

Lab 09

Data Model

Web Dev

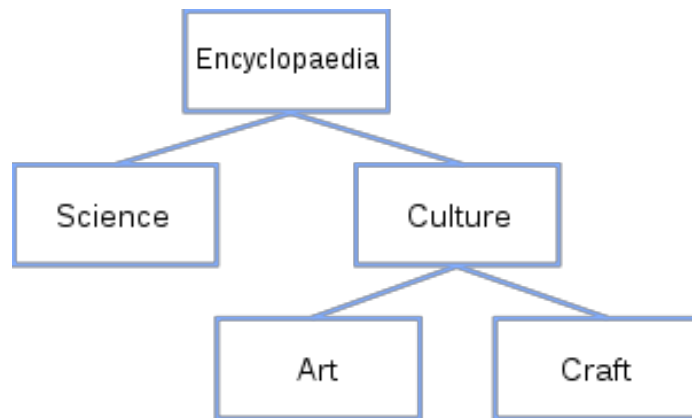
DataLab, CS,

NTHU

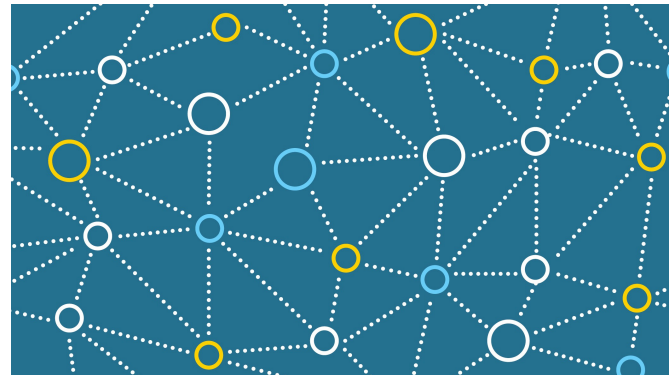
2019 Spring

Data model

- Definition : A data model is a framework for describing the structure of databases.



Hierarchical data model



Network data model

	Team Member 1		Team Member 2	
	Student ID	Name	Student ID	Name
1	104062312	白語彤	104062213	簡如謙
2	104062124	張嘉軒	104062102	林軒毅
3	103060003	吳宗憲	104061133	蕭丞佑
4	104000098	蔡樂津	104060004	游雅筑
5	104062108	王大維	104062105	黃聖富
6	103062239	彭冠復	104062209	林瀚埕
7	104062324	陳濔威	104062133	張育榮
8	104021219	鄭余玄	104021103	蔡孟宇

