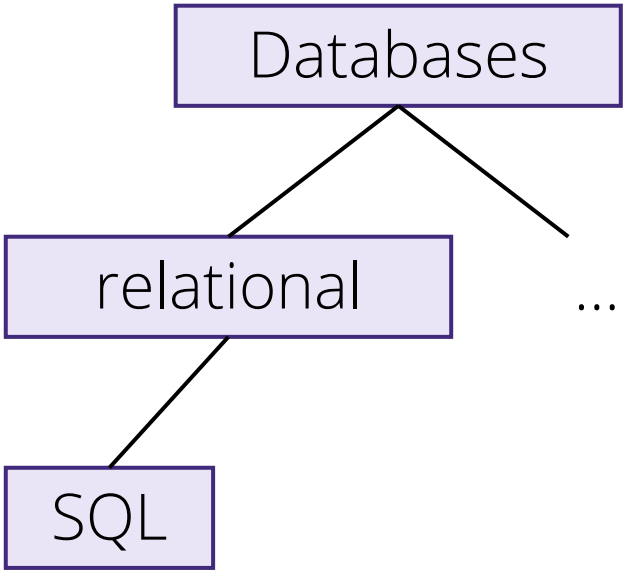
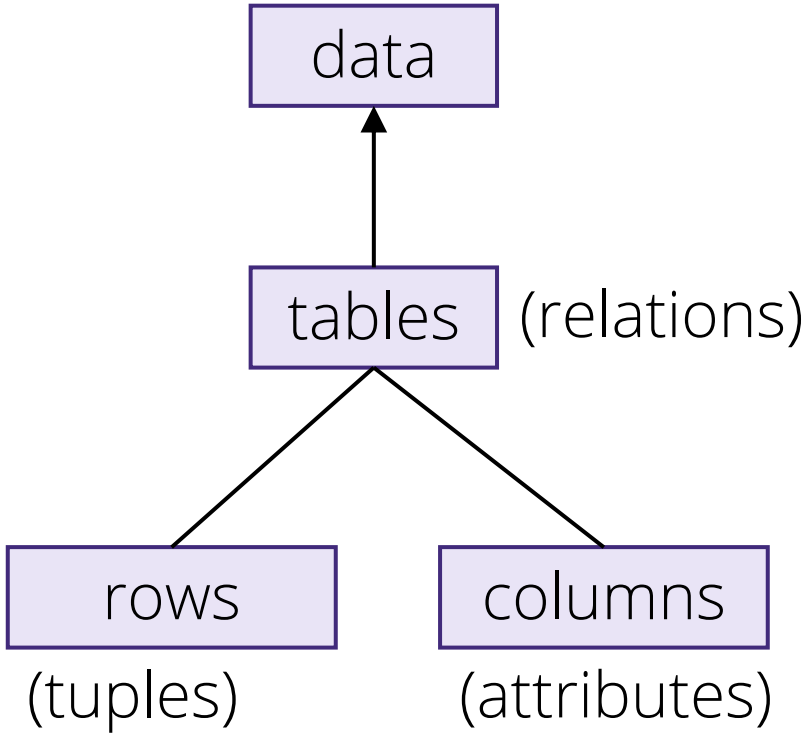
Relational modelling 1

COMS10012 Software Tools

Principles

Relational


Databases
relational
...
SQL


data
tables
(relations)
rows
columns
(tuples)
(attributes)

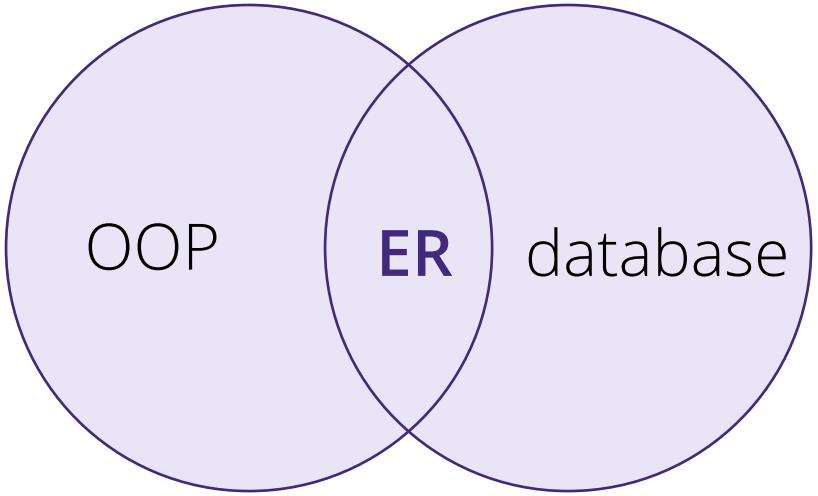
Relational

Facts about the world:

Student		
id	**name**	**cohort**
1	Tom	G400
2	Sarah	G403

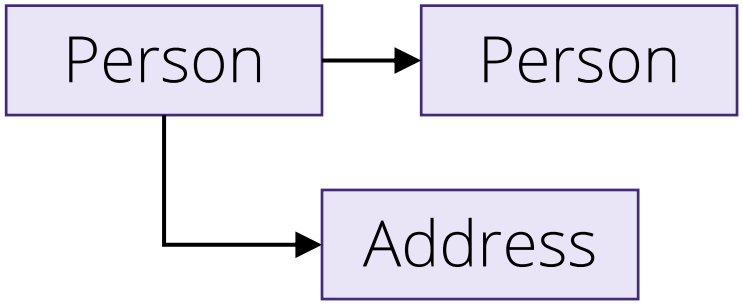
(1, Tom, G400), (2, Sarah, G403) ...

Modelling

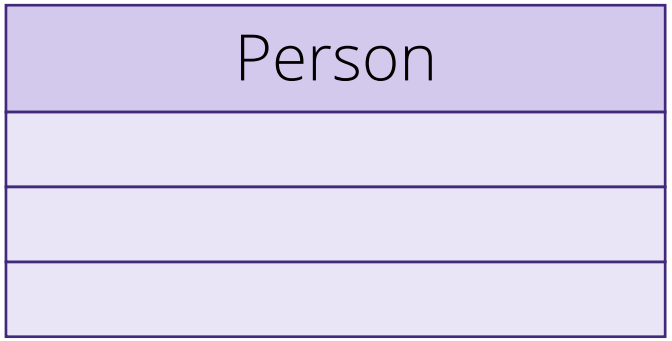


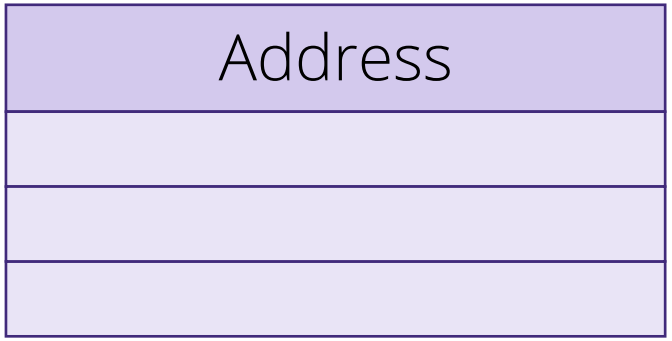
ER: Entity-Relationship (modelling)

