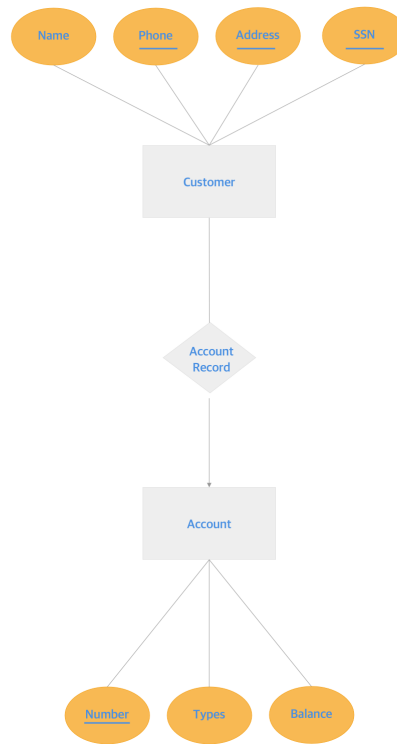


# CSC343 Worksheet 15 Solution (Final)

July 15, 2020

1.
  - E/R Diagram



- UML



### Notes:

- UML
  - Was developed originally as a graphical notation for describing software designs in an object-oriented style
  - Offers the same as E/R model, with the exception of multiway relationship

UML	E/R Model
Class	Entity set
Association	Binary relationship
Association Class	Attributes on a relationship
Subclass	Isa hierarchy
Aggregation	Many-one relationship
Composition	Many-one relationship with referential integrity

- UML Class



- Associations



### Multiplicity in UML

Multiplicity	Option	Cardinality
0..0	0	Collection must be empty
0..1		No instances or one instance
1..1	1	Exactly one instance
0..*	*	Zero or more instance
5..5	5	Exactly 5 instances
$m..n$		At least $m$ but no more than $n$ instances

### Example:



Two or more Player actors are required to initiate **one** Play Game use case.

### References:

- 1) uml-diagrams, UML Multiplicity and Collections, link
- Referential Integrity
    - Means that a value appearing in one context must also appear in another



Means studio can have **at most one** president  
but it could not have a president at some time



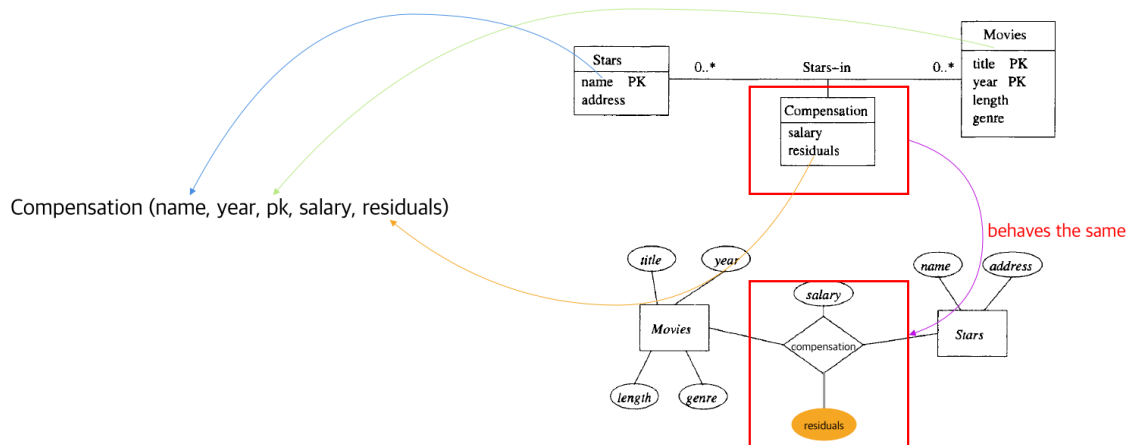
Means one studio can have **at least one** movies  
and there could have many more (to infinity!)

