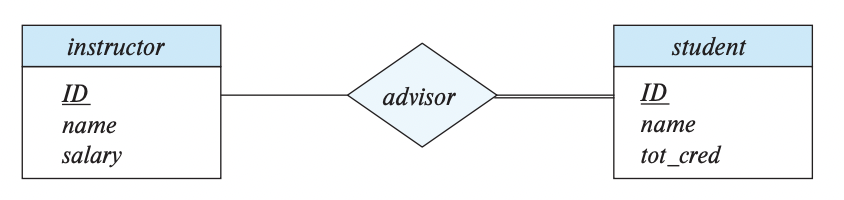
### Unknown

### Not applicable

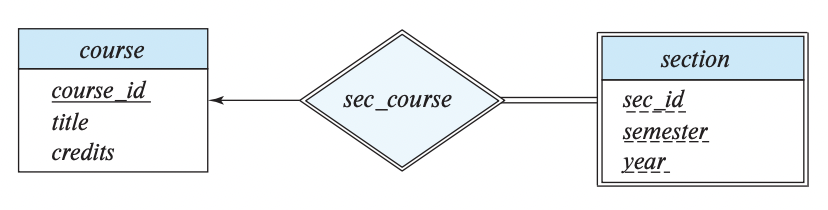
# Entities

## Types

### Strong



### Weak



## Sets

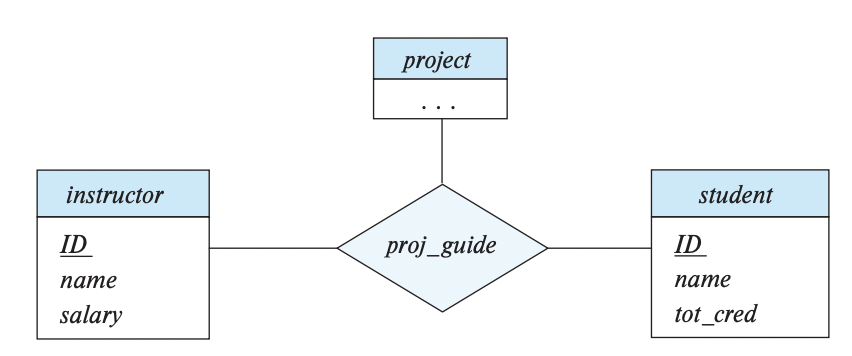
## Key attributes

# Relationships

## Degree

### Binary

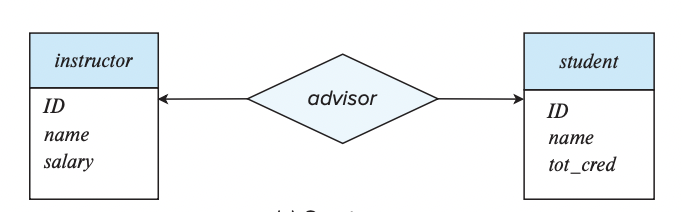
