

Data Modelling (design process – converts requirement to data model)

1. INFORMATION is contained (entities)
2. RELATIONSHIP between data items
3. CONSTRAINTS on data

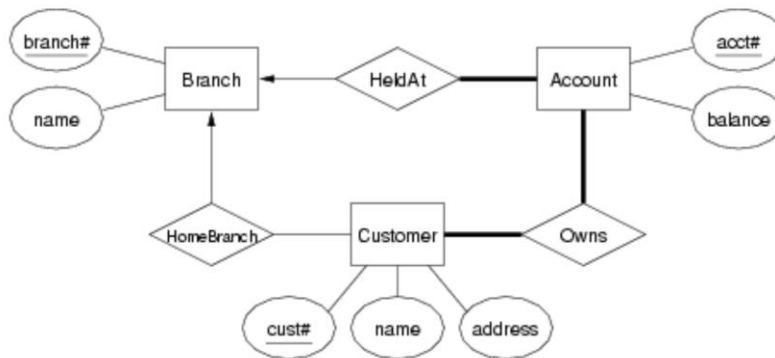
Logical Model – abstract, for conceptual design (ER, ODL)

Physical Model – record-based, for implementation (relational/UML)

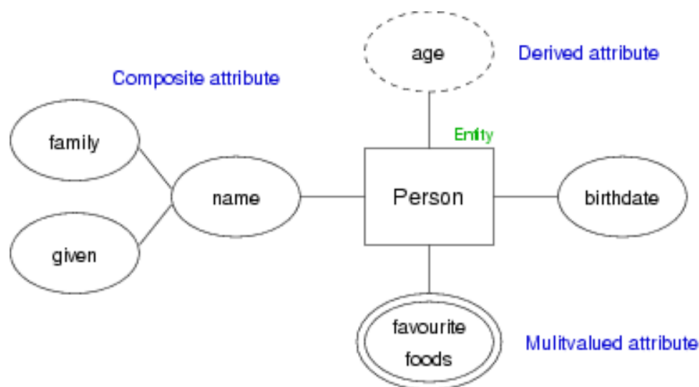
EXERCISE 1

Quality of design: correctness/ completeness/ consistency

ER model (entity-relationship) – collection of inter-related entities



1. Attribute – data item describing a property of interest
2. Entity – collection of attributes describing object of interest
3. Relationship – association between entities(object)



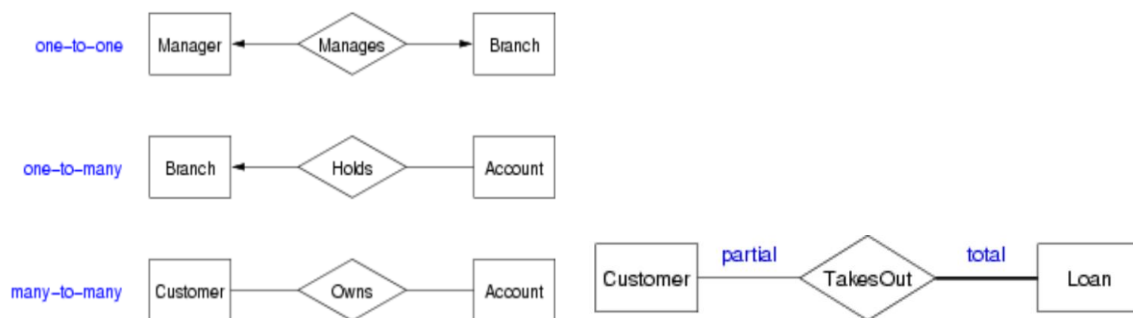
1. Composite attribute – attribute consisting more than one value for a given entity (eg. Phone no. can be more than one for a given student)
2. Derived attribute – if an attributes value can be determined from the value of other attributes (eg. Age is depends on the birthday of given student)
3. Multivalued attribute – multiple value (eg. Fav colors/foods..)