Modelling

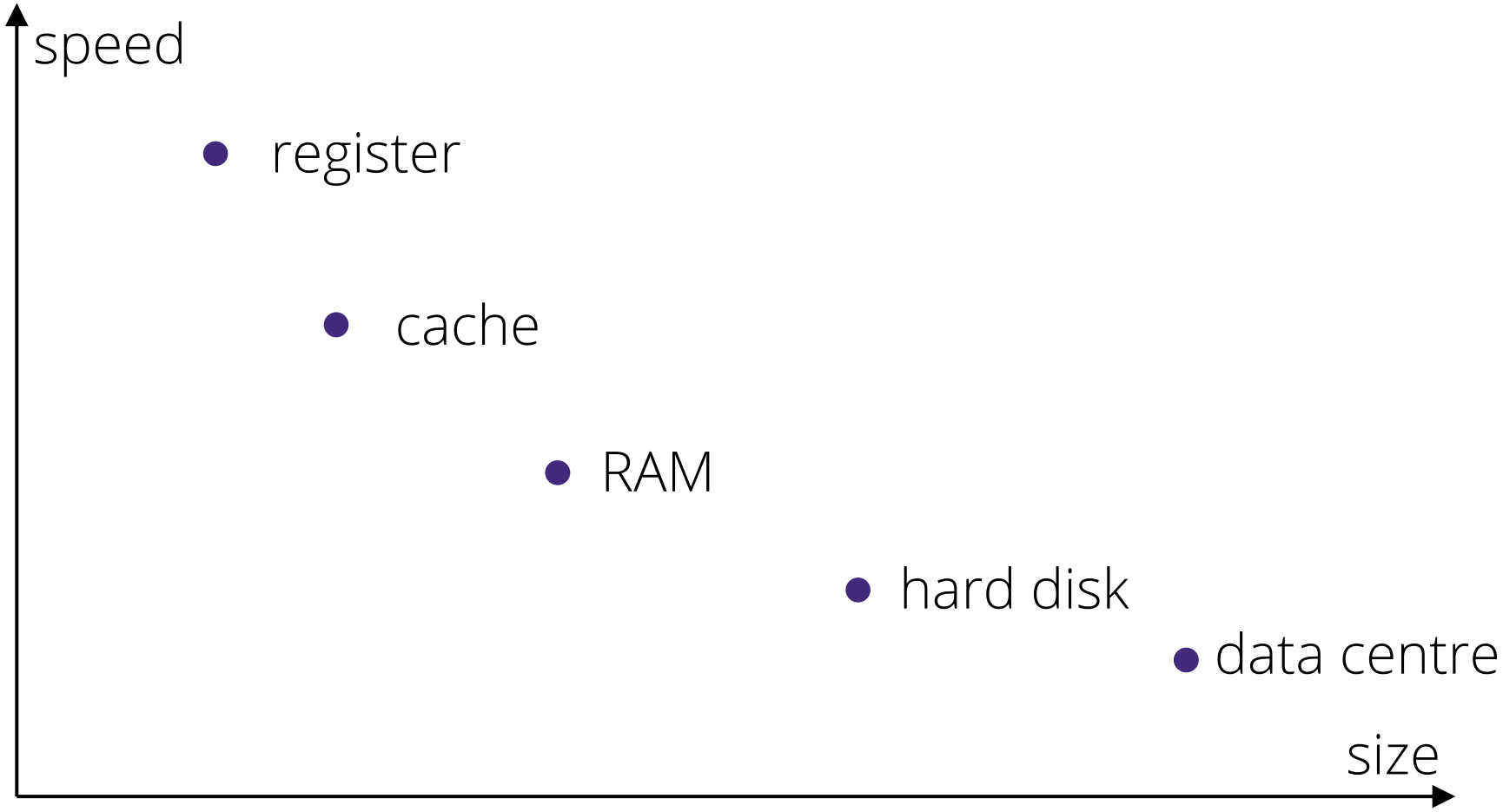



```
class Address { ... }
class Person {
  String name;
  Address address;
  List<Person> friends;
}
```





Big data



Crow's foot notation 1

Scenario

Bristol City Council wants an application to support Covid-19 related volunteering.

Volunteers complete tasks for clients, such as shopping or picking up medicine.

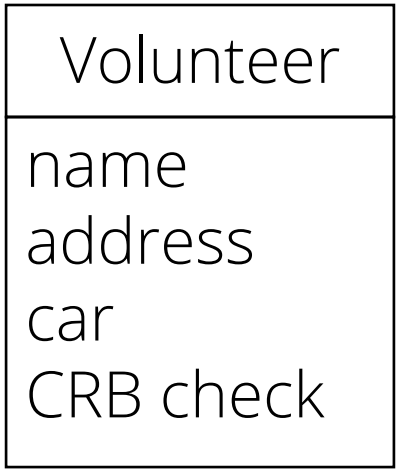
Entities are nouns

Volunteer

Client

Task

Attributes



Keys

Keys

Candidate key: one or more attributes in an entity that are *minimally unique*.

Unique: no two different entities have the same attributes.

Minimal: (if the key is more than one attribute) removing any attribute would break uniqueness.

Primary key

Choose one candidate key per table to be the **primary key**: this is the way you refer to instances of this type in your database.

You can add an ID column that has no meaning to your users, this is called a **surrogate key**.

A key with more than one attribute is called a **composite key**.

Primary Key

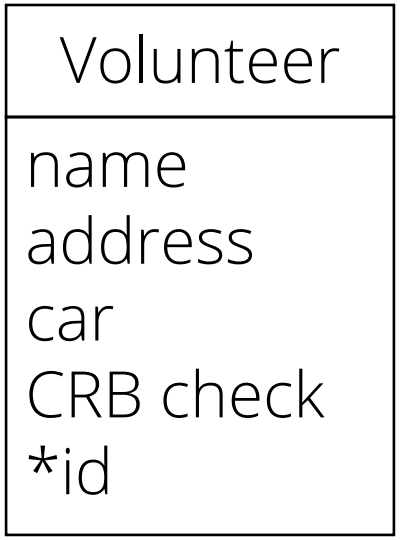
Good choices:

e-mail, phone number, username, ID column

Terrible choices:

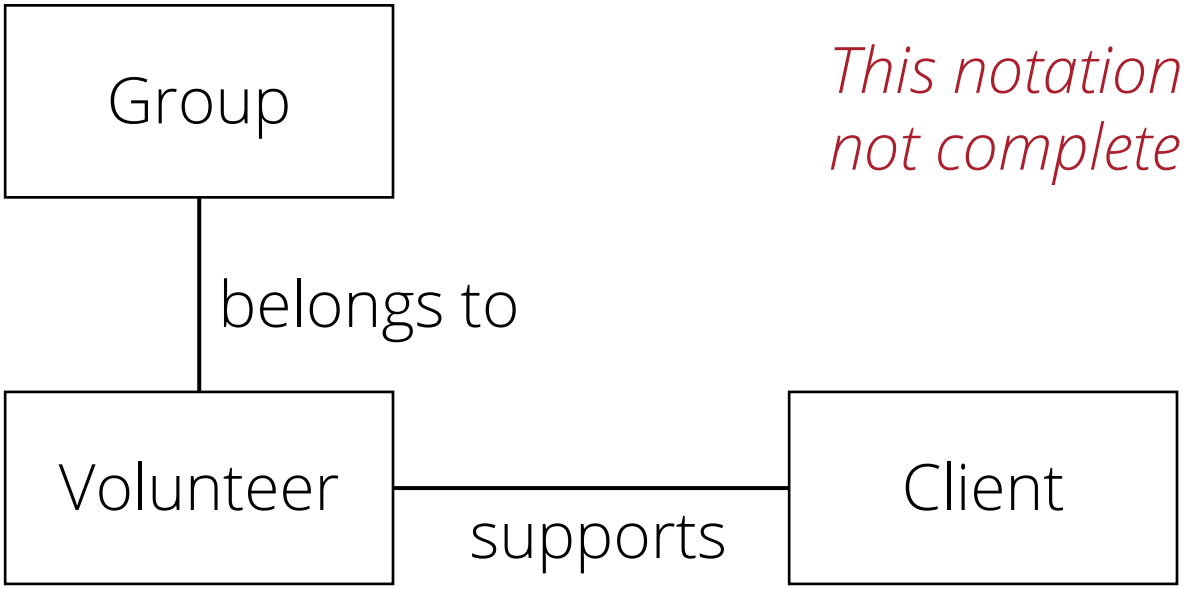
anything involving human names

Keys



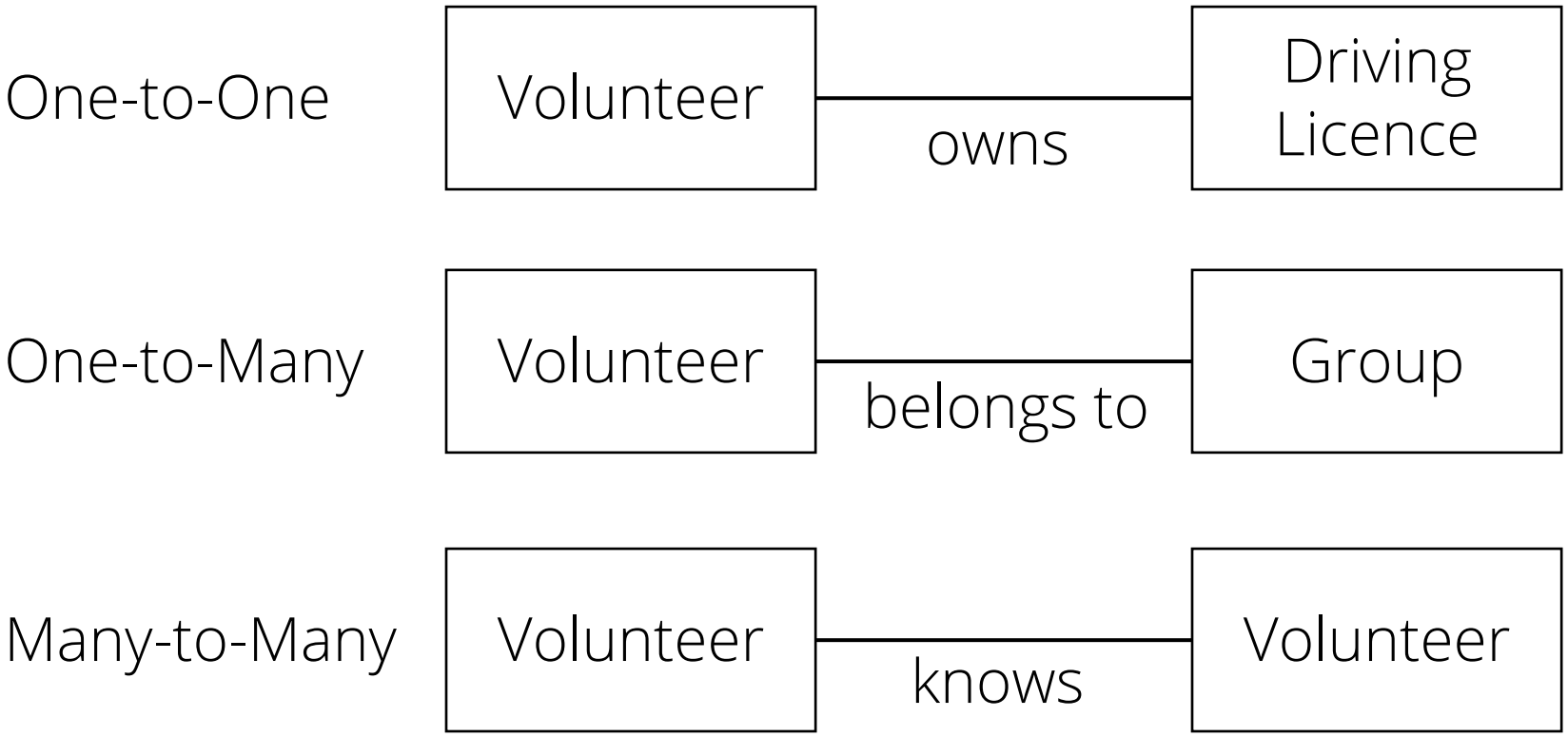
Crow's foot notation 2

Relationships are verbs



This notation is not complete yet …