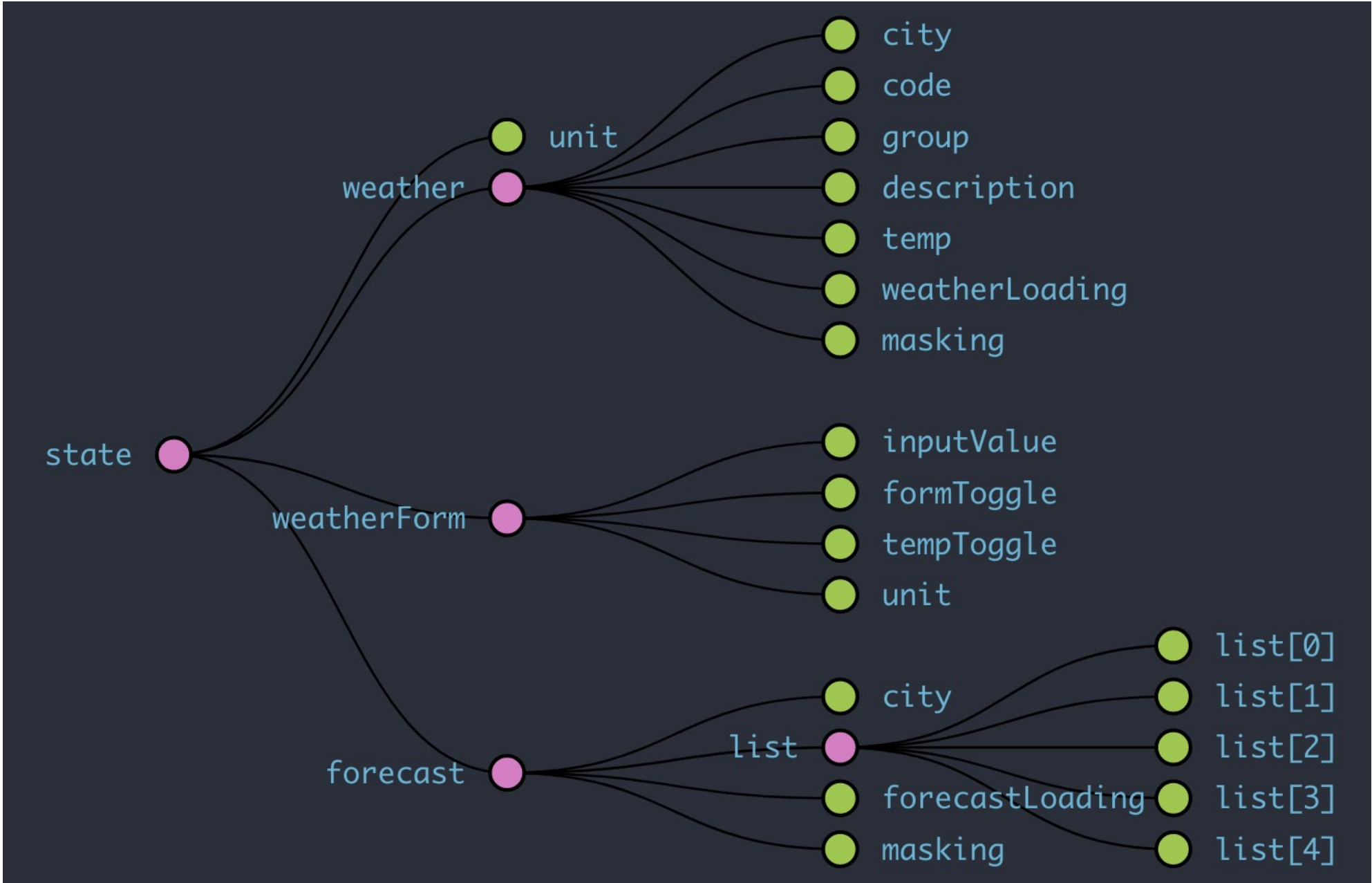
Relational data model

Outline

- Hierarchical data model
- Relational data model
- ER model

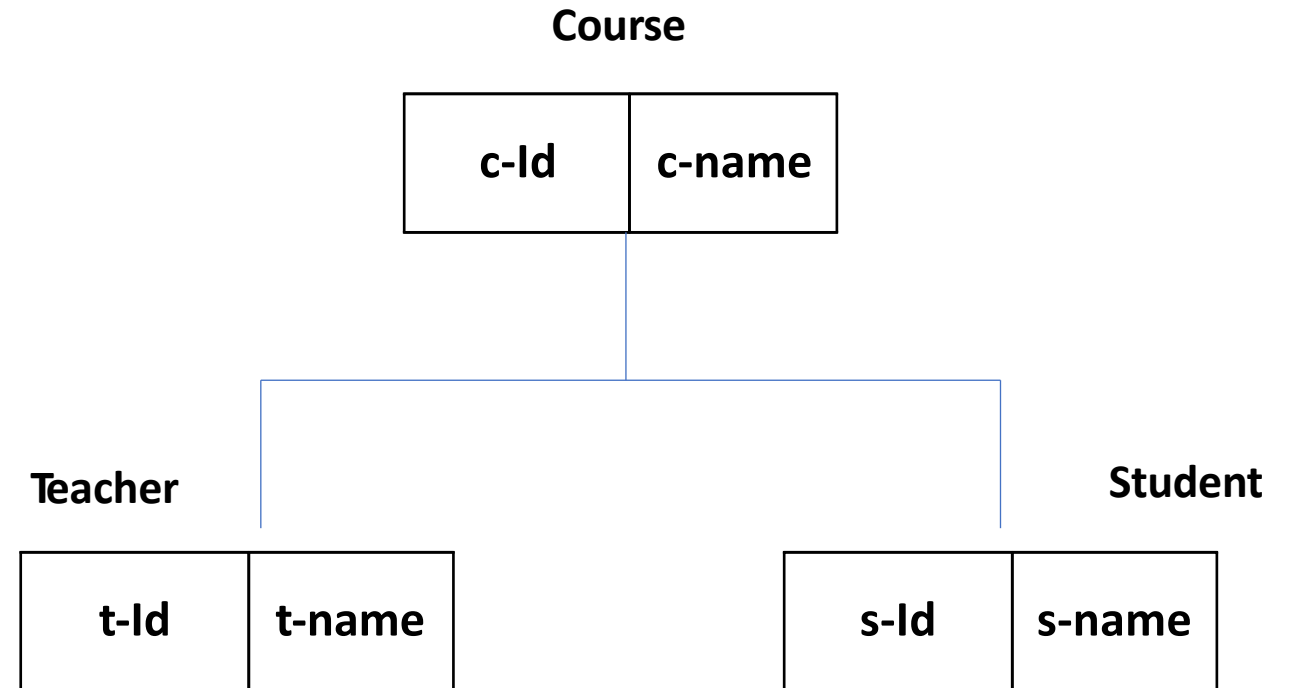
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- Hierarchical data model
- Relational data model
- ER model

