Tutorial 2

Ex1:

1. i

   composite attribute - can be broken into component parts
2. d associative entity - relationship modeled as an entity type
3. b unary relationship - relates instances of a single entity type
4. j weak entity - depends on the existence of another entity type
5. h attribute - property of an entity
6. l entity - person, place, object, concept, event
7. e relationship type - association between entity types
8. c cardinality constraint - specifies maximum and minimum number of instances
9. g degree - number of participating entity types in relationship
10. a

    identifier - uniquely identifies entity instances
11. f

    entity type - collection of similar entities
12. k

    ternary - relationship of degree 3

Ex2:

a. Stored attribute: values stored in the database
   Derived attribute: values can be calculated from related attribute values (not physically stored in the database)

b. Simple attribute: can be broken down into smaller components
   Composite attribute: that has meaningful component parts

(attributes)

c. Entity type: a collection of entities that share common properties or characteristics, Relationship type is a meaningful association between (or among) entity types.

d. Strong entity type: exists independently of other entity types Weak entity type: depends on some other entity type.

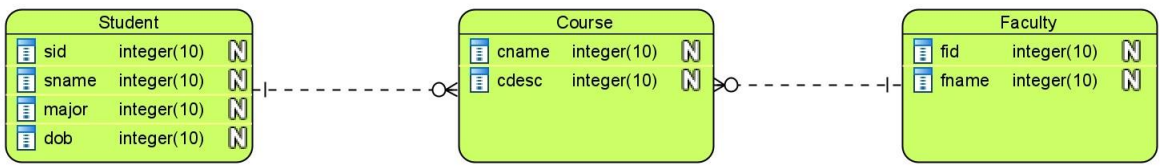
e. Degree: the number of entity types that participate in that relationship
Cardinality: constraint on the number of instances of one entity that can (or must) be associated with each instance of another entity.

f. Required attribute: have a value for each entity instance
Optional attribute: may not have a value for every entity instance.

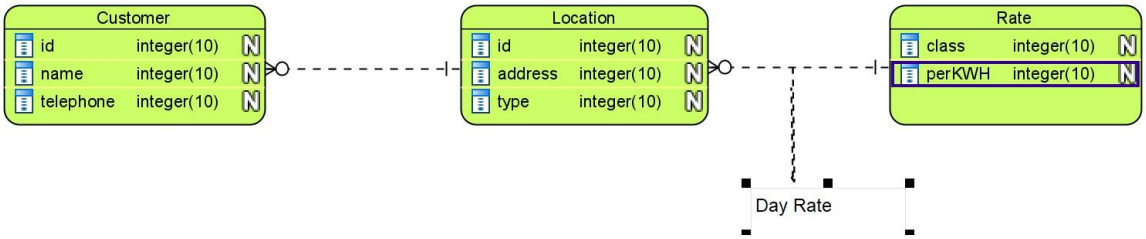
g. Composite attribute: has component parts that give meaning
Multivalued attribute: may take on or more values for an entity instance.

h. Ternary relationship: relationship of degree 3
Three binary relationships: three relationship of degree 2

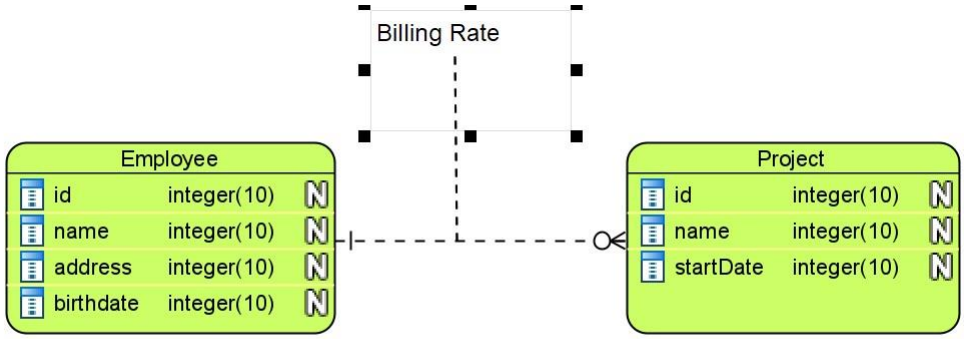
Ex3:



Ex4:


Customer
id integer(10) N
name integer(10) N
telephone integer(10) N
Location
id integer(10) N
address integer(10) N
type integer(10) N
Rate
class integer(10) N
perKWH integer(10) N
Day Rate

Ex5:


Billing Rate
Employee
id integer(10) N
name integer(10) N
address integer(10) N
birthdate integer(10) N
Project
id integer(10) N
name integer(10) N
startDate integer(10) N

