CS 336 Recitation
Entity / Relationship Model

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Mon 10AM – 11AM, Hill 202

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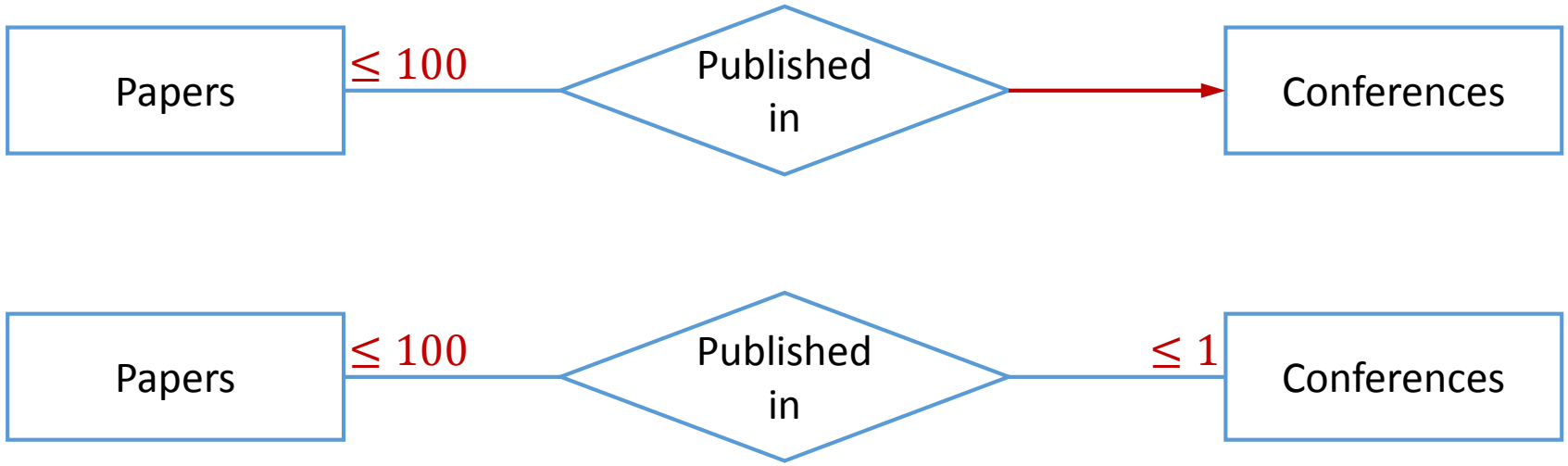
Degree Constraints

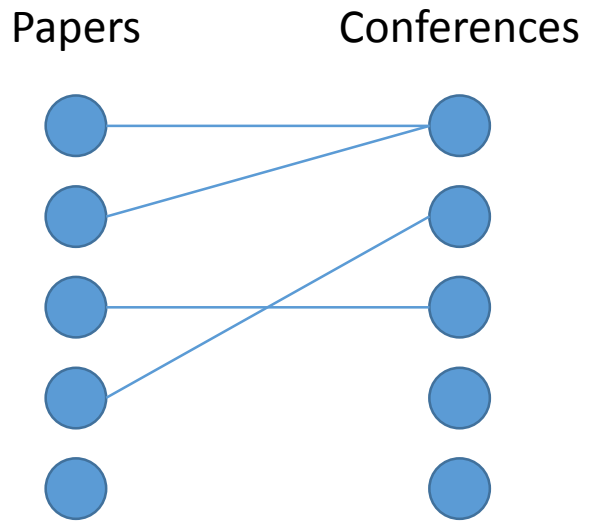
- This many-one relationship specifies that a paper can be published in at most one conference
- However, it does not specify how many papers a conference can accept
- If each conference accepts at most 100 papers, we may want to represent such constraint in the diagram

Degree Constraints



Degree Constraints

Papers	Conferences
paper1	conf1
paper2	conf1
paper3	conf3
paper4	conf2
paper5	conf1
paper6	conf2



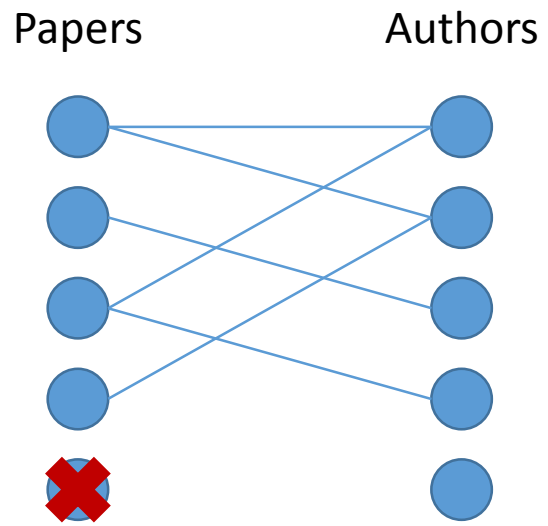
Each paper appears at most once
Each conference appears at most 100 times