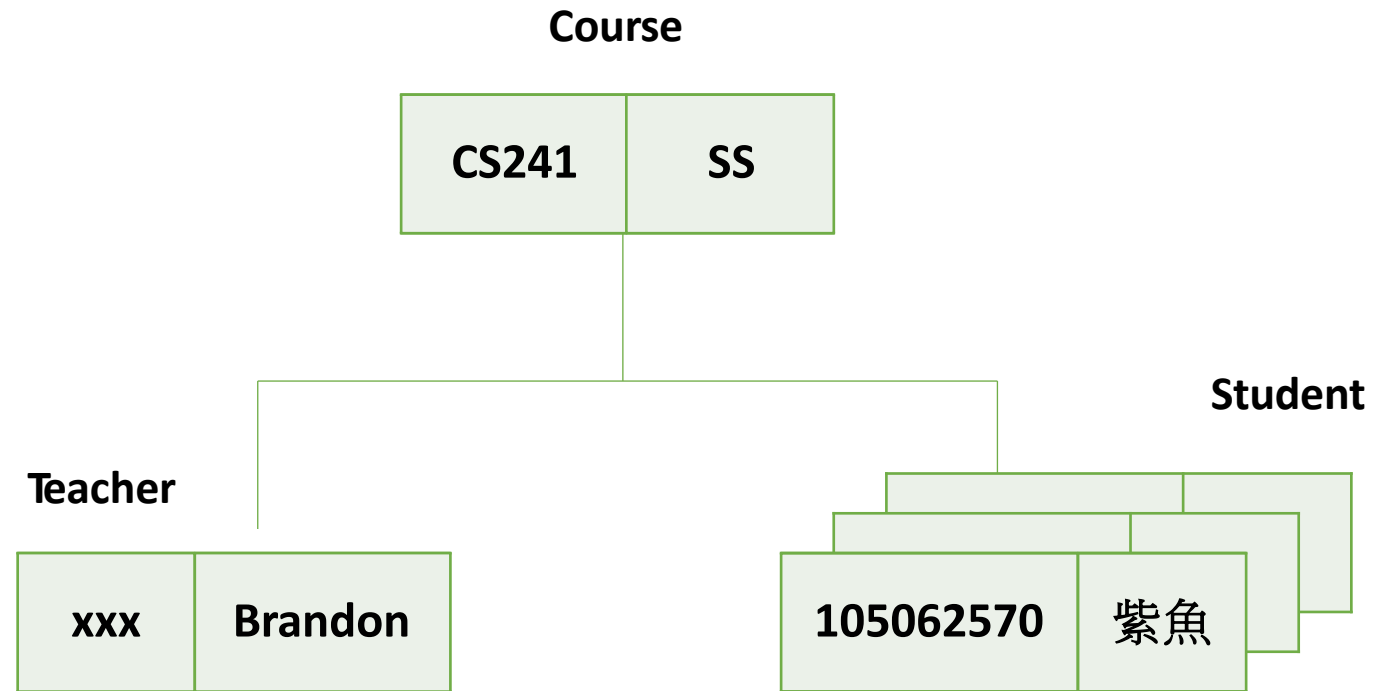


Hierarchical data model

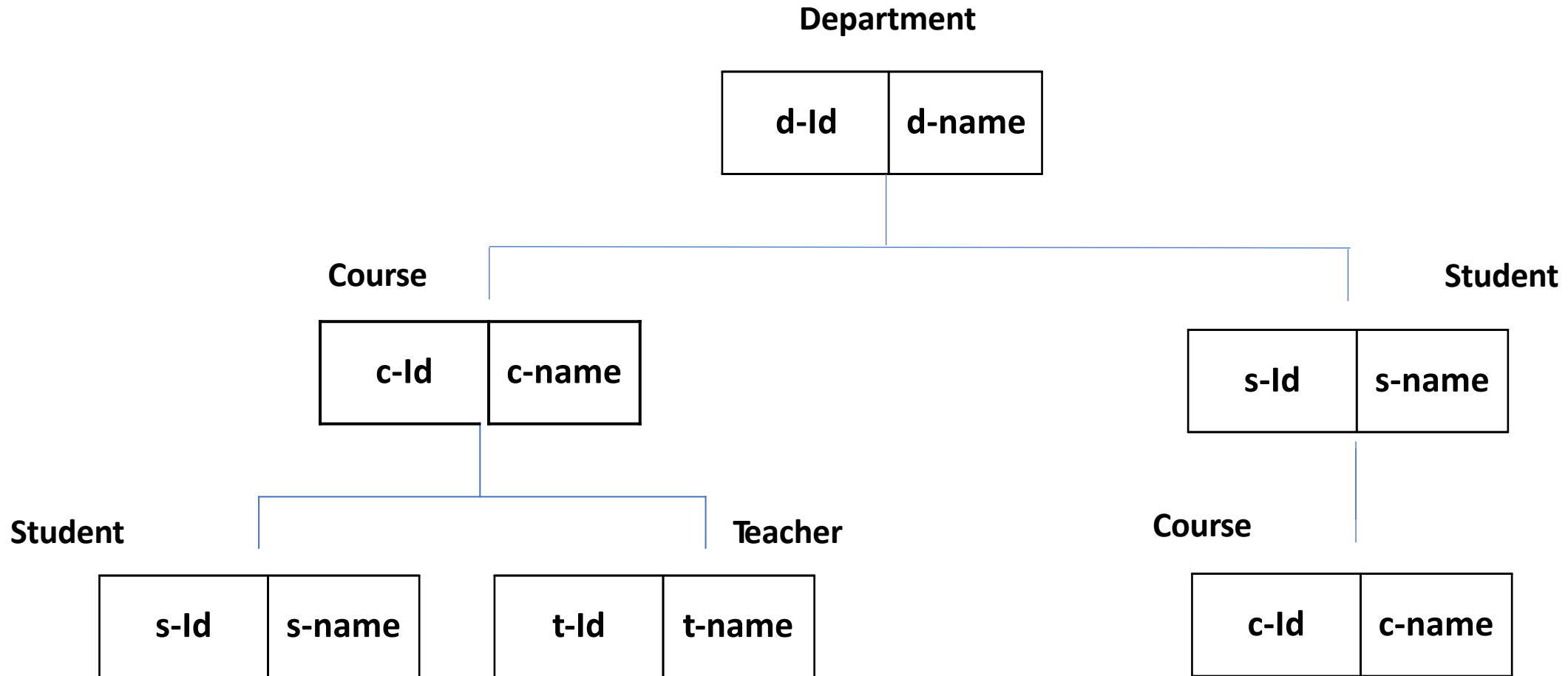
- Tree structure
- Suit for 1-many relation



Example



More complex?





