The Object Data Model

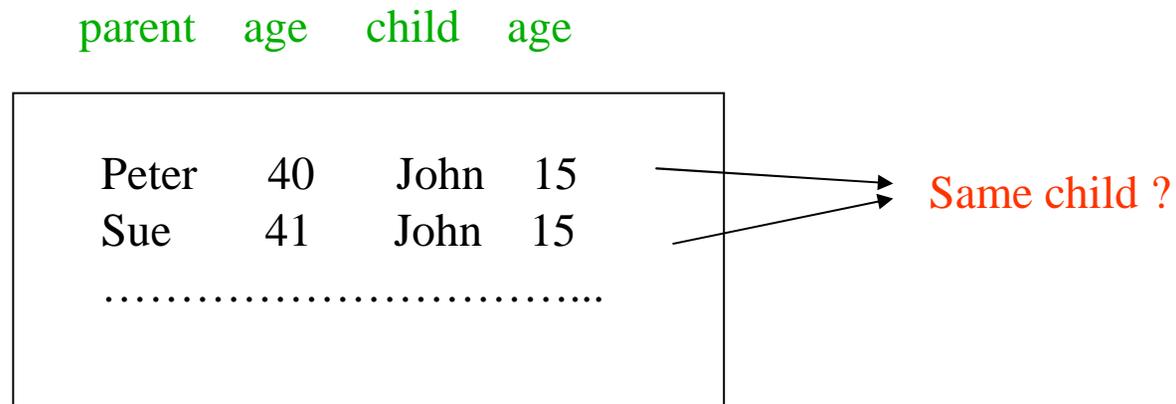# What is different:

-- object identity

-- complex structure

-- classes: attributes, methods, encapsulation

-- inheritance

--more complex query languages
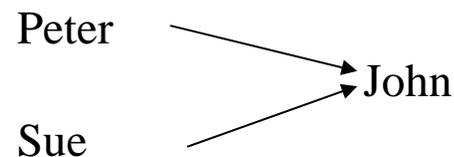
Object identity

-- built-in notion, similar to entities in ER model
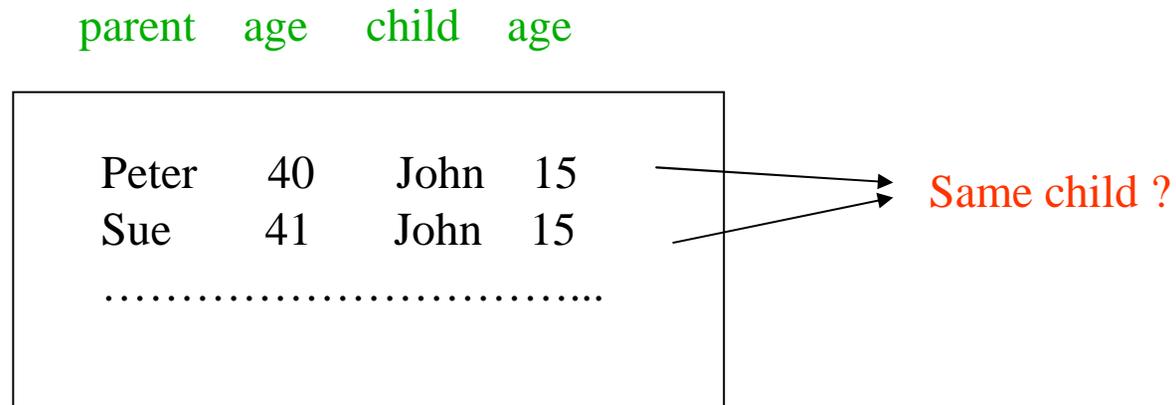-- independent of value (unlike in relational dbs)

Example

parent   age   child   age

```
Peter     40     John     15
Sue       41     John     15
…………………………..
```

Same child ?