Each node has at most one connection

Each node has at most 100 connections

Total Participation

Papers	Authors
paper1	author1
paper1	author2
paper2	author3
paper3	author1
paper3	author4
paper4	author2

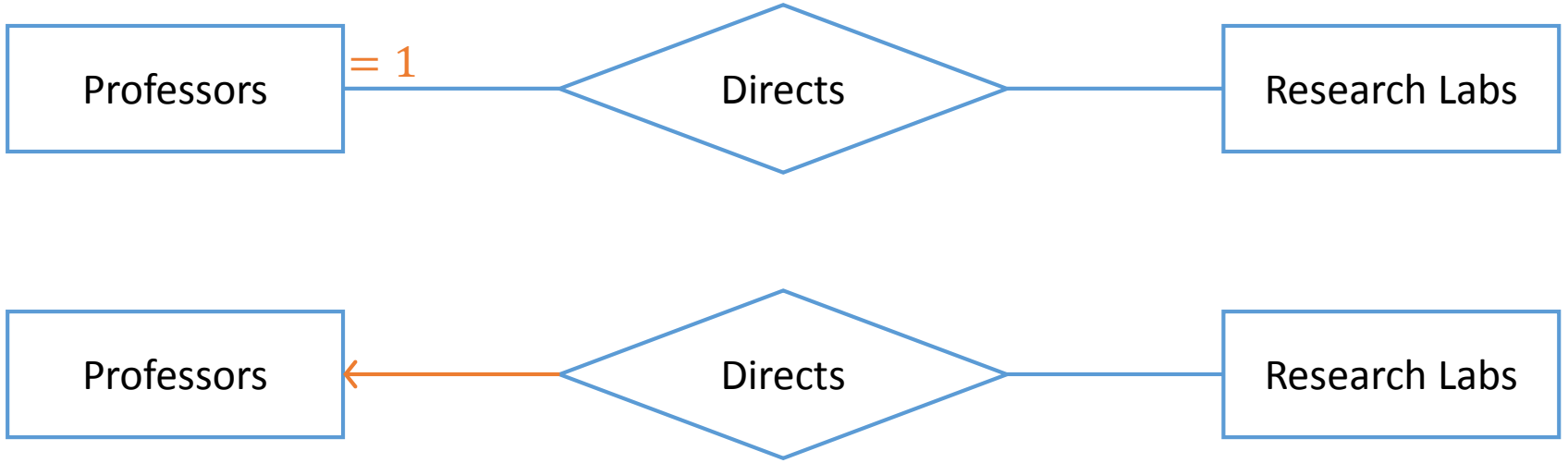


Each paper must appear at least once

The participation of *Papers* in *Written by* is total

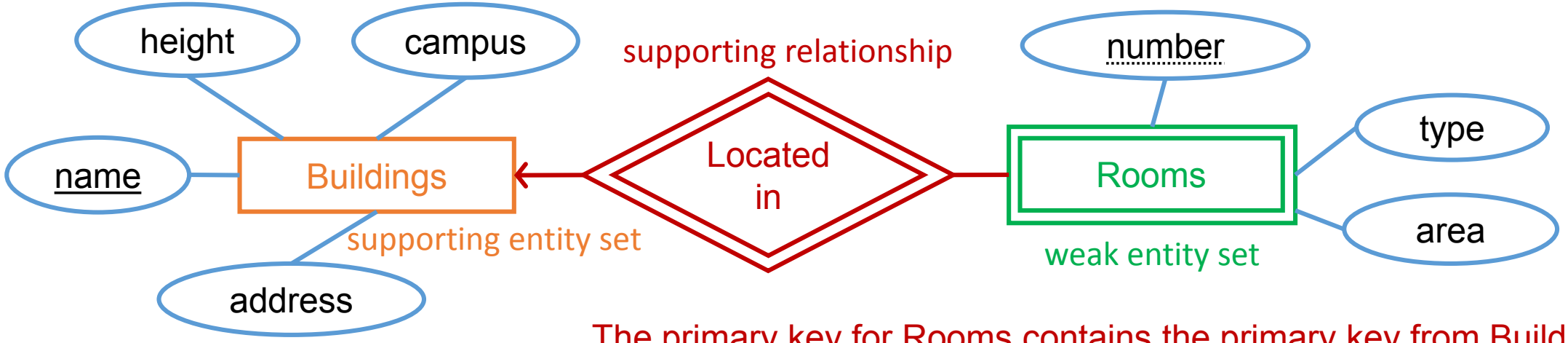
Total Participation

- If E has total participation in R, and R is many-one from E to F, then each member of E connects to exactly one member of F



Weak Entity Sets

- Supporting relationship must be “many to exactly one”