Department

62	CS
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Course

CS241	SS
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Student

10506257 0	紫魚
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Student

10506257 0	紫魚
---------------	----

Teacher

xxx	Brandon
-----	---------

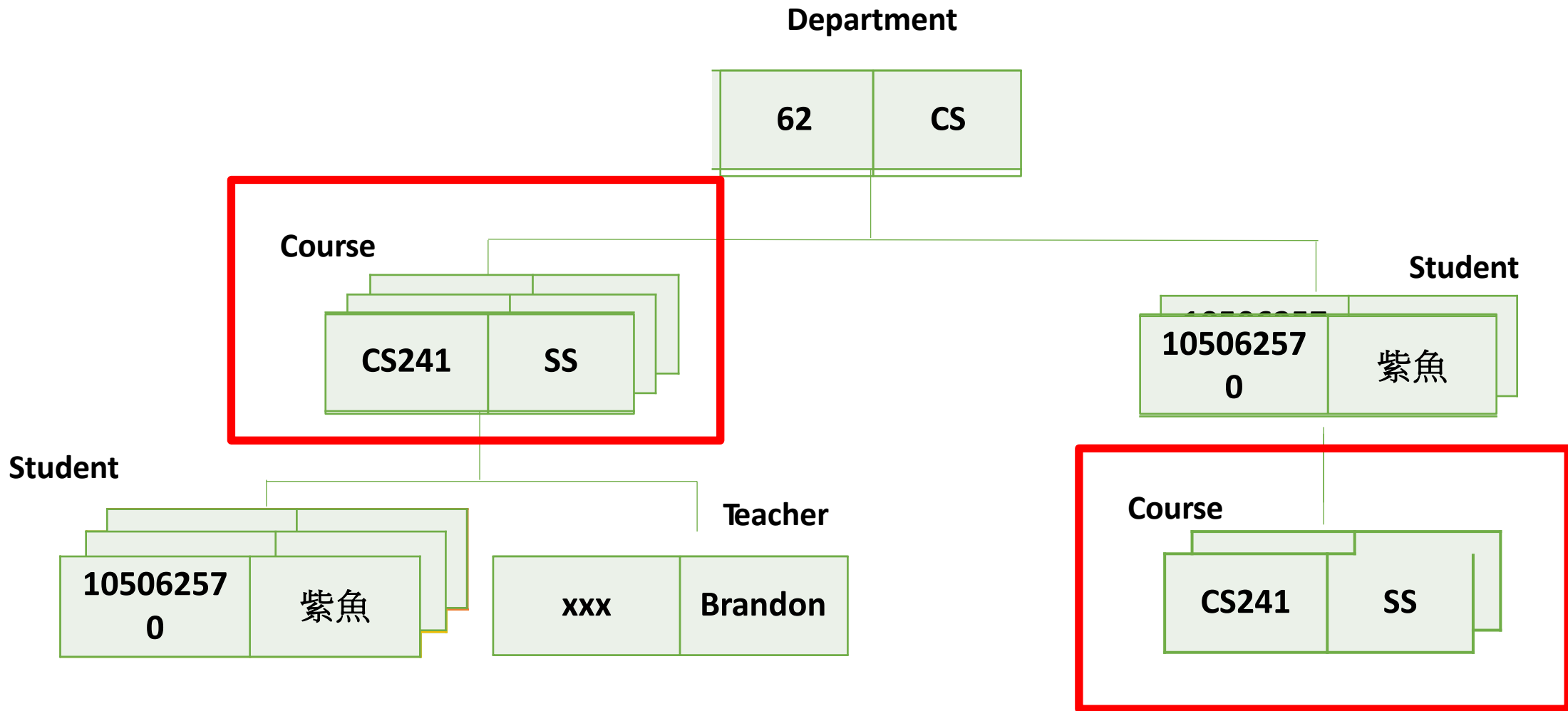
Course

CS241	SS
-------	----

Some constraint

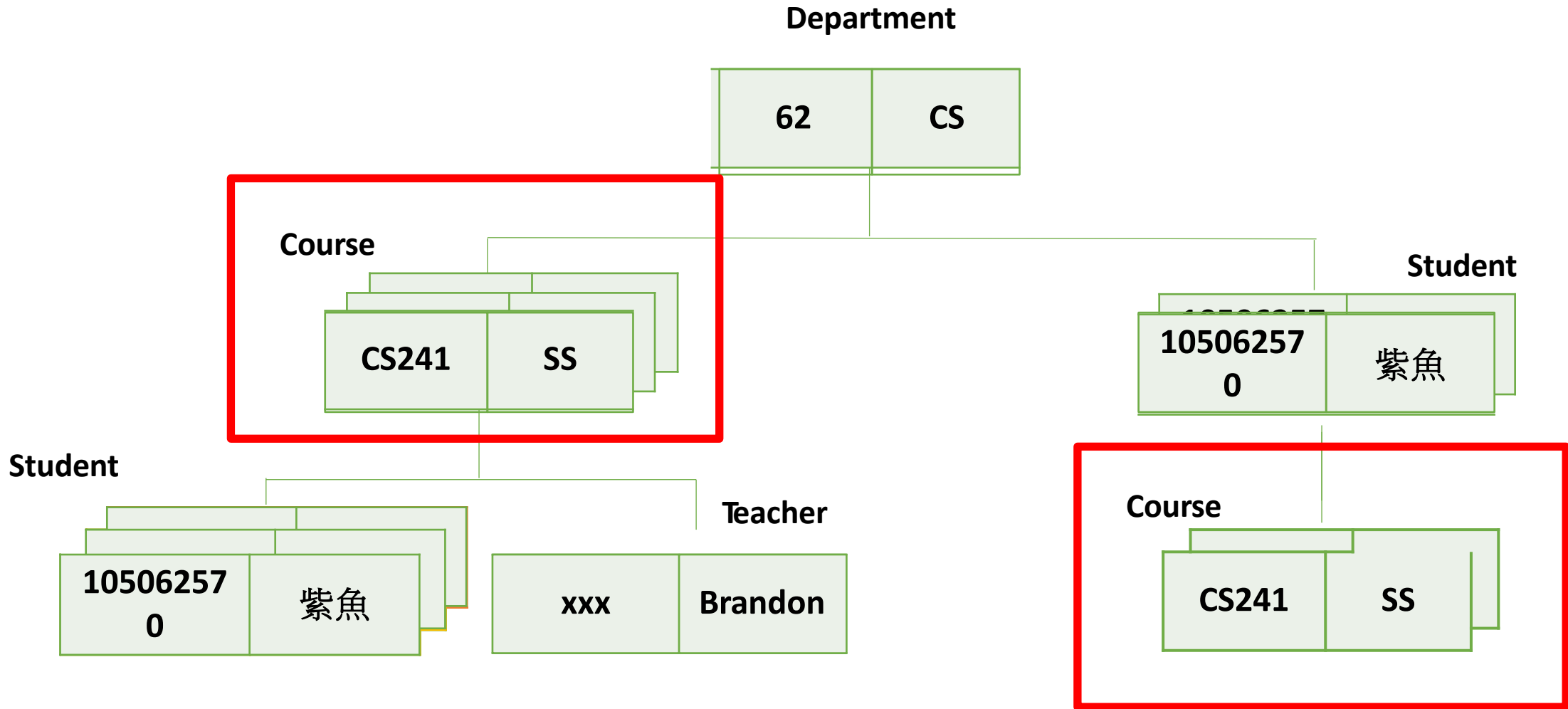
- Not suitable for many-many relation
 - **Cause data redundant**

