

# CS 336 Recitation

## Entity / Relationship Model

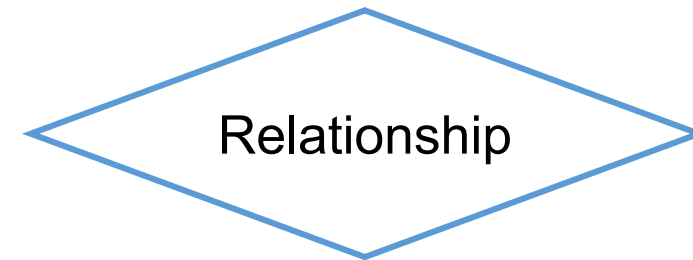
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# Administrative

- Project
  - Form groups of four
  - Sign up on Sakai (deadline: this Sunday Feb. 3rd)
  - Two project-related lectures
- Attendance
  - Sign your name before you leave

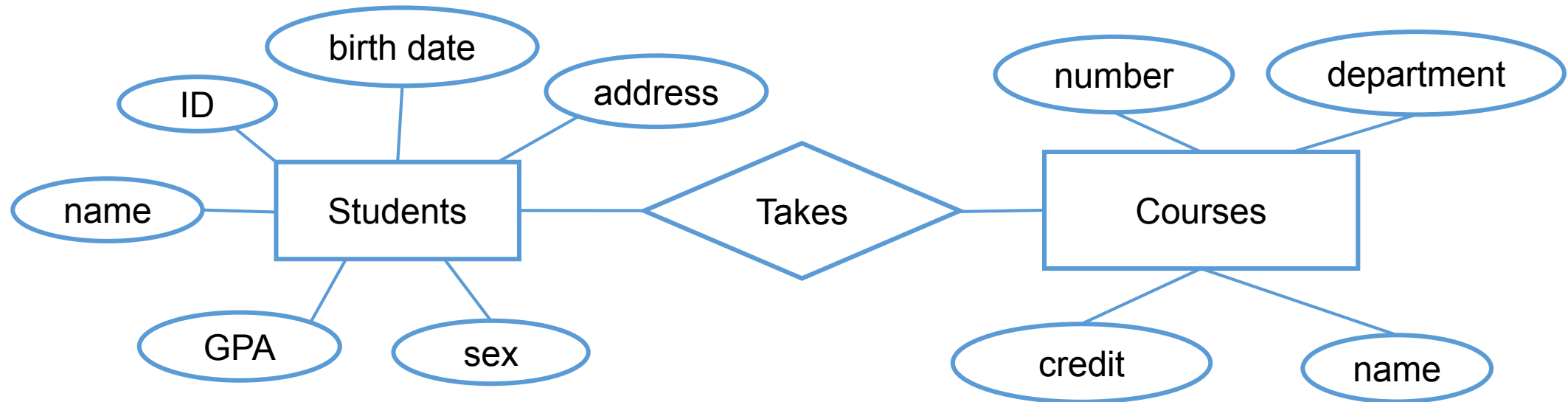
# Entity / Relationship Model

- A high-level design model
- Build a graph representation of data
- Three types of nodes
  - Entity sets: rectangles
  - Attributes: ovals
  - Relationships: diamonds



# Entity / Relationship Model

- Example

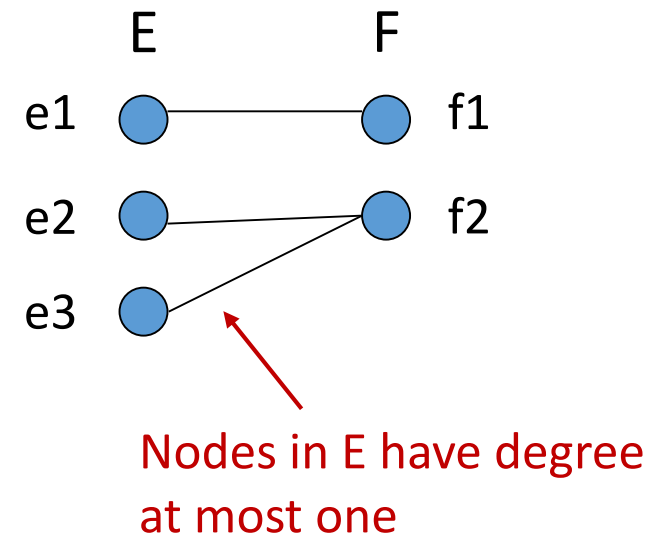


# Types of Relationships

- Suppose  $R$  is a relationship connecting entity sets  $E$  and  $F$
- If each member of  $E$  can be connected by  $R$  to **at most one** member of  $F$ , then we say that  $R$  is **many-one from  $E$  to  $F$**
- Equivalently,  $R$  is **one-many from  $F$  to  $E$**