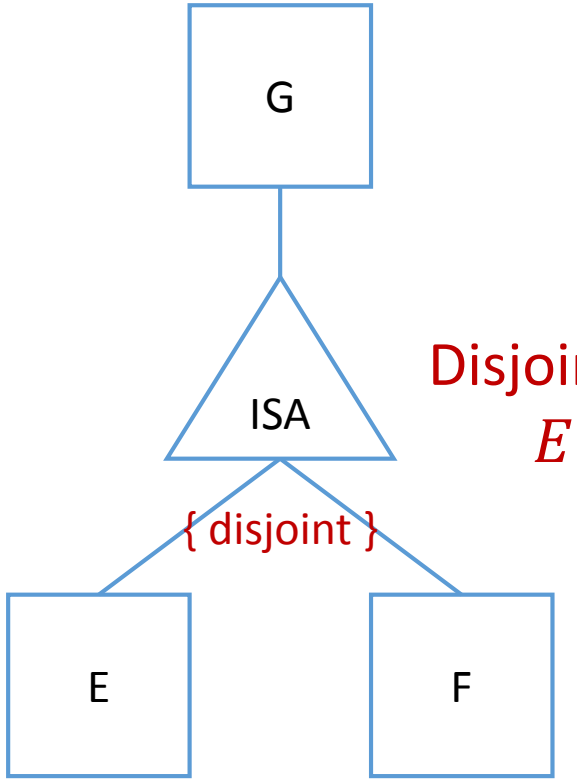


The primary key for Rooms contains the primary key from Buildings

name	number	type
Hill Center	202	TA office
Tillett Hall	202	classroom

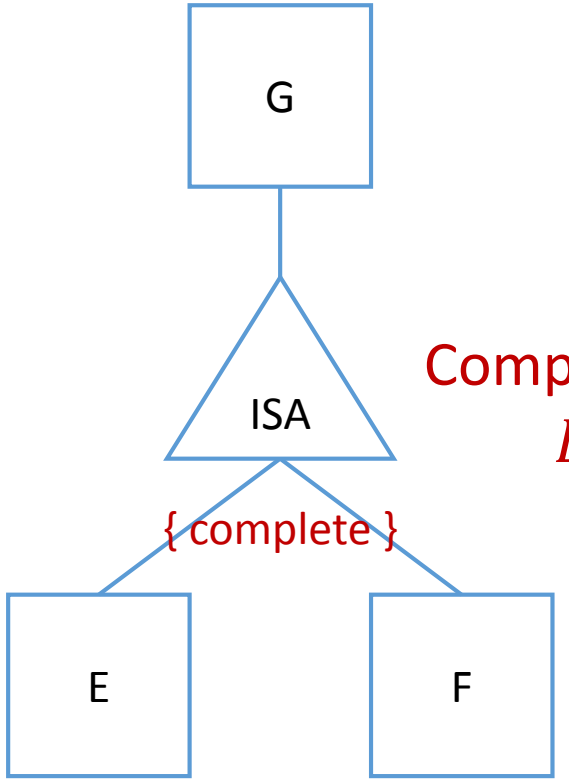
Subclasses

- Think of subclasses as subsets: $E \subseteq G$, $F \subseteq G$



Disjoint constraint:

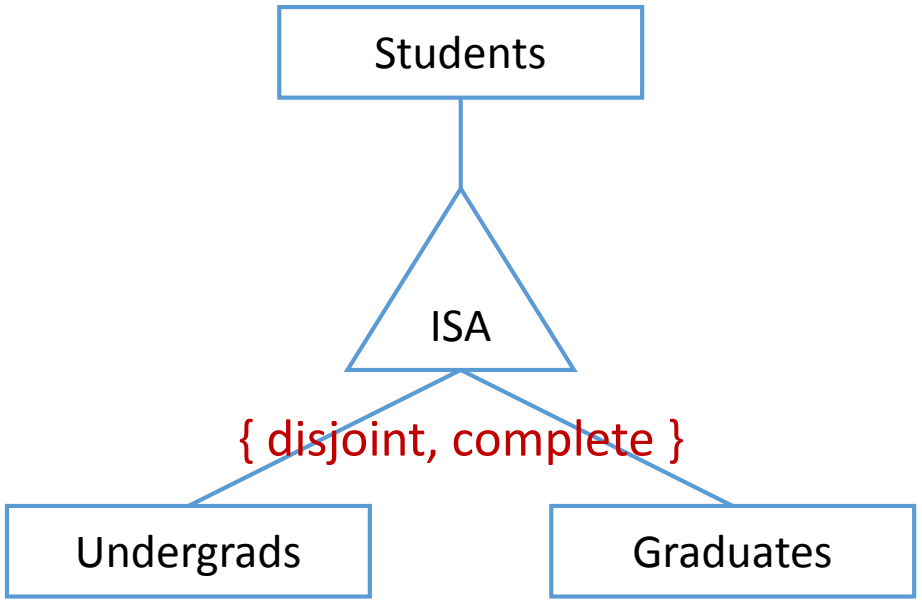
$E \cap F = \emptyset$



Complete constraint:

$E \cup F = G$

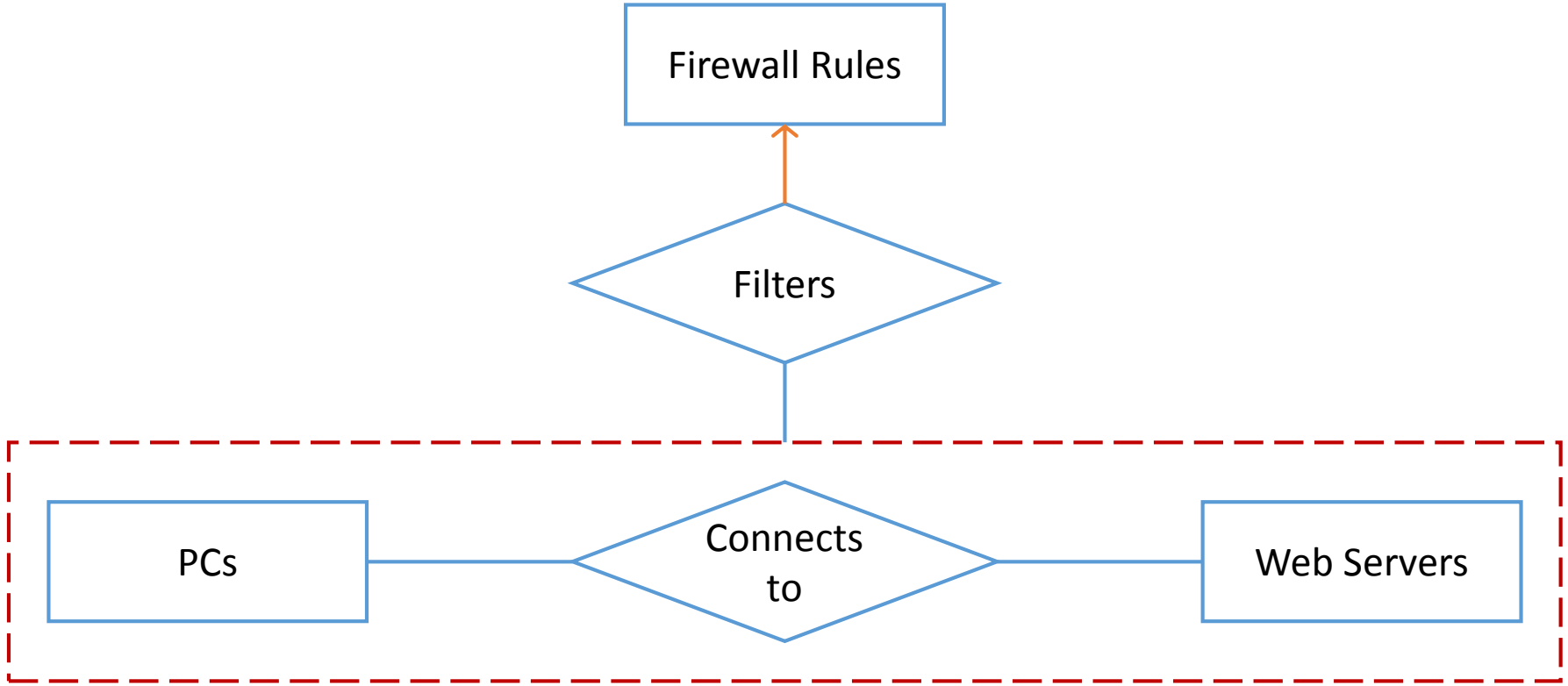
Subclasses



$$Undergrads \cap Graduates = \emptyset$$
$$Undergrads \cup Graduates = Students$$

Aggregation

- Treat a relationship and its participating entity sets as a single virtual entity set



Simple University Database

- Students (sid, sname)
- PhD_Students (sid, sname)
- Professors (pname)
- Departments (dname)
- Courses (cno, cname)
- Sections (sectno)