Redundant data



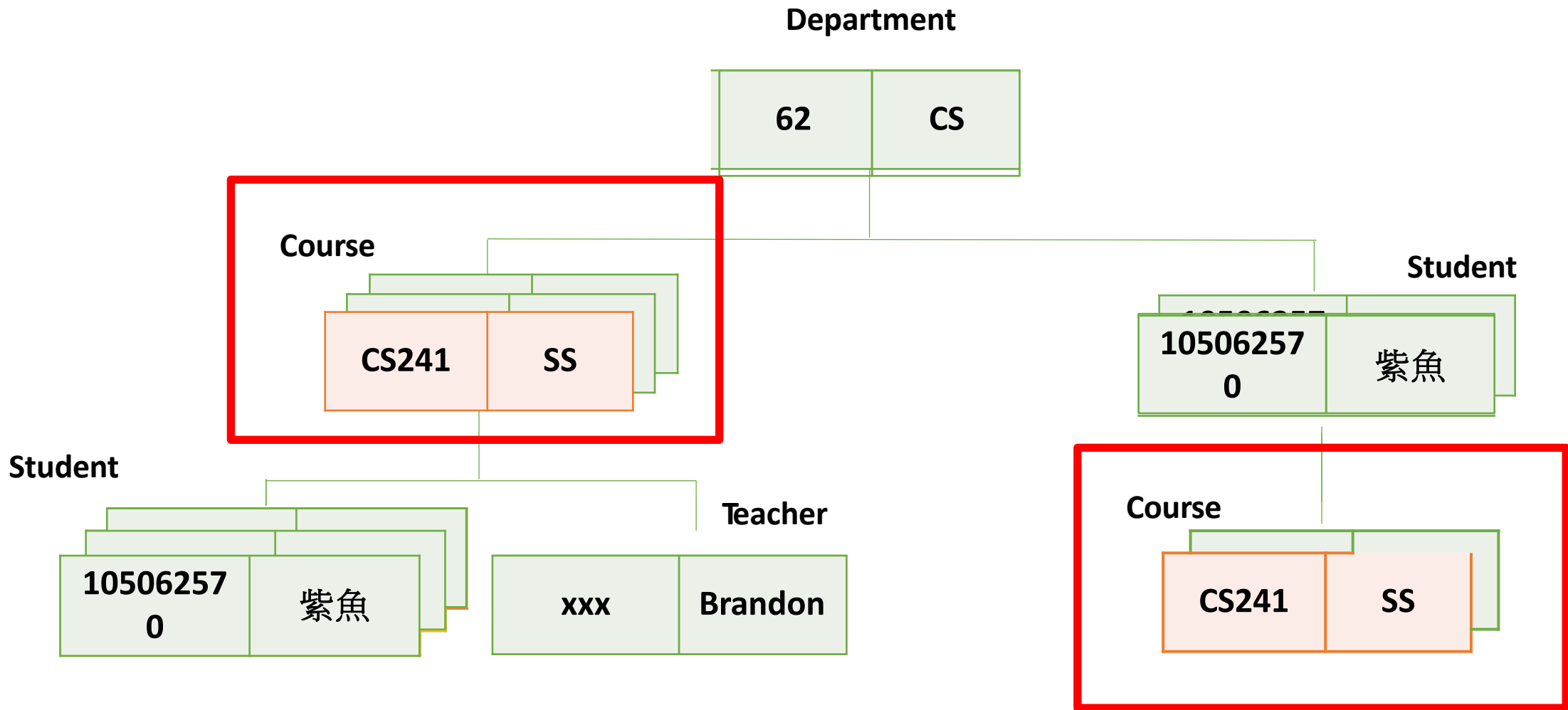
Redundant data

If we want modify Course Info



Redundant data

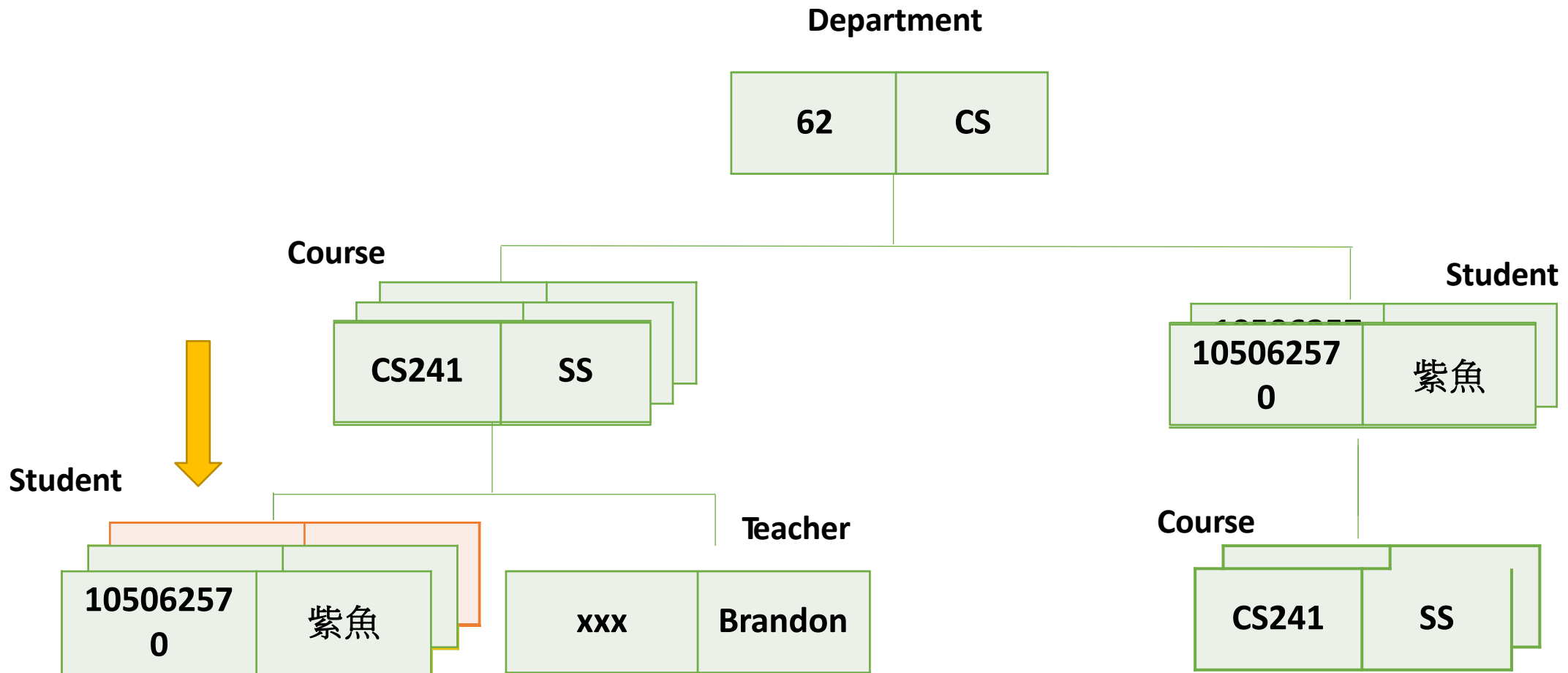
If we want modify Course Info



Some constraint

- Not suitable for many-many relation
 - **Cause data redundant**
- SELECT cost
 - Must through parent to child

If we want SELECT



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GET!