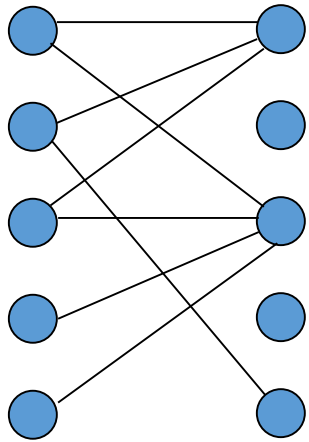
E	F
e1	f1
e2	f2
e3	f2
e3	f1
e1	f2

reject

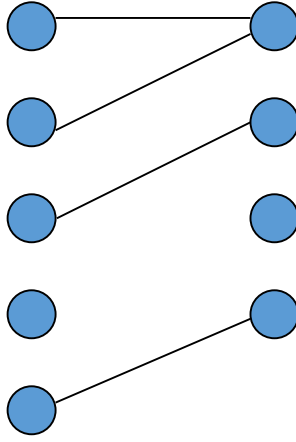


# Types of Relationships

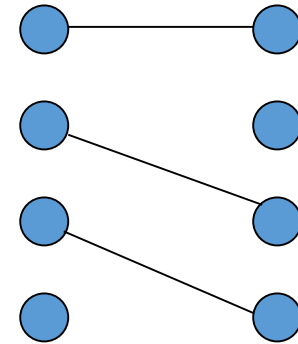
- If  $R$  is both many-one from  $E$  to  $F$  and many-one from  $F$  to  $E$ , then we say that  $R$  is **one-one**
- If  $R$  is neither many-one from  $E$  to  $F$  or from  $F$  to  $E$ , then we say that  $R$  is **many-many**