### Ternary



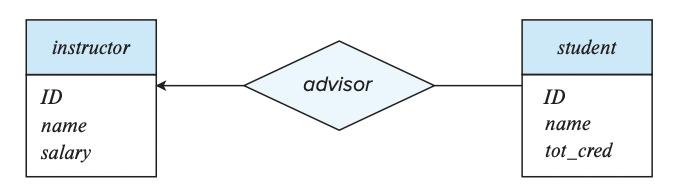
### Higher degree

## Cardinality Ratio

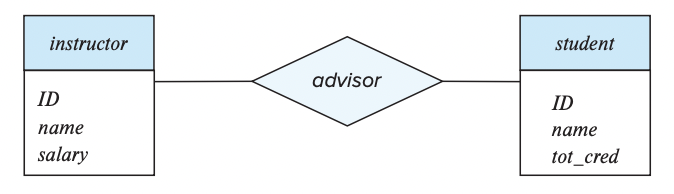
### 1:1



### 1:N

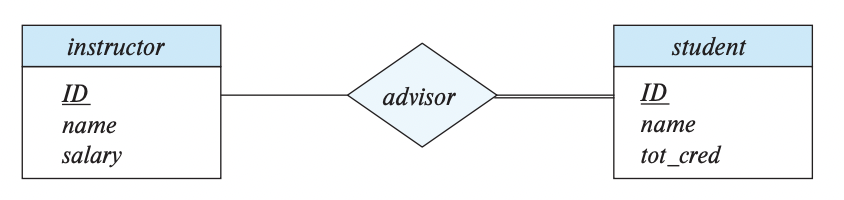


### N:M



## Participation

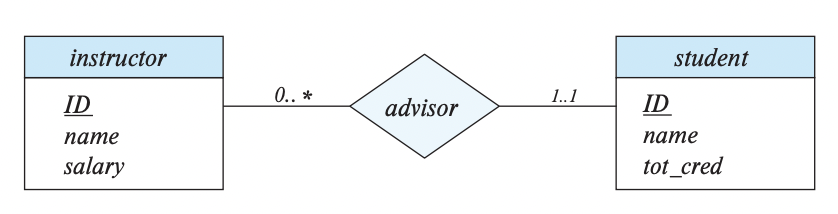
### Total



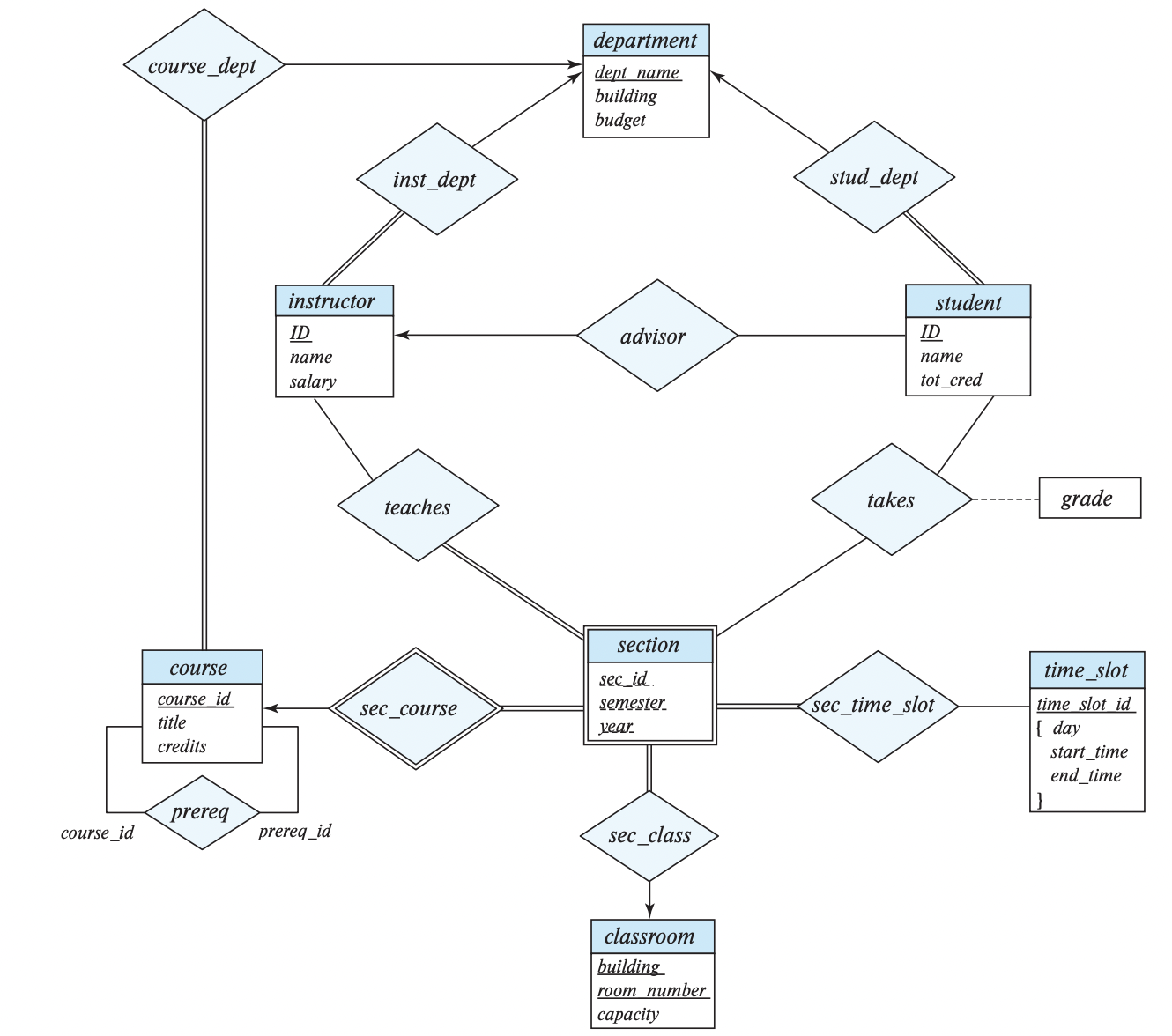