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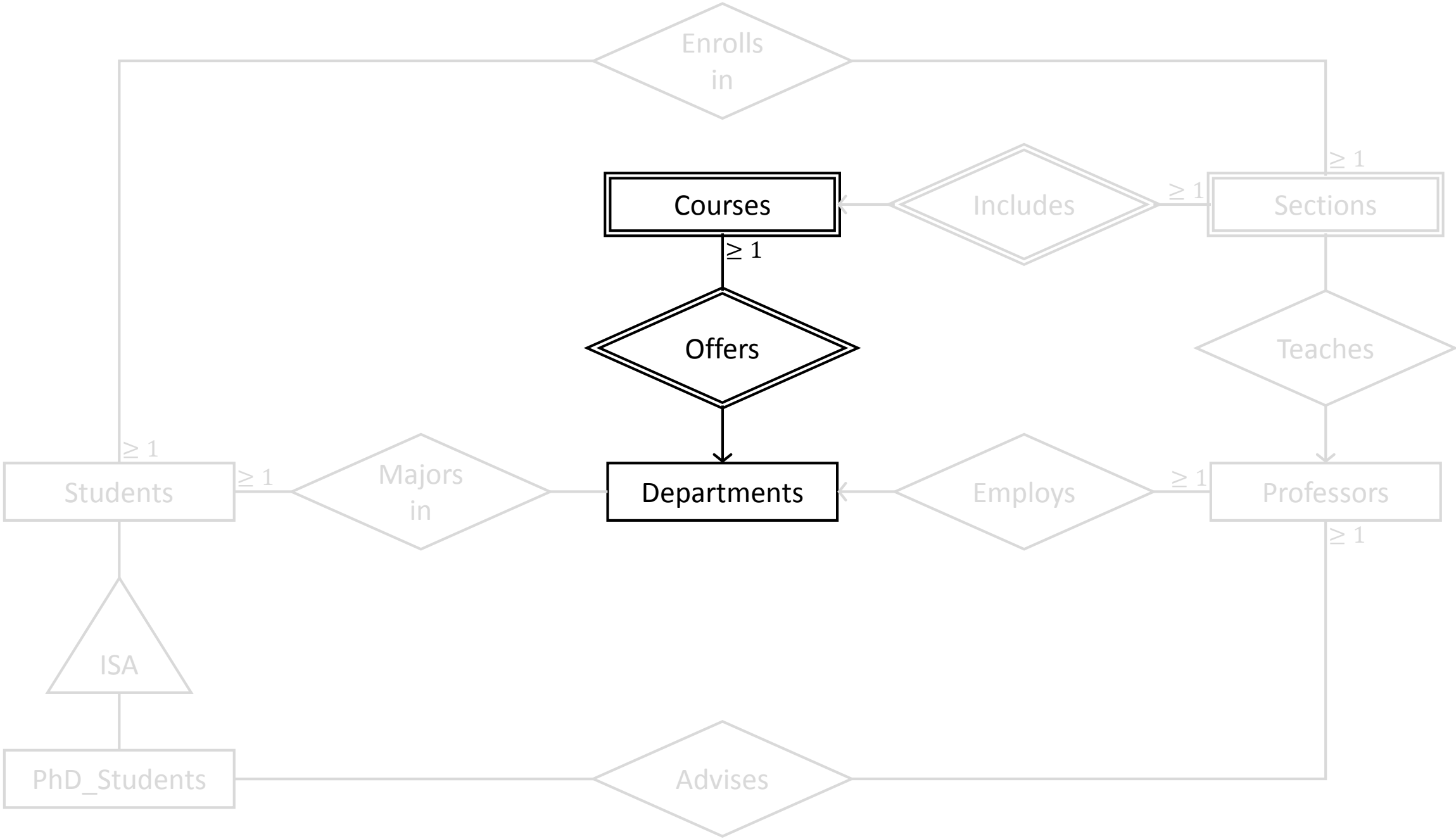
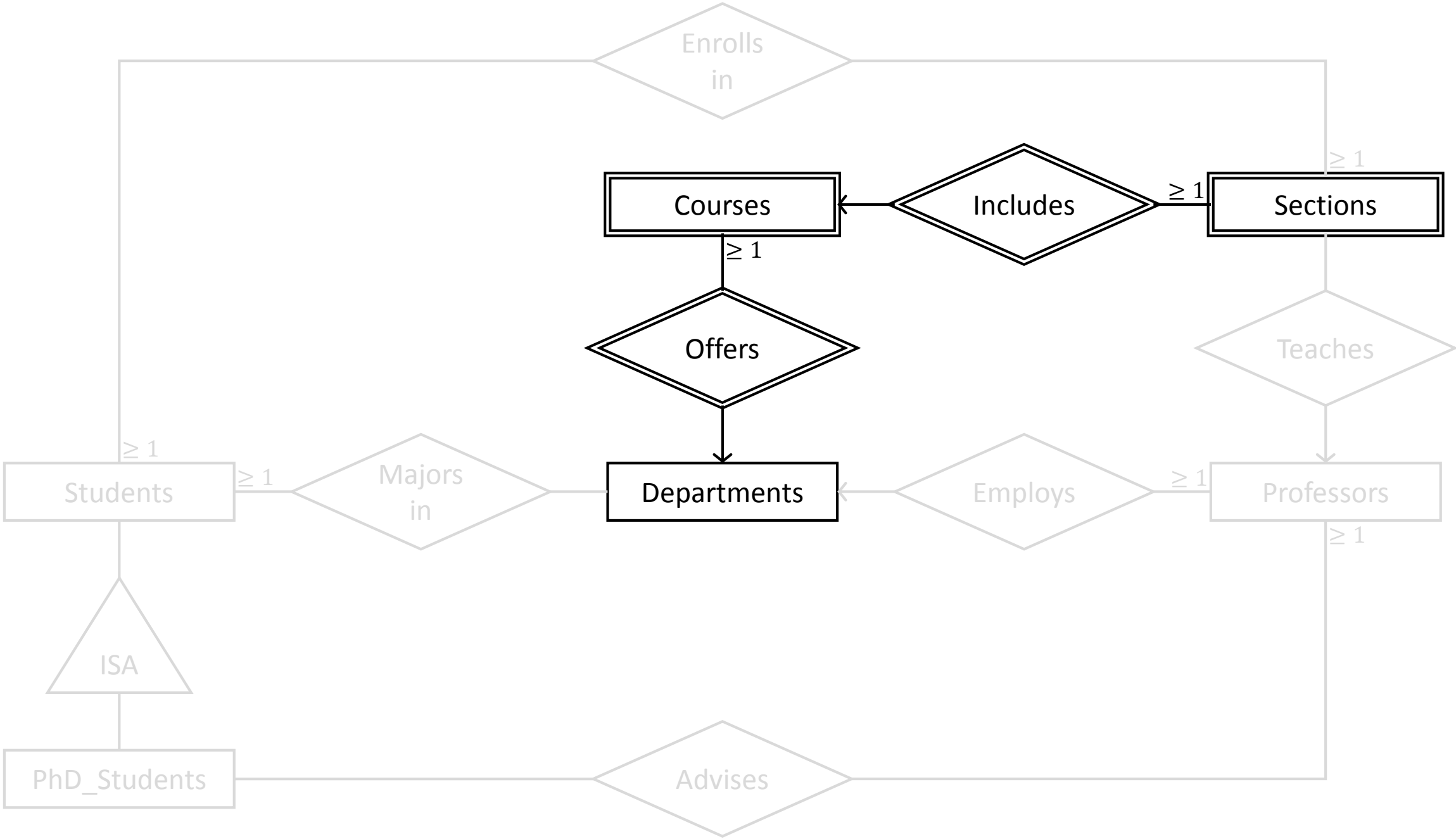
Subclass