With object identity:

Peter

Sue

John

Object identity

-- built-in notion, similar to entities in ER model
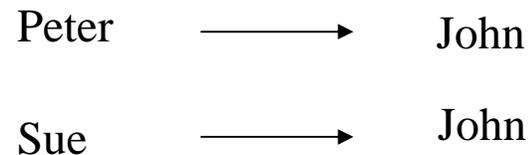-- independent of value (unlike in relational dbs)

Example

	parent	age	child	age

```
Peter      40      John    15  ⟶
Sue        41      John    15  ⟶   →   Same child ?
…………………………...
```

With object identity:

Peter ⟶ John

Sue ⟶ John

Class: type + extent

--extent: set of objects in class (like database instance)

--type: structure + methods

       encapsulation: separate interface from implementation

Pseudo-code example:

```
class employee {
      string name;                  int annual salary();
      string address;               string get-name();
      int salary;                    int employment-length() };
```

           ↑   ↑

    attributes   methods

Inheritance: class is a special case of given class
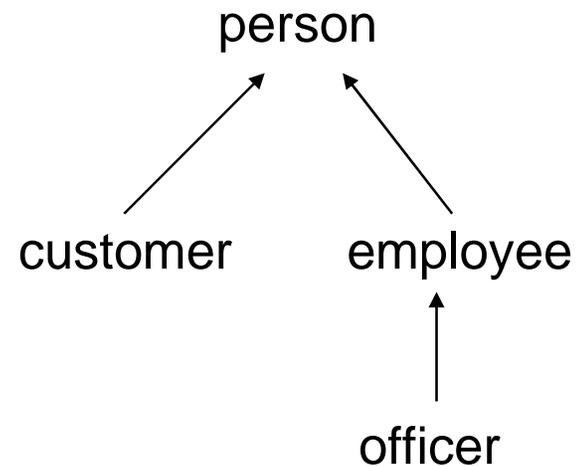
--what is inherited: structure + methods

Example

```
class person {
        string name;
        string address; }

class cutomer isa person {
        int credit-rating; }

class employee isa person {
        date start-date;
        int salary;  }

class officer isa employee {
        int office-number;
        int expense-account-number; }
```

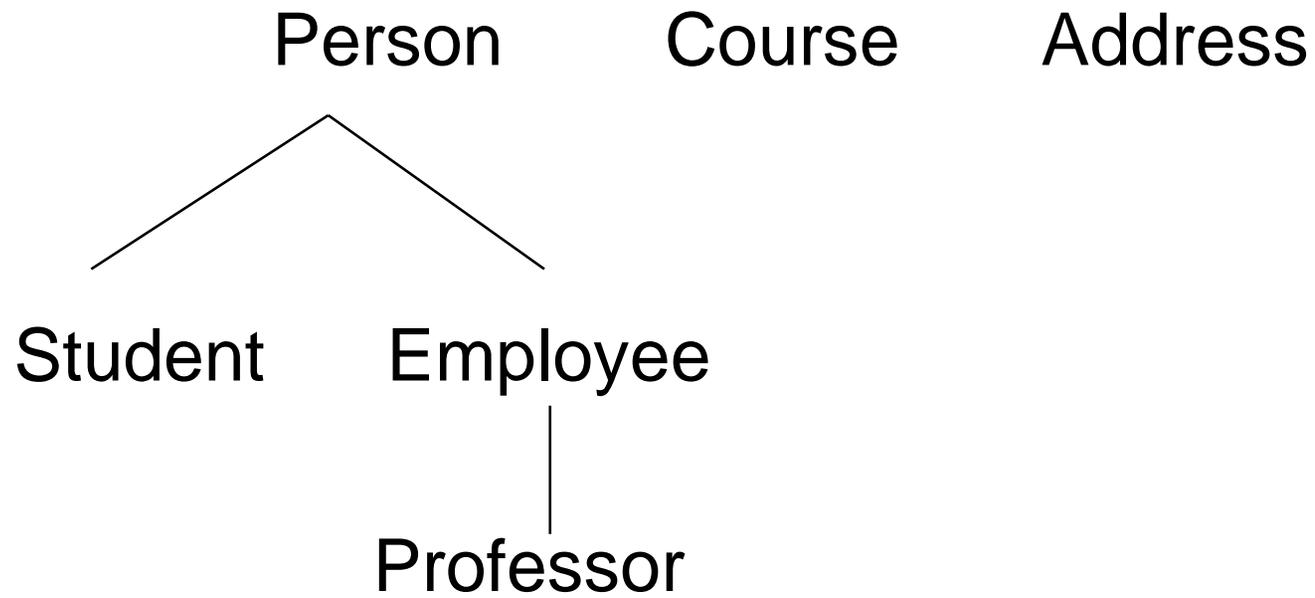person

customer   employee

officer

Multiple inheritance: when one class
is subclass of several classes --
potential ambiguity

Relationships

- Beside attributes, an object may have some relationships with other objects.