### Partial

# Exercises

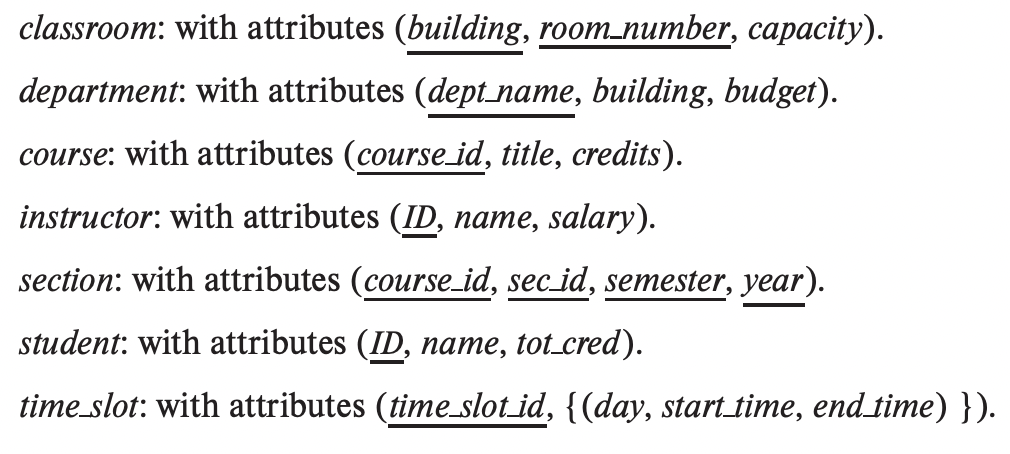
## 1



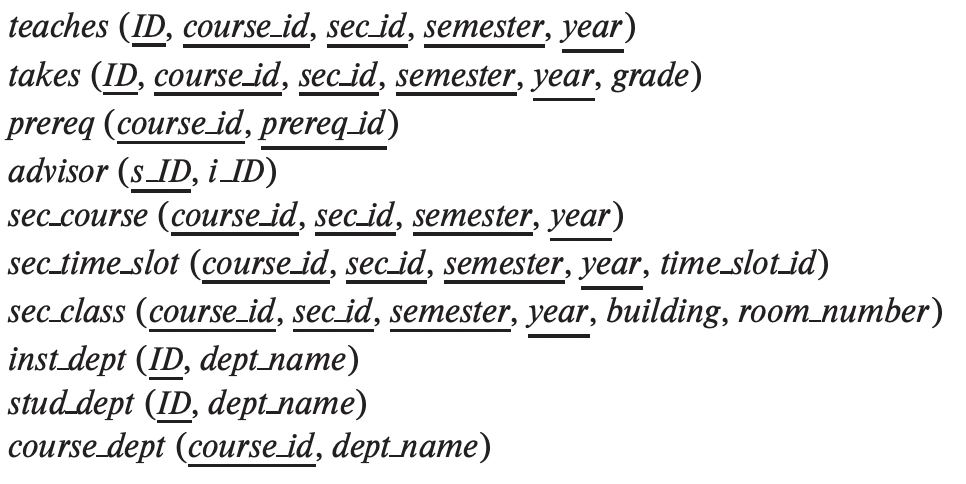
### 2



#### schema

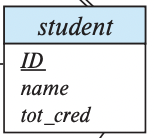


#### schema 2

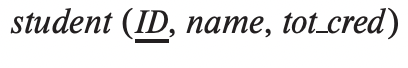


# Convert to relational schema

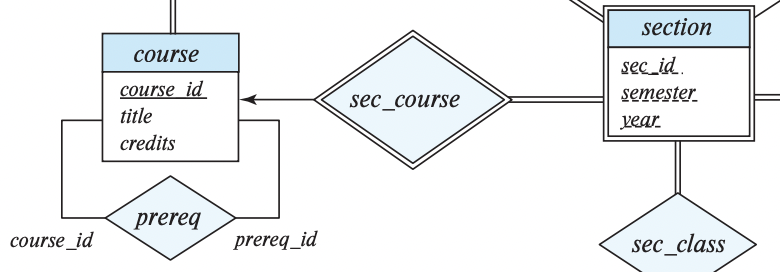
## simple entity set



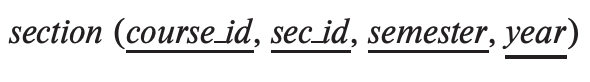