Weak entities


Enrolls in
Courses
Includes
≥ 1
≥ 1
Sections
≥ 1
Offers
Teaches
Students
≥ 1
≥ 1
Majors in
Departments
Employs
≥ 1
Professors
≥ 1
ISA
PhD_Students
Advises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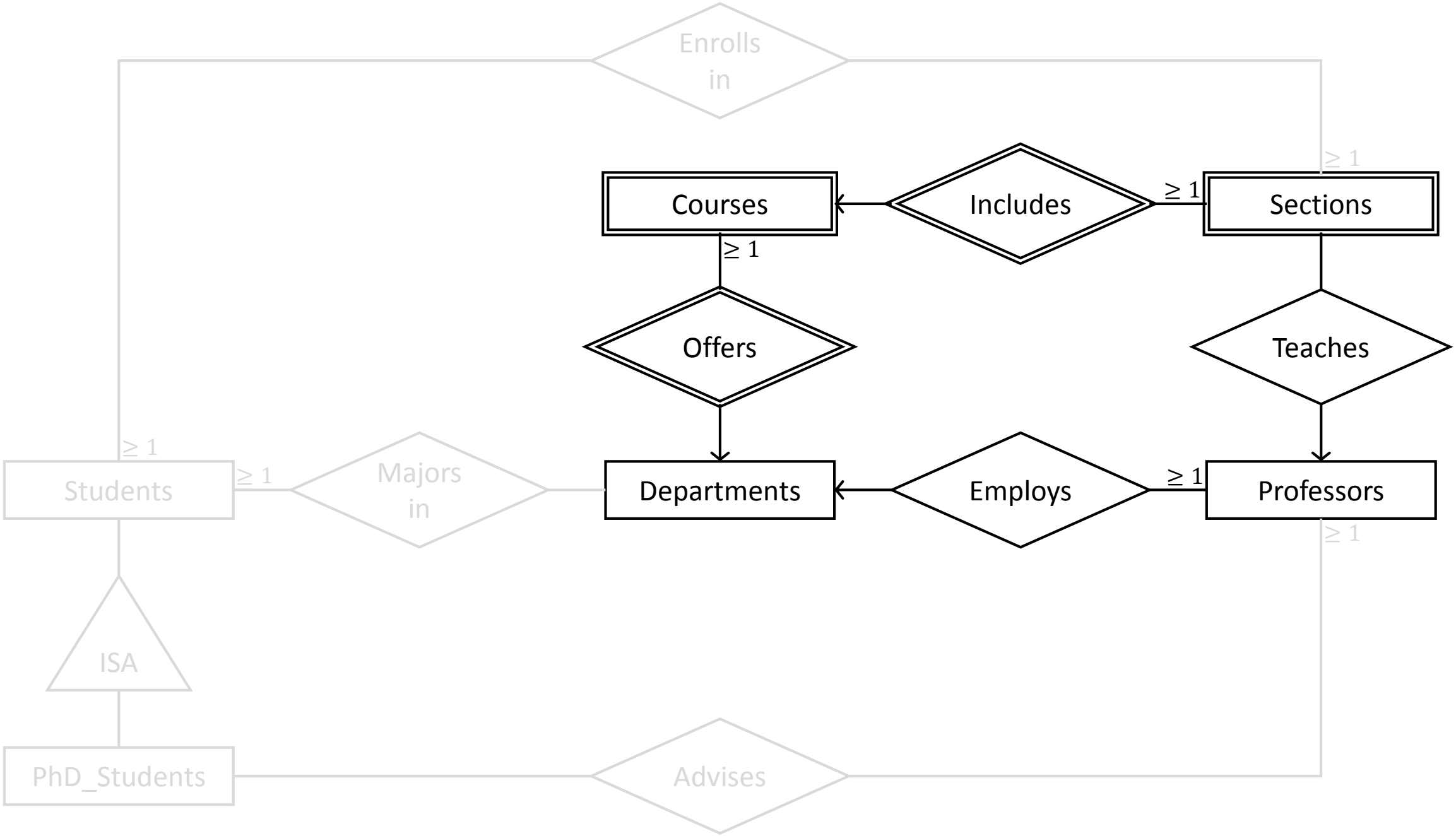
