Entities and Attributes

- Sometimes it is hard to tell if something should be an entity or an attribute
 - They both represent objects or facts about the world
 - They are both often represented by nouns in descriptions

- General guidelines
 - Entities can have attributes but attributes have no smaller parts
 - Entities can have relationships between them, but an attribute belongs to a single entity

Example

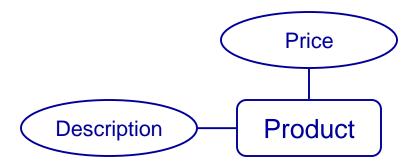
We want to represent information about products in a database. Each product has a description, a price and a supplier. Suppliers have addresses, phone numbers, and names. Each address is made up of a street address, a city, and a postcode.

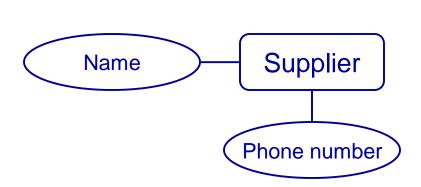
Example - Entities/Attributes

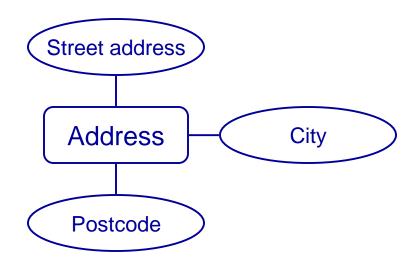
- Entities or attributes:
 - product
 - description
 - price
 - supplier
 - address
 - phone number
 - name
 - street address
 - city
 - postcode

- Products, suppliers, and addresses all have smaller parts so we can make them entities
- The others have no smaller parts and belong to a single entity

Example - E/R Diagram







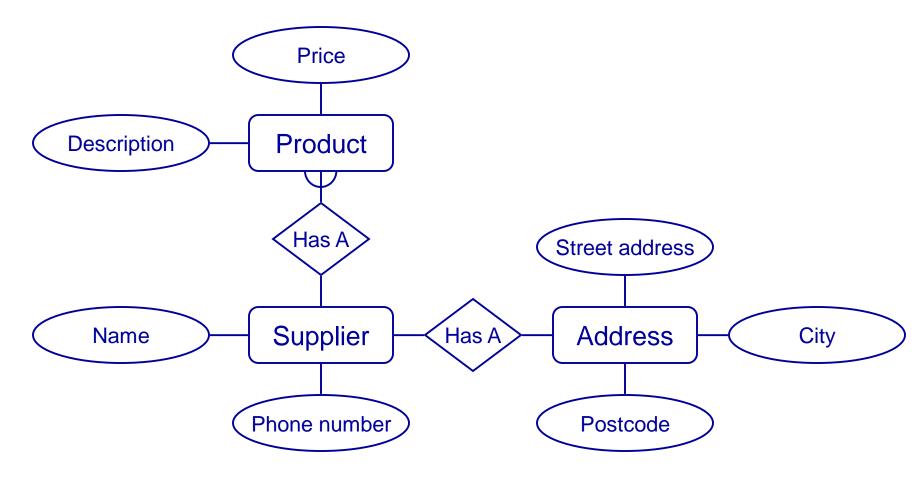
Entity Relationship Modelling

Example - Relationships

- Each product has a supplier
 - Each product has a single supplier but there is nothing to stop a supplier supplying many products
 - A many to one relationship

- Each supplier has an address
 - A supplier has a single address
 - It does not seem sensible for two different suppliers to have the same address
 - A one to one relationship

Example - E/R Diagram



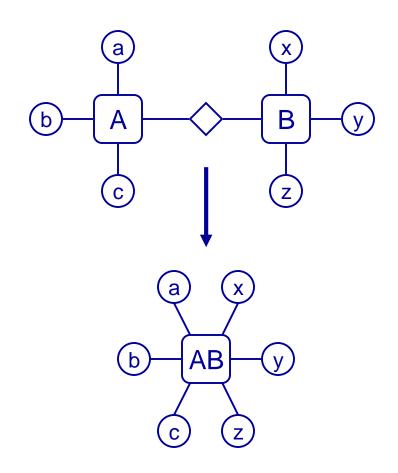
One to One Relationships

- Some relationships between entities, A and B, might be redundant if
 - It is a 1:1 relationship between A and B
 - Every A is related to a B and every B is related to an A

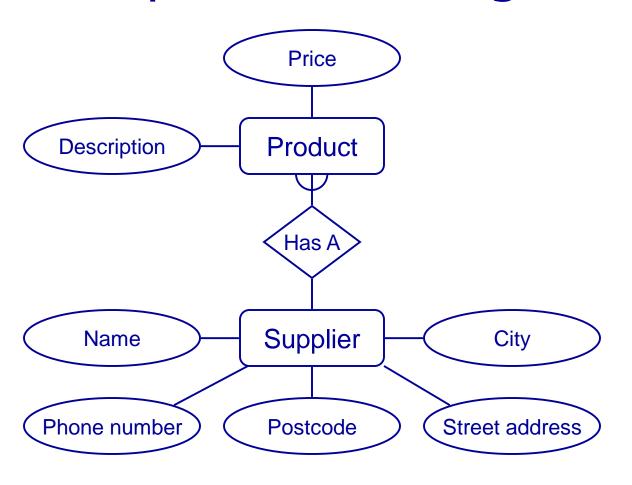
- Example the supplier-address relationship
 - Is one to one
 - Every supplier has an address
 - We don't need addresses that are not related to a supplier

Redundant Relationships

- We can merge the two entities that take part in a redundant relationship together
 - They become a single entity
 - The new entity has all the attributes of the old one



Example - E/R Diagram



Making E/R Diagrams

- From a description of
 Draw the E/R the requirements identify the
 - Entities
 - Attributes
 - Relationships
 - Cardinality ratios of the relationships

- diagram and then
 - Look at one to one relationships as they might be redundant
 - Look at many to many relationships as they might need to be split into two one to many links