Student

10506257 0	紫魚
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Teacher

xxx	Brandon
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Course

CS241	SS
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Outline

- Hierarchical data model
- **Relational data model**
- ER model
- Today's mission

Relational data model

- Table structure

c-id	c-name	d-name	s-Id	s-name
CS 241	SS	CS	105062570	紫魚
CS 241	SS	CS	105062558	朕鮪
CS 321	Computer Networks	CS	105062570	紫魚
CS 321	Computer Networks	CS	105062521	計網概助教

Relational data model

- Table structure

Field



Record

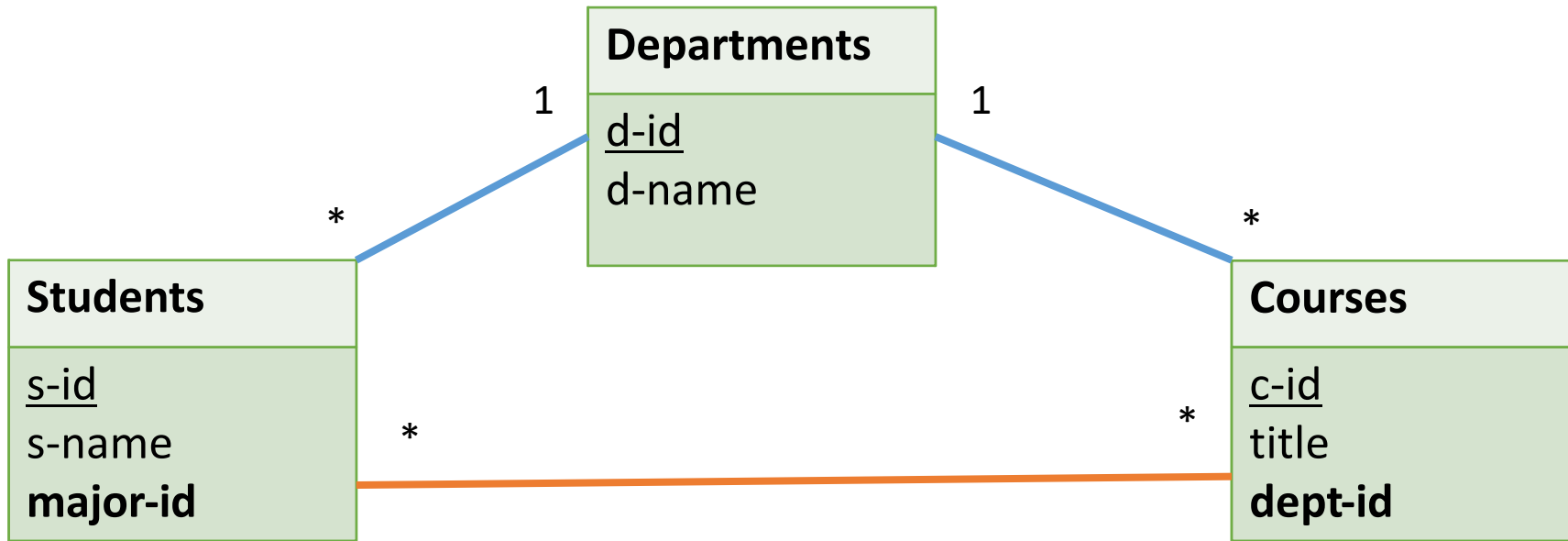
c-id	c-name	d-name	s-Id	s-name
CS 241	SS	CS	105062570	紫魚
CS 241	SS	CS	105062558	朕鮪
CS 321	Computer Networks	CS	105062570	紫魚
CS 321	Computer Networks	CS	105062521	計網概助教

Outline

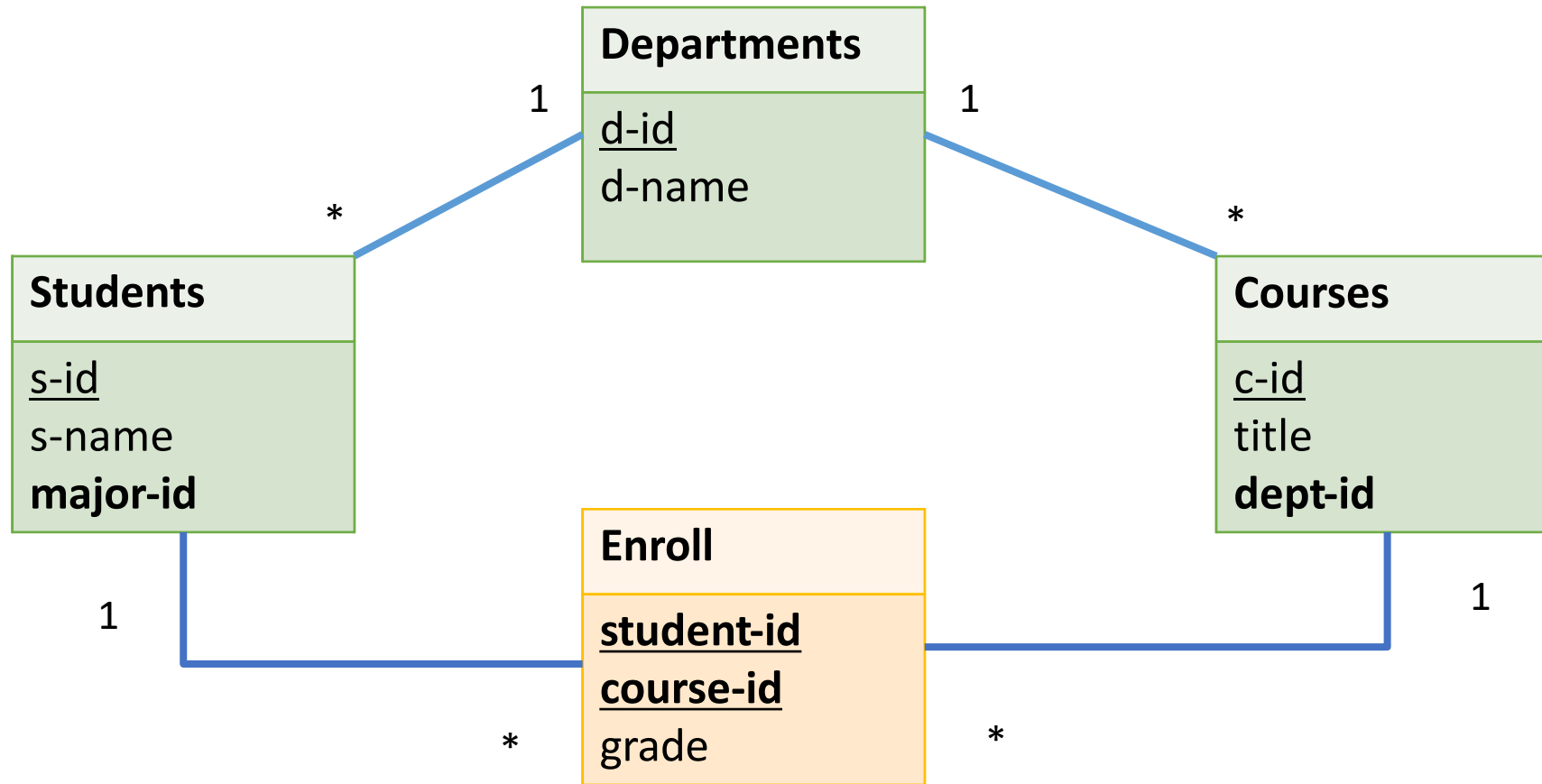
- Hierarchical data model
- Relational data model
- **ER model**
- Today's mission