### schema



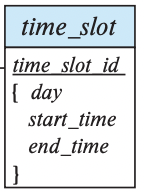
#### Weak entity set



##### schema



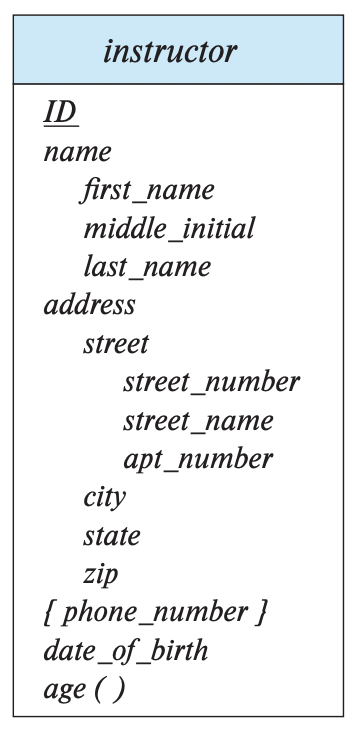
## Multivalued Entity set



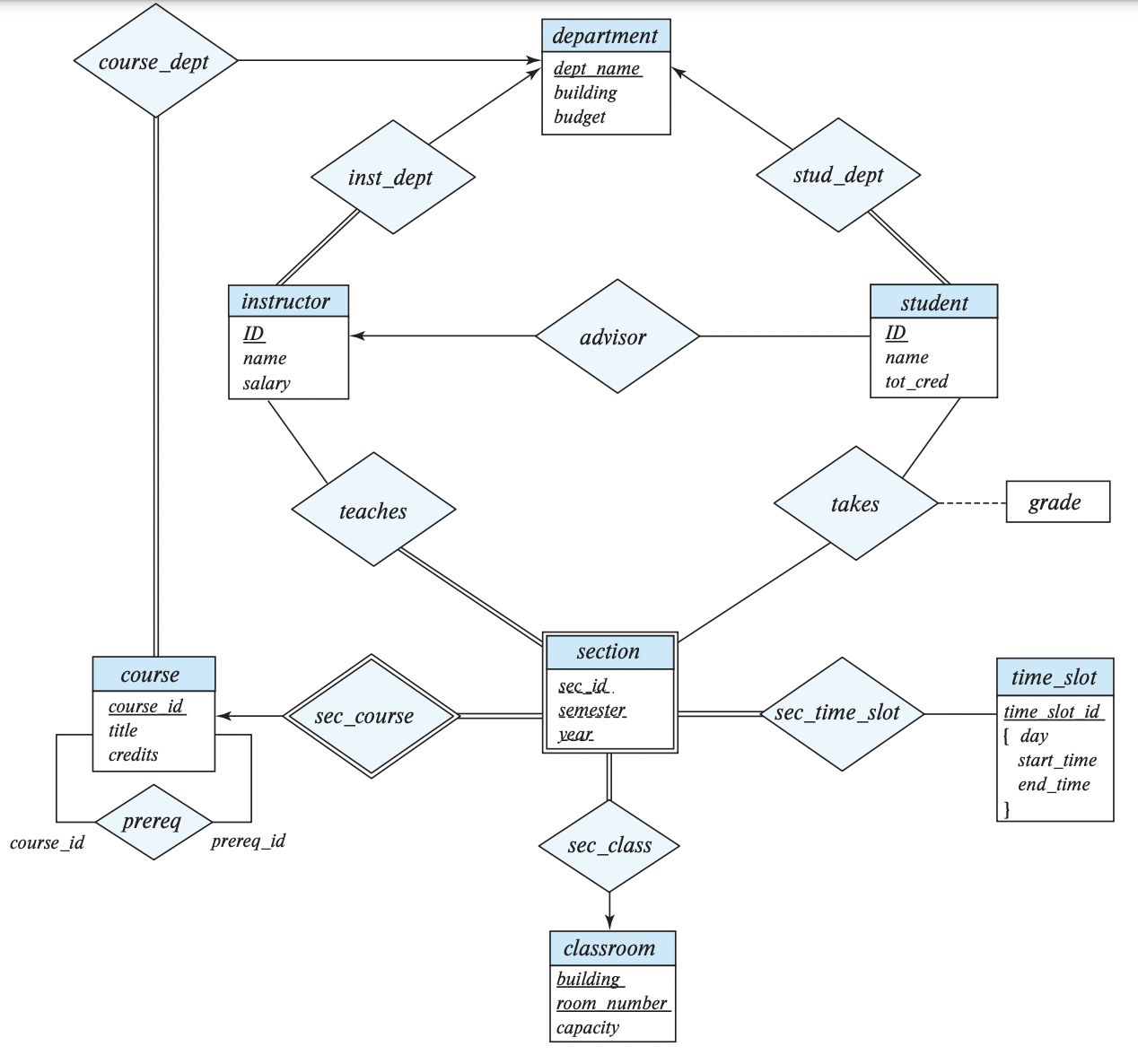
### schema

idea_image_61006642_730x58.png

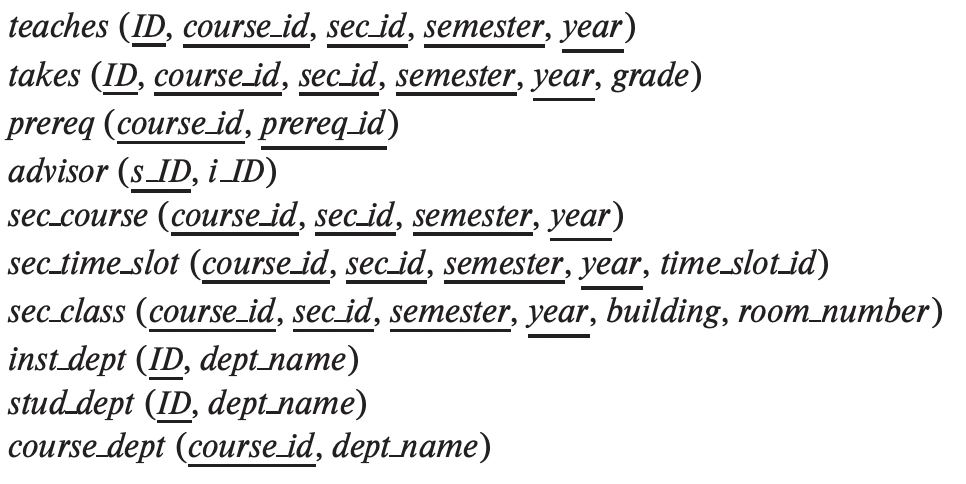
