

Entity/Relationship Model

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Entity/Relationship model

ER

1. Conceptual, high-level data model
2. Aimed mainly to represent relational data (RDBMs)
3. Graphical language
4. Instrumental in good database design

Building blocks

Entity

What classes of objects are there?



Relationship

How do they relate to each other?



Attributes

What relevant data is there?



Entities

Entity

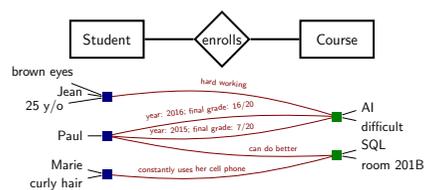
- ▶ a class of objects of the same kind
- ▶ can be concrete or abstract



Relationships

Relationship

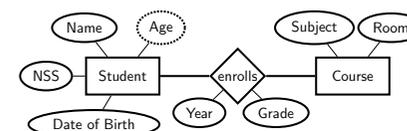
- ▶ connects one, two, or more entities



Attributes

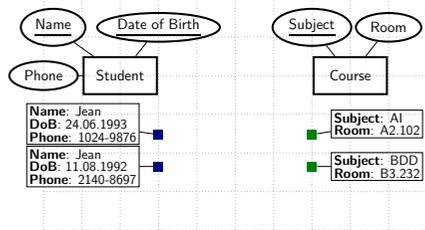
Attribute

- ▶ the relevant pieces of information



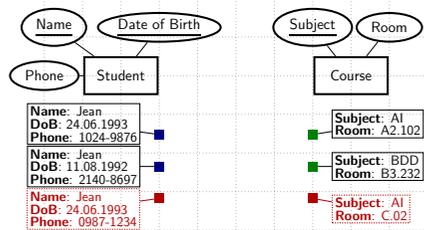
Key of an Entity

Key is a set of attributes that identifies an object with its class.



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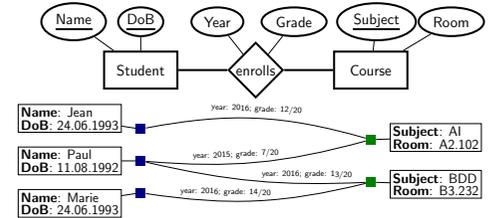


Forbidden: two students with the same name and the same date of birth

Forbidden: two courses with the same subject

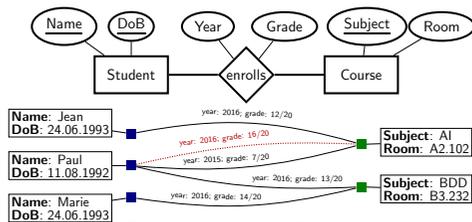
Relationships with no key

Only one link between the same objects is allowed



Relationships with no key

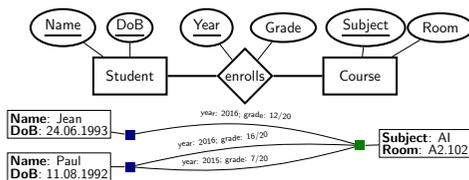
Only one link between the same objects is allowed



Forbidden: two links between Paul and AI

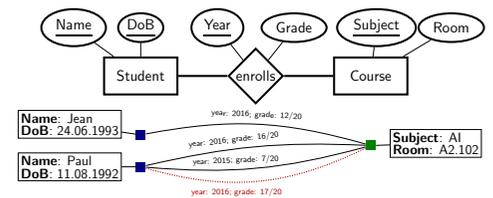
Keys of a Relationship

Only one link between the same objects with the same key value



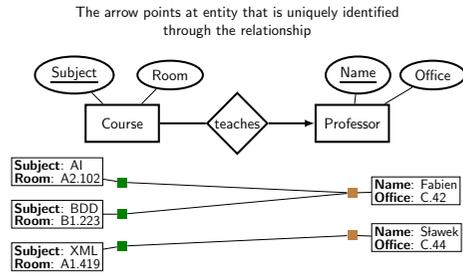
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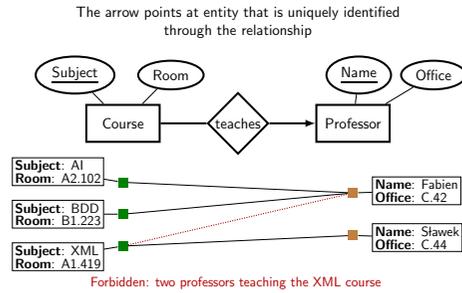


Forbidden: two links between Paul and AI for year 2016

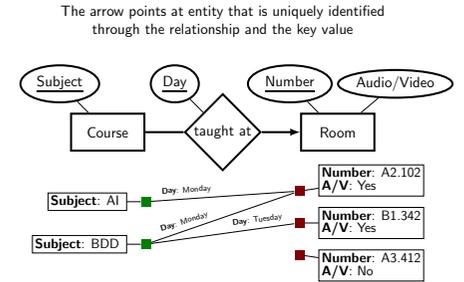
Functional Relationship



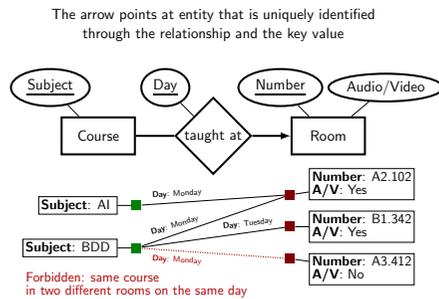
Functional Relationship



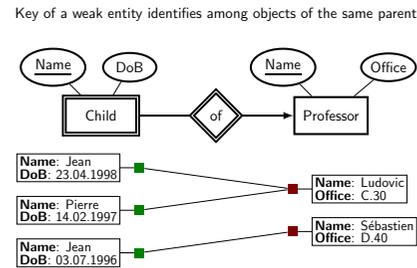
Functional Relationship with a key



Functional Relationship with a key



Weak Entity (and its identifying relationship)



Weak Entity (and its identifying relationship)

