Design: Entity Relationship Diagram

Definition

An Entity Relationship Diagram is a graphical representation used to illustrate the relationship that exists between two or more entities.

Entity Relationship Diagrams show:

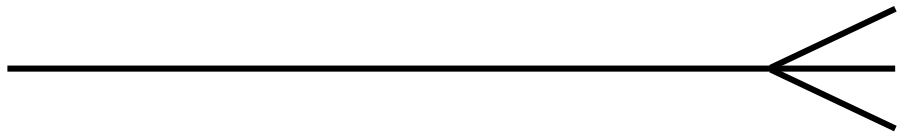
- attributes
- relationship cardinality
- relationship names

Cardinality

Cardinality refers to the relationship of data in one entity with respect to another entity. A **one-to-many** relationship exists when one entity can be present in many different instances of another entity.

A one-to-many relationship is shown with an arrow with crow's feet. The single line shows the 'one' side of the relationship, while the crows feet show the 'many' side of the relationship

'one' side of the relationship



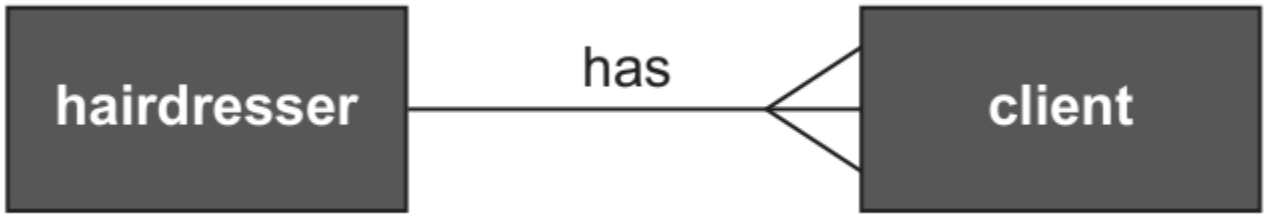
'many' side of the relationship

Relationship Names

Relationships between entities requires a short phrase to help to describe the relationship. For example “one user **posts** many updates” or “one company **employs** many people”.

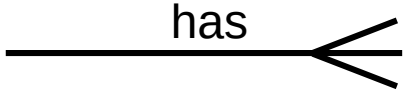
Often, if you cannot think of an appropriate description, “has” will work instead.

Here is a simple ERD showing the relationship name and cardinality:

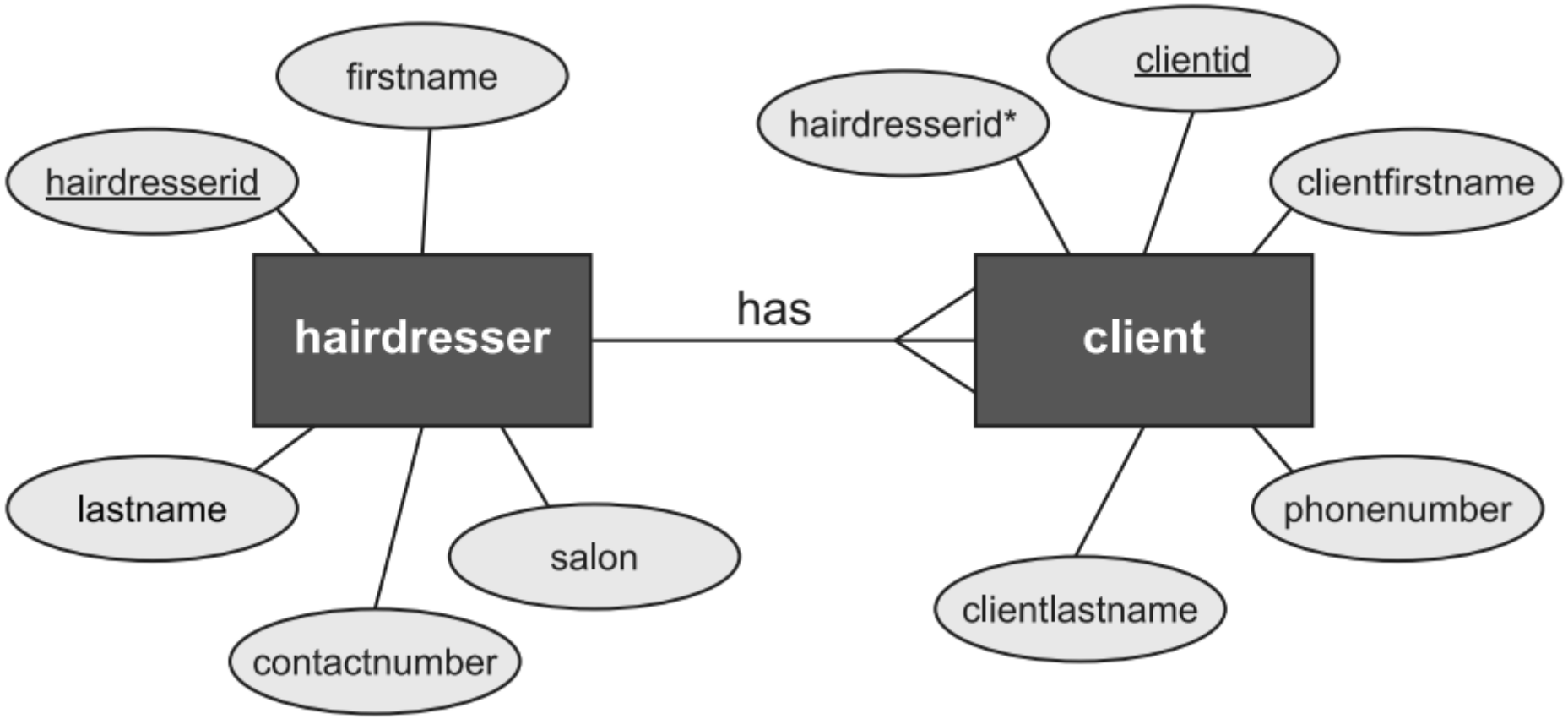


ERD Symbols

ERDs illustrates entities, relationships and attributes. Entity relationship diagrams make use of the following symbols.

Entity name	A rectangle is used to represent each entity. The name of the entity set is entered inside the rectangle to identify it. The name should be singular (e.g. person rather than people).
has 	The relationship between the two entity sets. A short phrase is written above the line to describe the relationship
Attribute	Attributes can be added to the ERD as ovals. The name of the attribute is entered inside the oval.
Primary Key	If an attribute is the primary key then its name is underlined inside the oval.
Foreign Key*	If an attribute is the foreign key then an asterix is put beside its name.

ERD Example


firstname
hairdresserid
hairdresser
has
client
clientid
hairdresserid*
clientfirstname
lastname
salon
contactnumber
phonenumber
clientlastname