Relationships



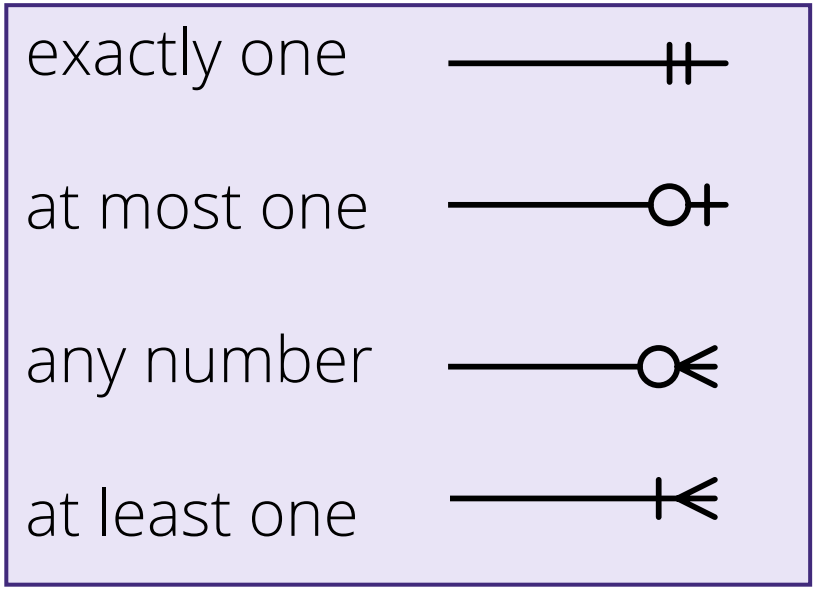
Crow's feet

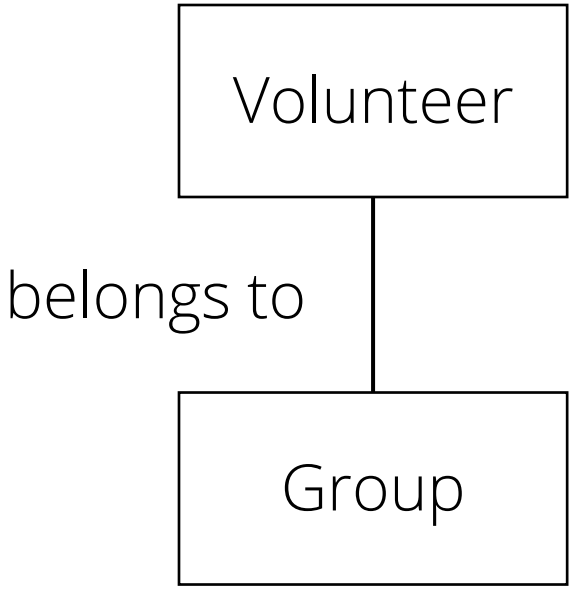
exactly one

at most one

any number

at least one





Associative entities