Homework

Ex1.

a. Entity type: Type–collection of entities

b. Entity-relationship model: is a high-level conceptual data model diagram

c. Entity instance: A single occurrence of an entity type

d. Attribute: property of an entity

e. Relationship type: a meaningful association between entity types

f. Identifier: attribute uniquely identifies individual instances of an entity type

g. Multi-valued attribute: more values for an entity instance

h. associative entity: relationship modeled as an entity type

i. cardinality constraint: instances of one entity must be associated with instance of another entity

j. weak entity: depends on the existence of another entity type

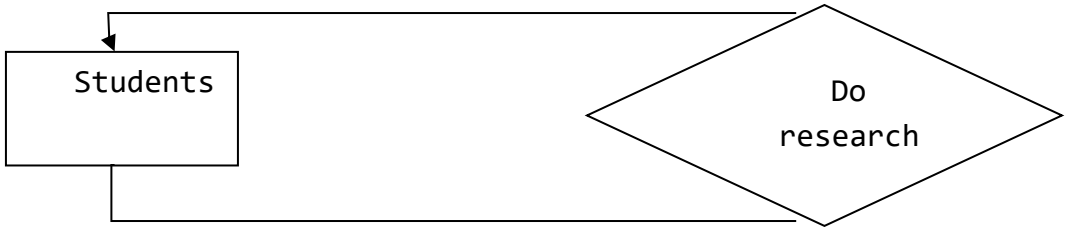
k. identifying relationship: links strong entities to weak entities

l. derived attribute: values can be calculated from related attribute values

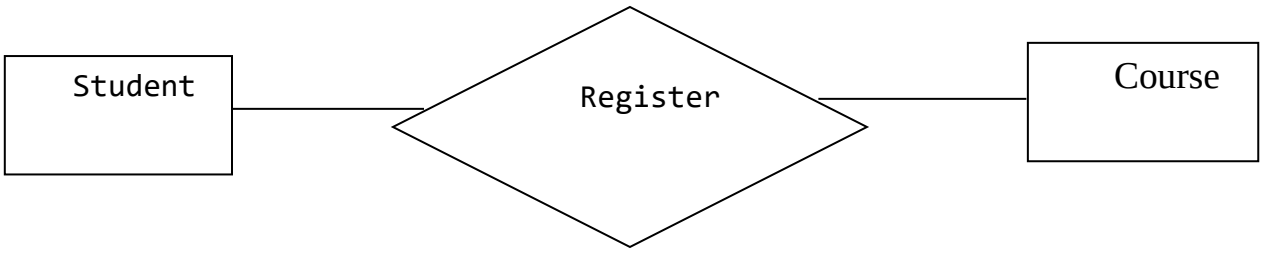
Ex2.
a. Derived attribute: age can be derived from data_of_birth
b. Multi-valued attribute: a student can have more than one email, phone, course
c. Atomic attribute: First_name, last_name of a person, names of things etc. – a person's name may be divided into first name, last name and middle name etc. But a person's first name cannot be divided further to give meaningful information. Hence, a first name is an atomic attribute,
d. Composite attribute: data_of_birth may have day, month, year
e. Required attribute: In a course must have data of teacher and student
f. Optional attribute: When consider a student, data about middle name is optional

Ex3.
- Degree of a relationship is the number of entity types that participate in it