ENTITY SETS

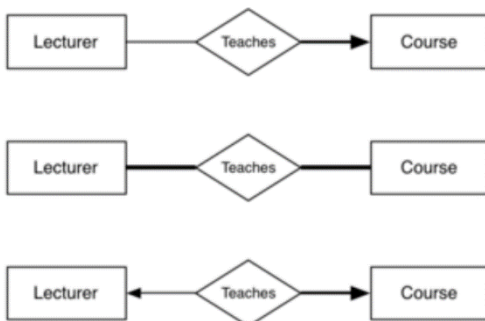
- a set of entities with the same set of attributes
- abstraction description of a class of entities
- Key (superkey) – any set of attributes
 1. Candidate key = min superkey
Value of candidate key is unique and non-null
Can be more than one
 2. Primary key = candidate key chosen by DB designer

RELATIONSHIP

- Collection of relationships of the same type



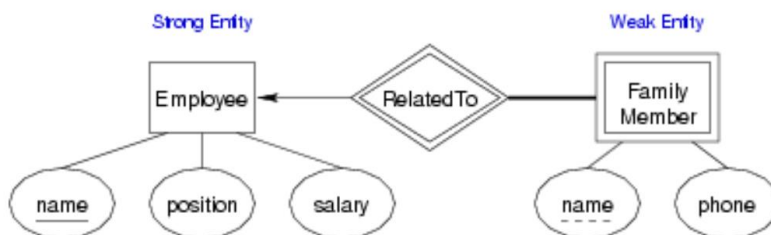
EXERCISE2:



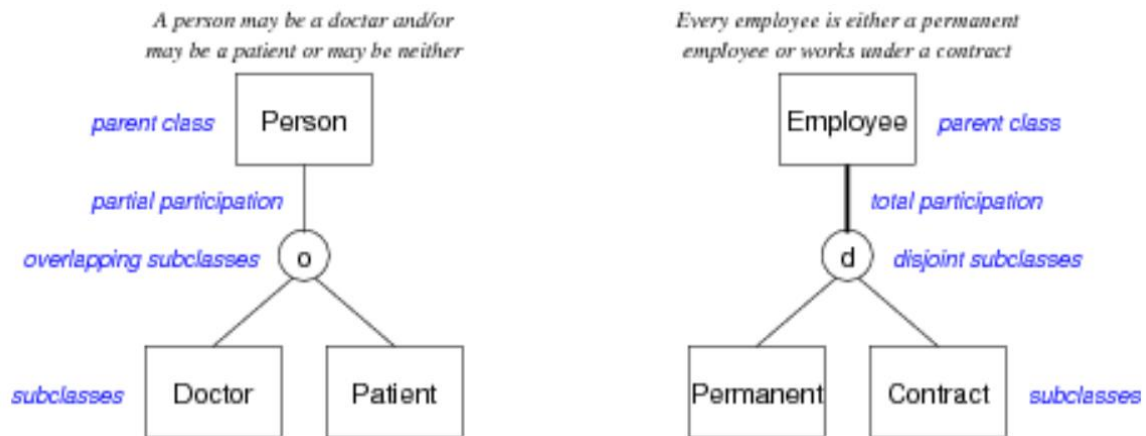
1. one course is taught by multiple lecturers (each course must be taught by at least one lecturer but lecturer doesn't have to teach any course)
2. many course is taught by many lecturer (each course must be taught by one lecture and each lecture must teach one course)
3. one course can only be taught by one course (each course must be taught by one lecturer but lecturer doesn't have to teach any course)

WEAK ENTITY SETS

- exist only because of association with strong entities
- have no key of their own have discriminator



SUBCLASSES & INHERITANCE



Design Using the ER Model

- Simple, powerful set of data modelling tools
- Consideration:
 - o Should an object be represented by an attribute or entity
 - o Is a 'concept' best expressed as an entity or relationship
 - o Should we use n-way relationship or several 2-way relationships
 - o Is an object a strong or weak entity (usually strong)
 - o Are there subclasses/super classes within the entities

Exercise04 – medical central

People Subclasses