- These can be 1-1, 1-n or m-n relationships.
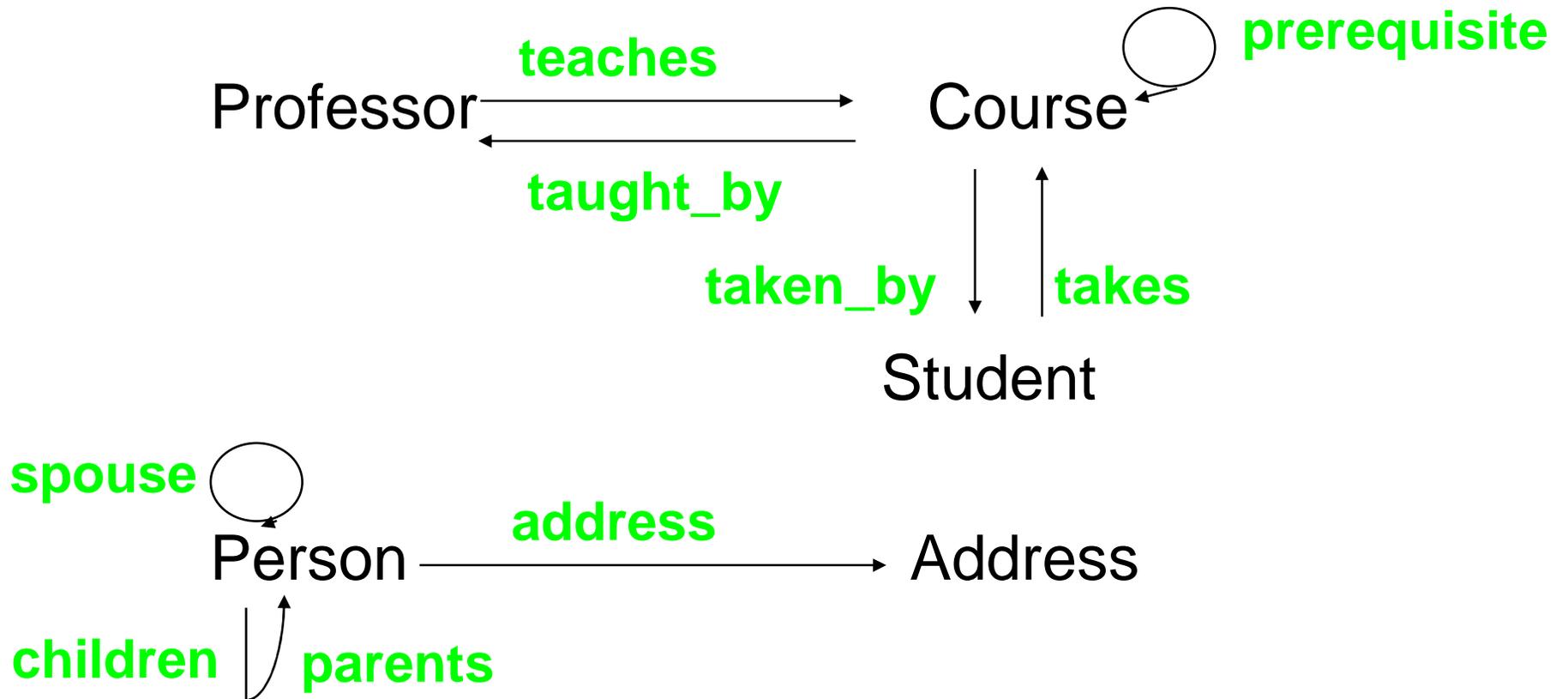
- Let us take an example:

Consider these classes:

Person   Course   Address

Student   Employee

Professor

Attributes and Methods

Person   *name, birth_date, age()*

Student   *takes, activities()*

Employee   *number, activities()*

Professor   *grade*

Course   *subject, notes()*

Address   *street, city*

Relationships

Graphic representation of more complex structure:
travel agency example