## Complex entity set



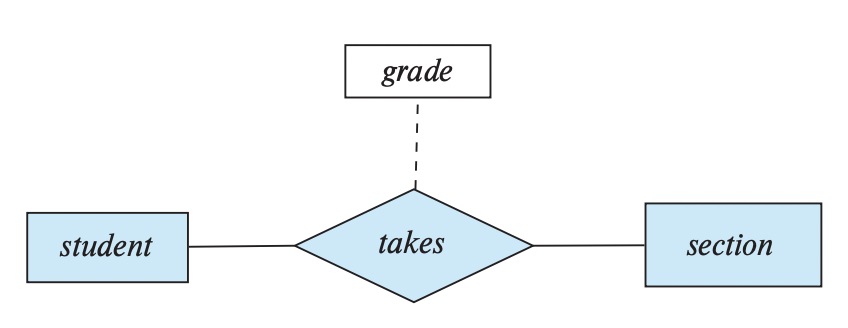
## Relationship set



### Schema



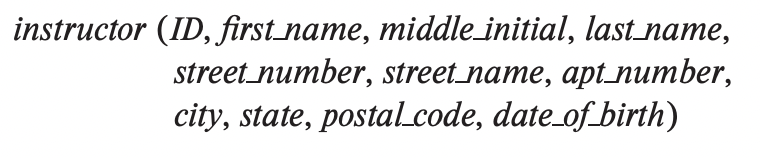
## Relationship set



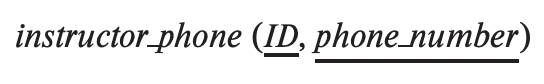
### schema

idea_image_61006756_300x21.png

# 2

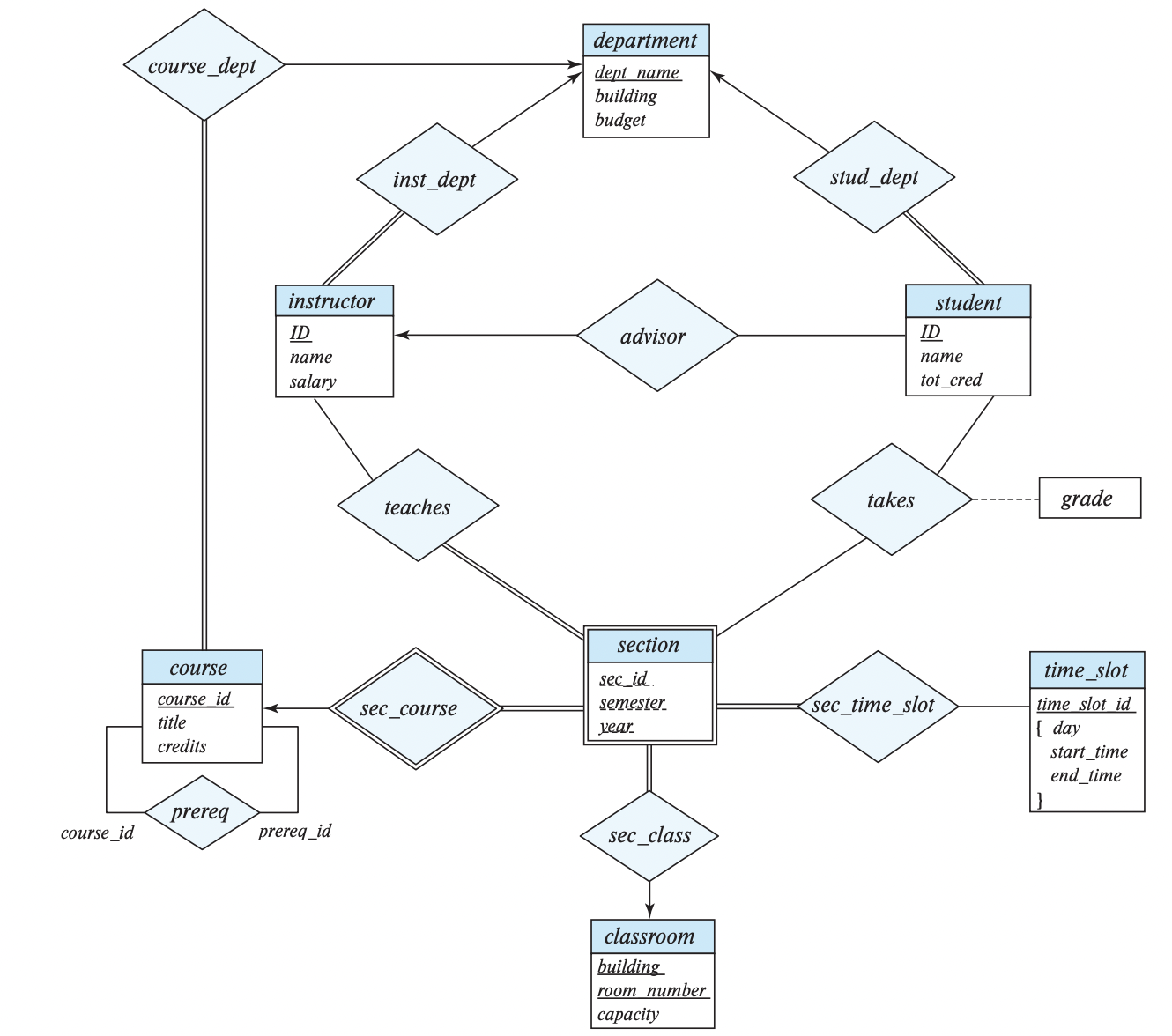


## 3



# Minimal schema

## a



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

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

### course depts {course id, title, dept name, credits}

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

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

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