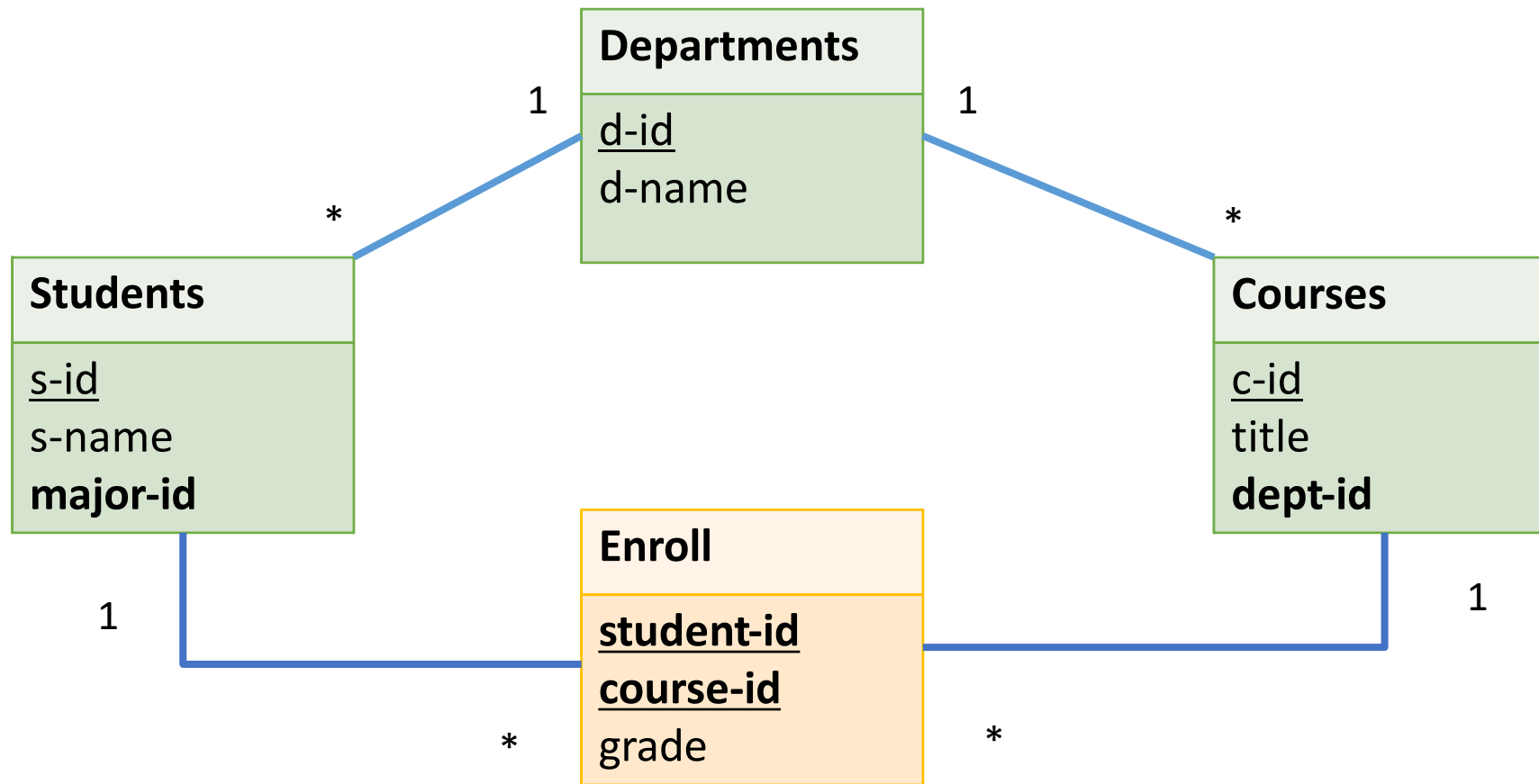
ER model

- Allows thinking how to structure your data in a proper way.
- **Entity**
 - A record
 - With fields
- **Entity group**
 - A table
 - Define unique ID field for each entity
- **Relationship** between entities
 - 1-1, 1-many, many-many