Many-Many



Many-One

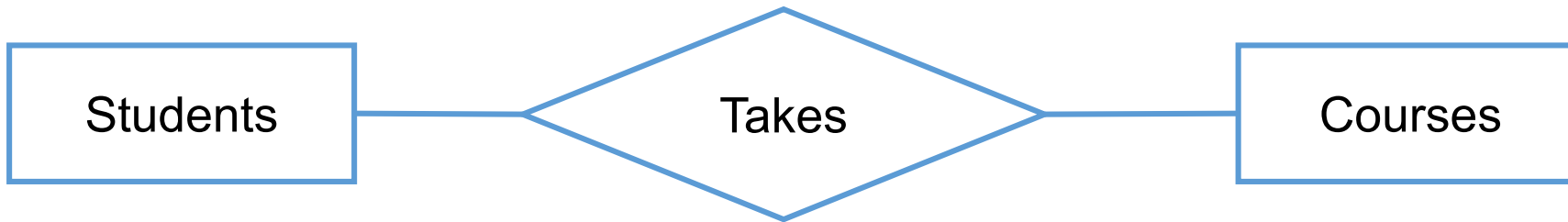


All Nodes have degree  
at most one

One-One

# Types of Relationships

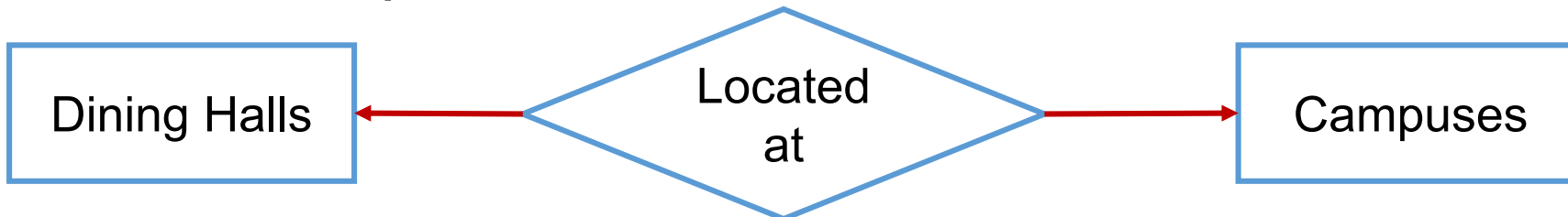
- Students Courses



- Papers Conferences

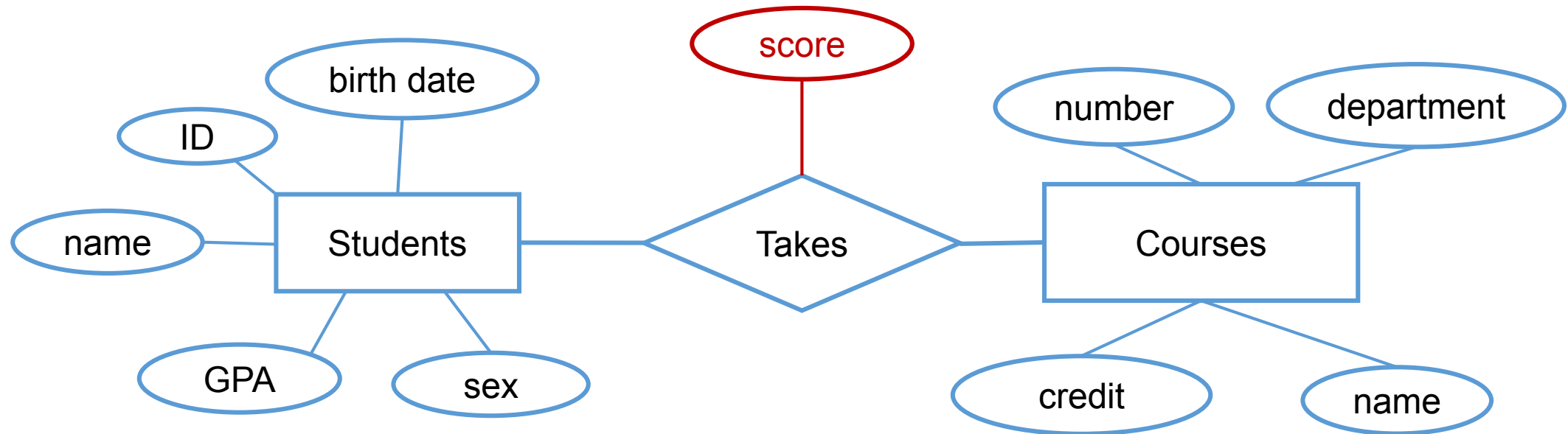


- Dining Halls Campuses



# Attributes on Relationships

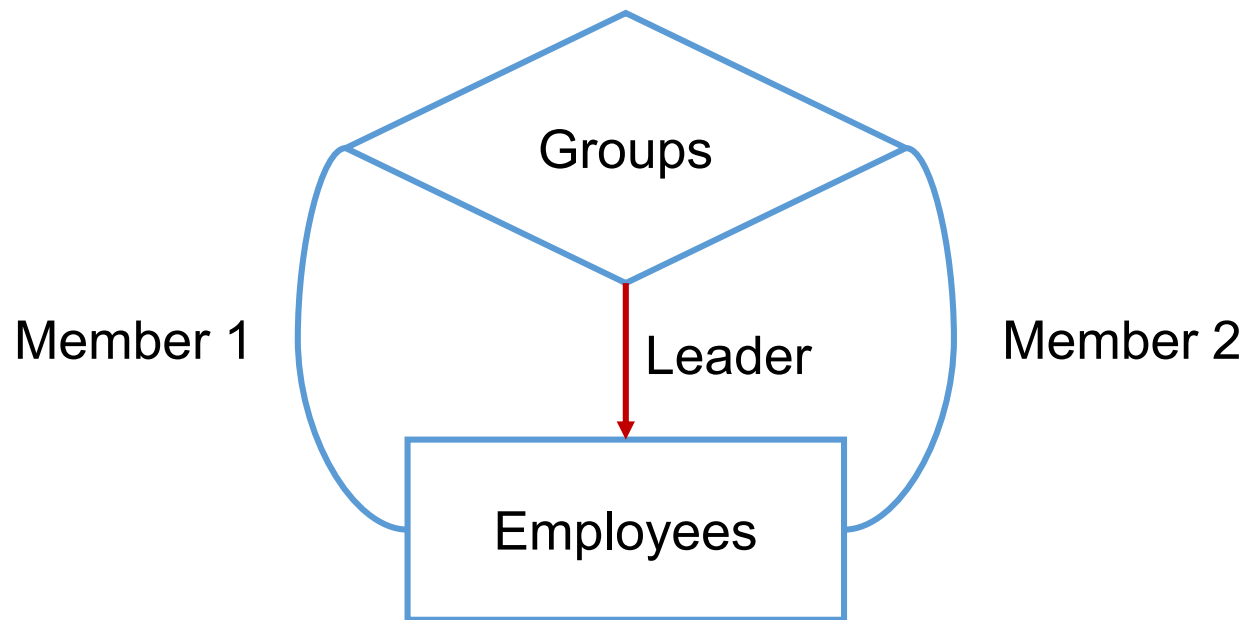
- These attributes cannot be determined by any single entity set





