ERD (entity relationship diagram)  
-tables  
-relationships  
-table contents/properties (attributes)  
  
Attributes:  
composite: can be subdivided to yield additional attributes eg hobbies – tennis, running ect  
simple: cannot be subdivided  
  
can be single/multi valued:  
single: stores single value  
multi:stores multi values  
  
You do not want multi valued attributes  
  
ie Car(ID, Colour1, Colour2, Colour3)  
to  
Car(ID)  
Colour(ColourID, carID, Colourx)  
  
Derived attributes:  
Does not need to be physically stored in table  
attribute is calculated from other attributes  
eg age calculated from date of birth.  
  
You would only want to store a derived attribute, if it will not need to be recalculated  
  
Relationships have:  
multiplicity: eg 1.1 ------- 1.4  
cardinality: maximum number of relations ie 4  
  
Existence dependence: The foreign key cannot be null. Cannot exist apart from related entities

Existence iddependence: The foreign key can be null. Can exist apart from one or more related entities  
  
Relationship strength:  
weak(non identifying): independence existence  
foreign key not part of primary key  
eg student and residence can exist without eachother  
  
strong(identifying): dependence existence  
foreign key part of primary key  
eg a student and his marks, their marks cannot exist without them.  
This is to eg: force the student to exist, before you can enter marks.