

1. An Associative Entity is an entity with 1:M relationships with the 2 entities that needed to be connected. The PK of the Associative Entity is a compound key of the 2 PKs of the other entities (ie. the FKs). This means that only one instance of the connected entities can exist in the Associative Entity.

A Transactional Entity is an entity also with 1:M relationships with the 2 entities being connected. However, it has its own PK and has the PK of the other 2 entities as FKs only. This means that any number of instances of the same tuples from the connected entities can exist in a Transactional Entity.

2. A weak entity must be existence-dependent. That is to say that it cannot exist without an entity which it has a relationship with. Also, a weak entity must have a primary key which includes a FK of the parent entity in the relationship.

3. A strong relationship is when the child in a relationship has a primary key which includes a FK of the parent entity.

4. An example is a building being the parent entity and a room being the child entity. The child entity has a primary key of BUILDING\_ID and ROOM\_NUMBER, where BUILDING\_ID is a FK pointing to the PK of building.

5. A recursive relationship is when an entity has a relationship with itself. An example would be a many to many relationship from EMPLOYEE to EMPLOYEE with a minimum cardinality of 0 called "is friendly with". This would show that an employee can get along with many other employees (or none).

6. A CUSTOMER can own anywhere from 0 to any number of CARs but each CAR must belong to 1 CUSTOMER. Also, each CAR can get 0 to many MAINTENANCE work done, but each MAINTENANCE which is performed is done to one car only.

7.

CUSTOMER (1..1)	CAR(0..*)
CAR(1..1)	MAINTENANCE(0..*)
MAINTENANCE(1..1)	MAIN_LINE (1..*)
MAINT_LINE(0..1)	PART(1..1)

8. This can be implemented as CLASS is a child of COURSE and CLASS has a PK consisting of CRS\_ID and CLASS\_ID. This would be a strong relationship between COURSE and CLASS.

Another implementation could be CLASS has a PK of CLASS\_ID and a FK of

CRS\_ID. This is a weak relationship and CLASS is a strong entity because it does not include a FK from course in its PK.