# Roles in Relationships

- One entity set can appear more than once in a single relationship
- Draw multiple lines, each representing a different role

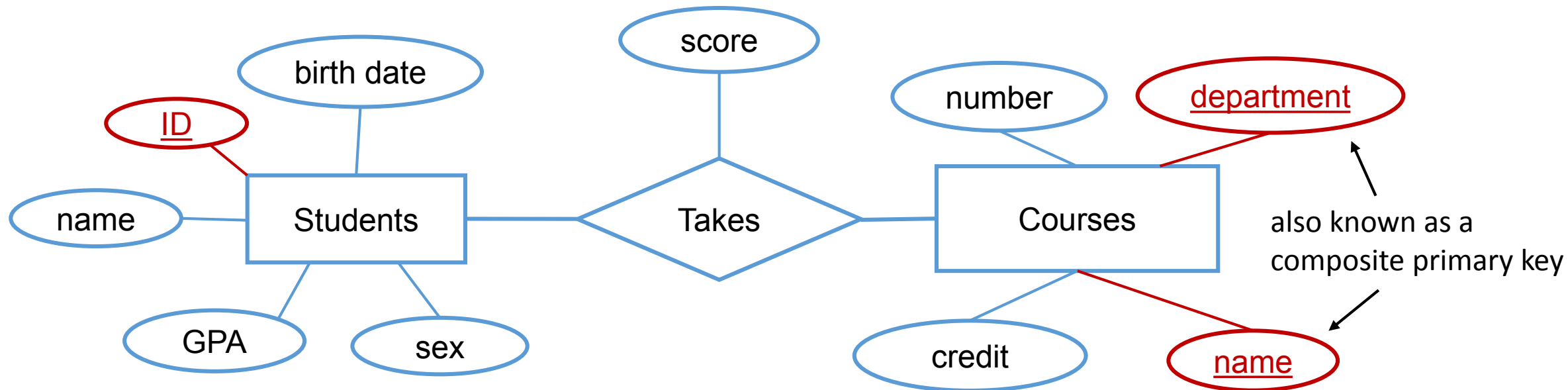


Member 1	Member 2	Leader
John	Alice	Tim
Joe	Park	Ann
Joe	Alice	Tim
John	Alice	Ann
...	...	...