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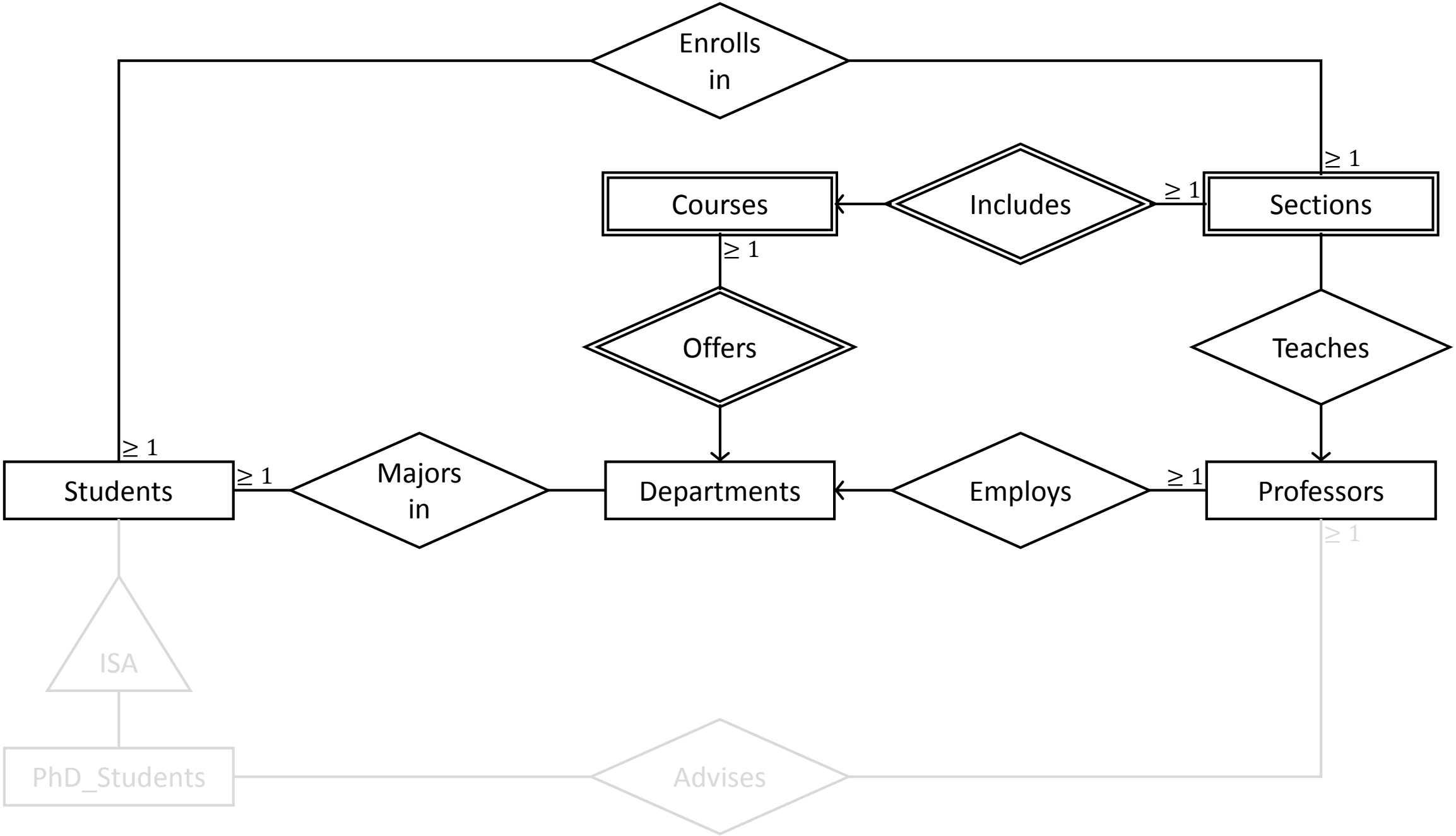
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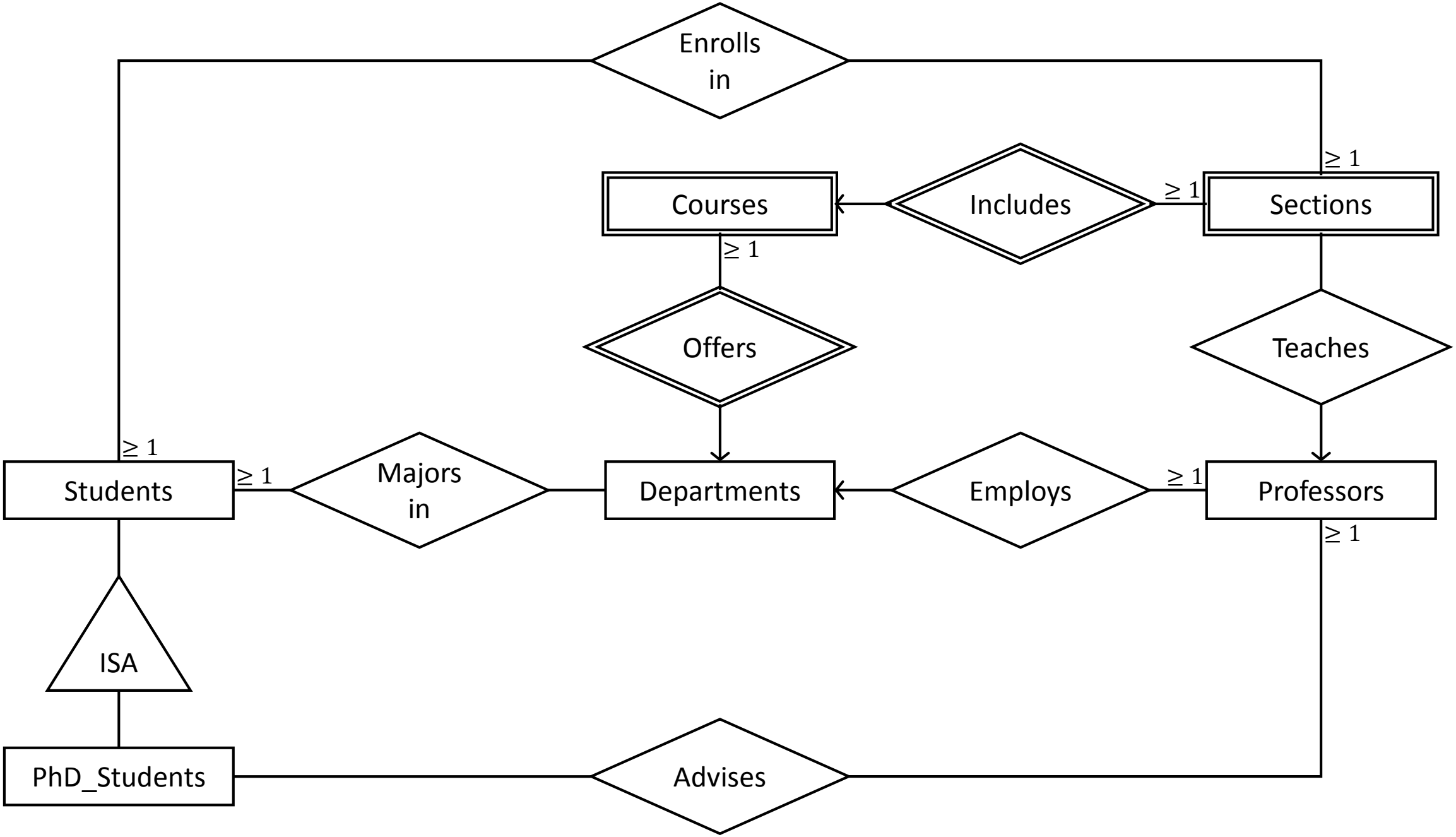
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