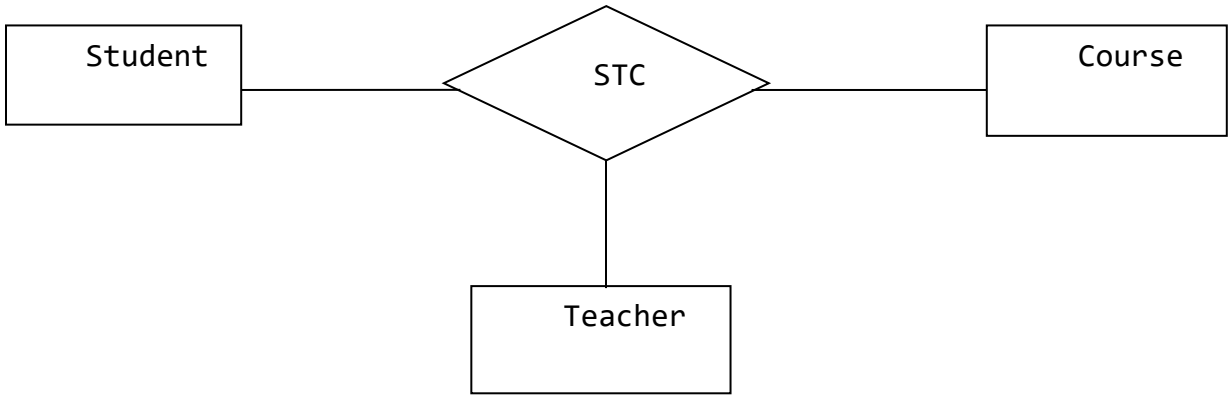
- Unary Relationship



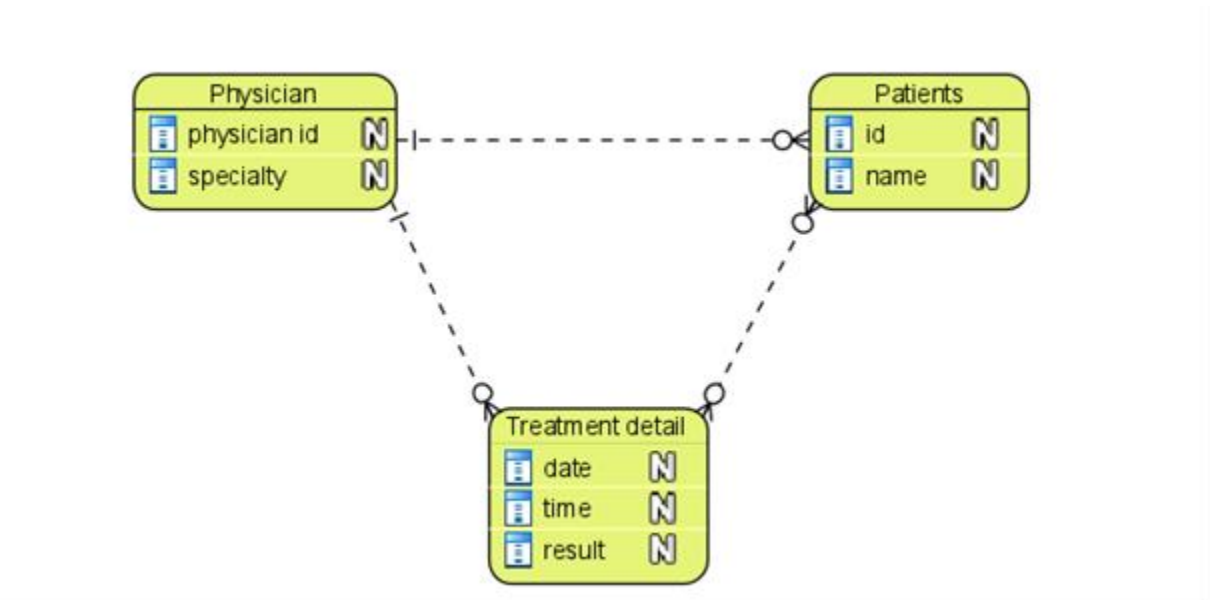
- Binary Relationship

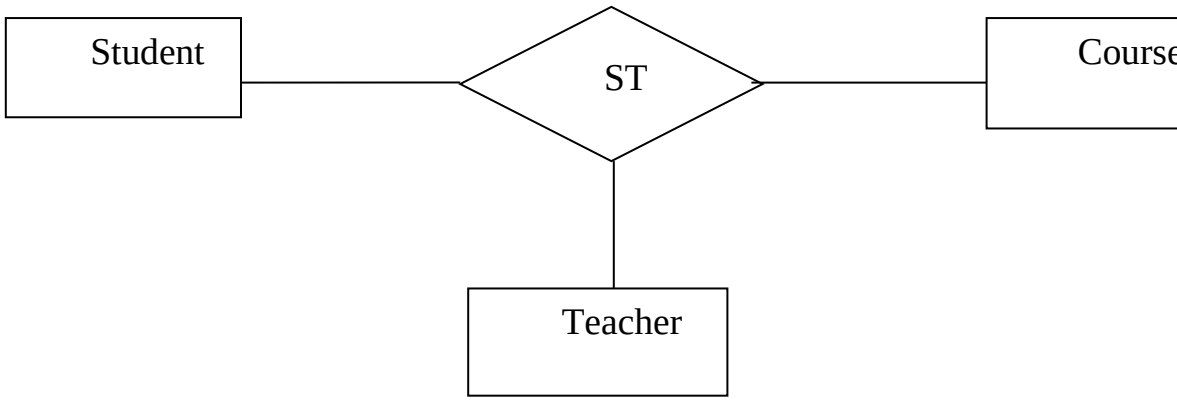


- Ternary Relationship



Ex4.




Student
ST
Course
Teacher