reject

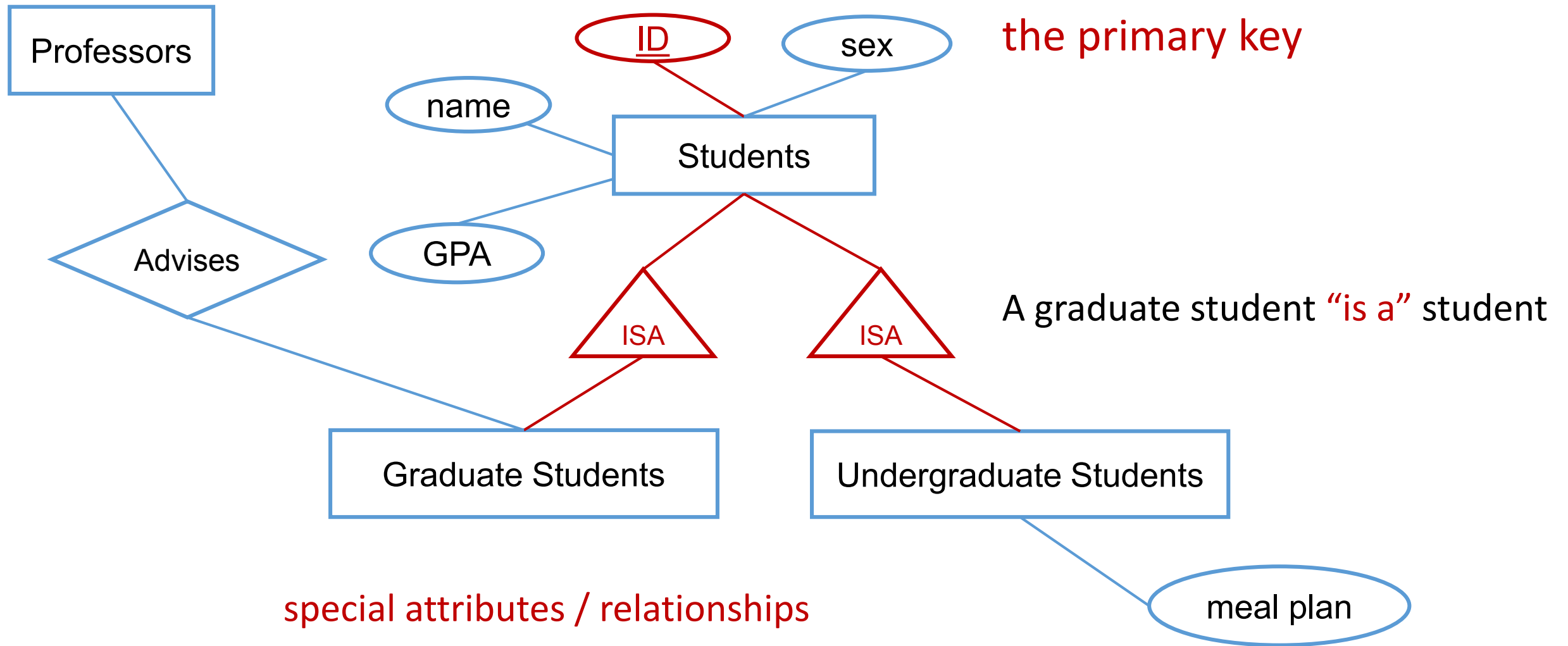
# Keys

- Each entity set must have a key
- A key is one or more attributes that uniquely identify the entities
- If there are more than one possible keys, pick one as the primary key



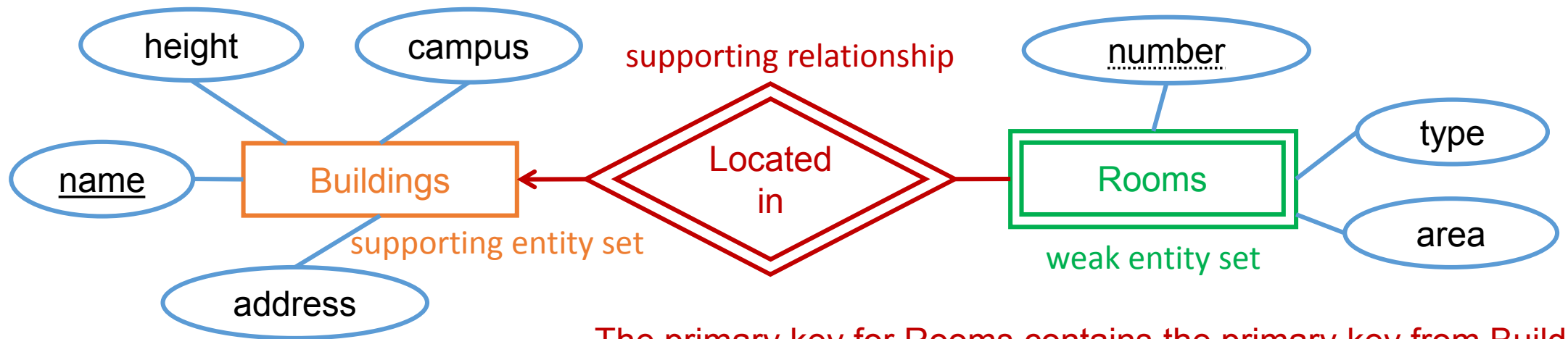
# Subclasses

The root entity set have all the attributes needed for the primary key



# Weak Entity Sets

- A weak entity set needs attributes from other entity sets to form the primary key



The primary key for Rooms contains the primary key from Buildings

<u>name</u>	<u>number</u>	type
Hill Center	202	TA office
Tillett Hall	202	classroom