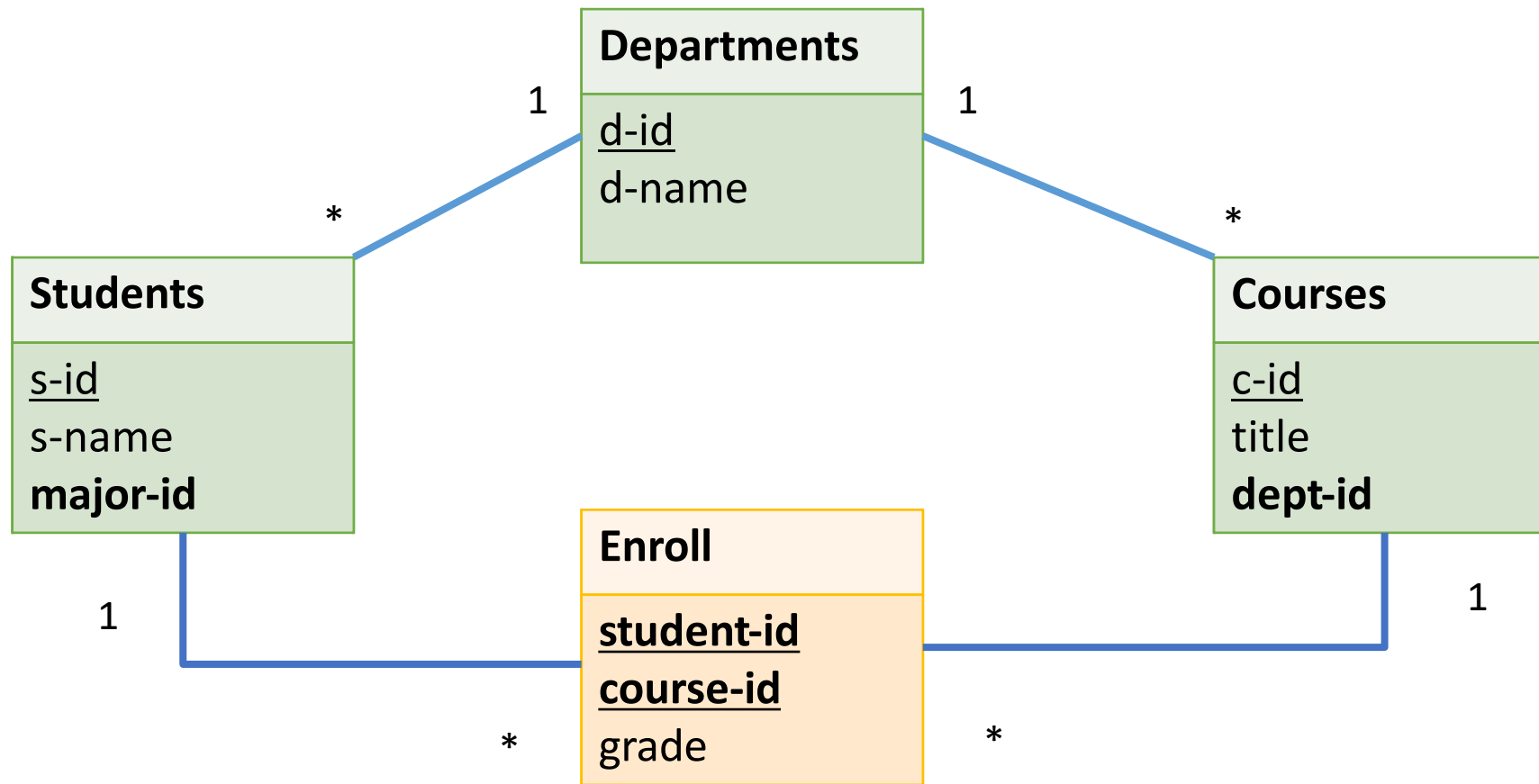


How?

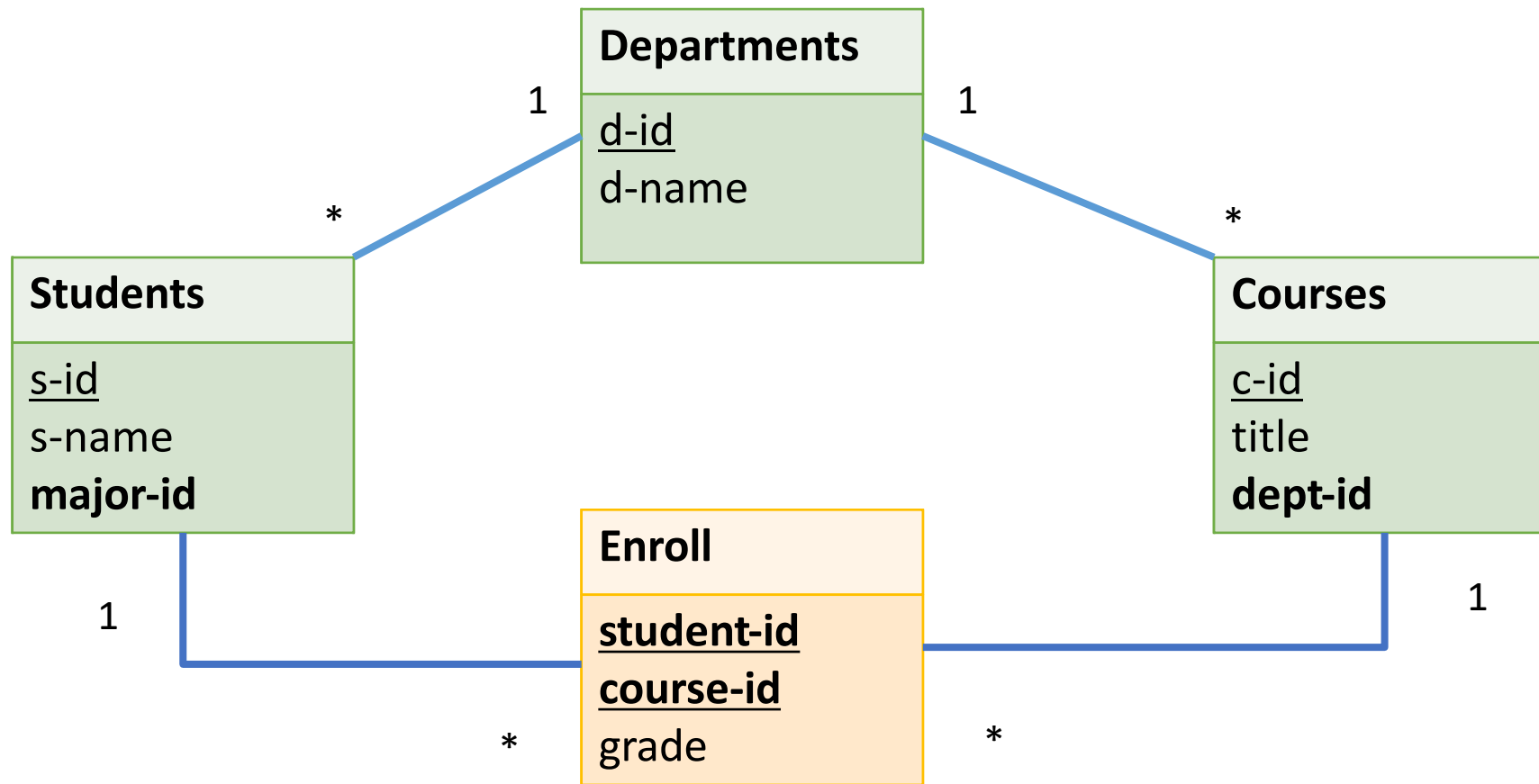




- Table
 - Realization of entity group / relational ship



- Primary key
 - Unique ID field for each table



- Foreign key
 - Implement the relationship
 - Point to the primary key of other record
 - Only 1-1 1-many