- Self-Associations



is the same

### • Associations



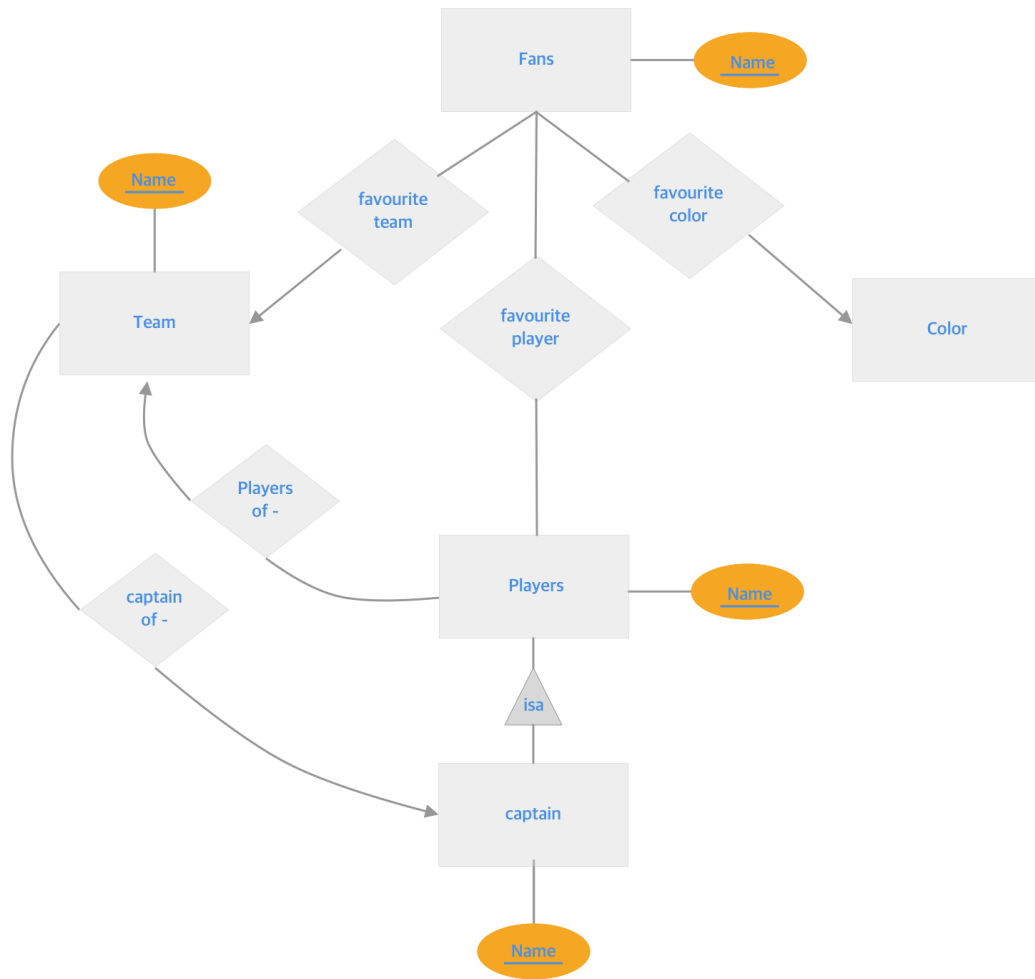
2. a) Solution:



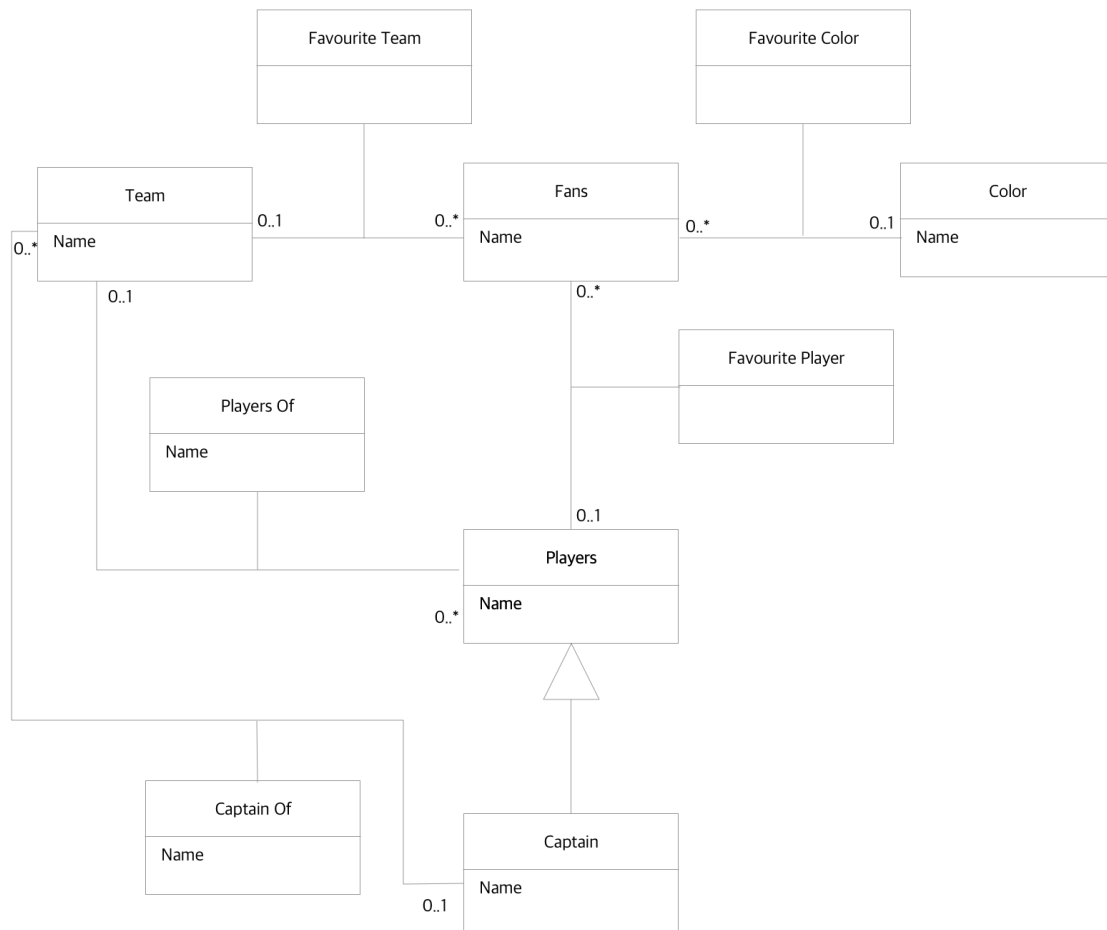
b) Solution:



3. • E/R Diagram

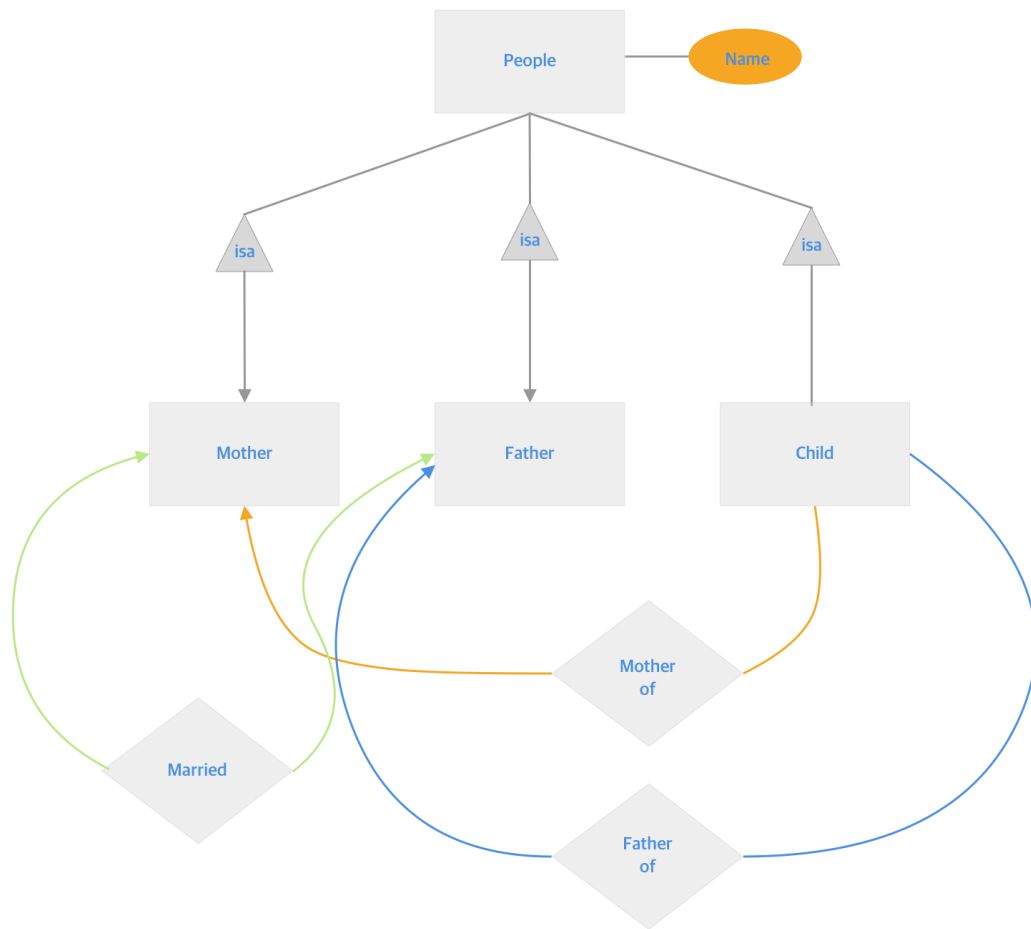


- UML

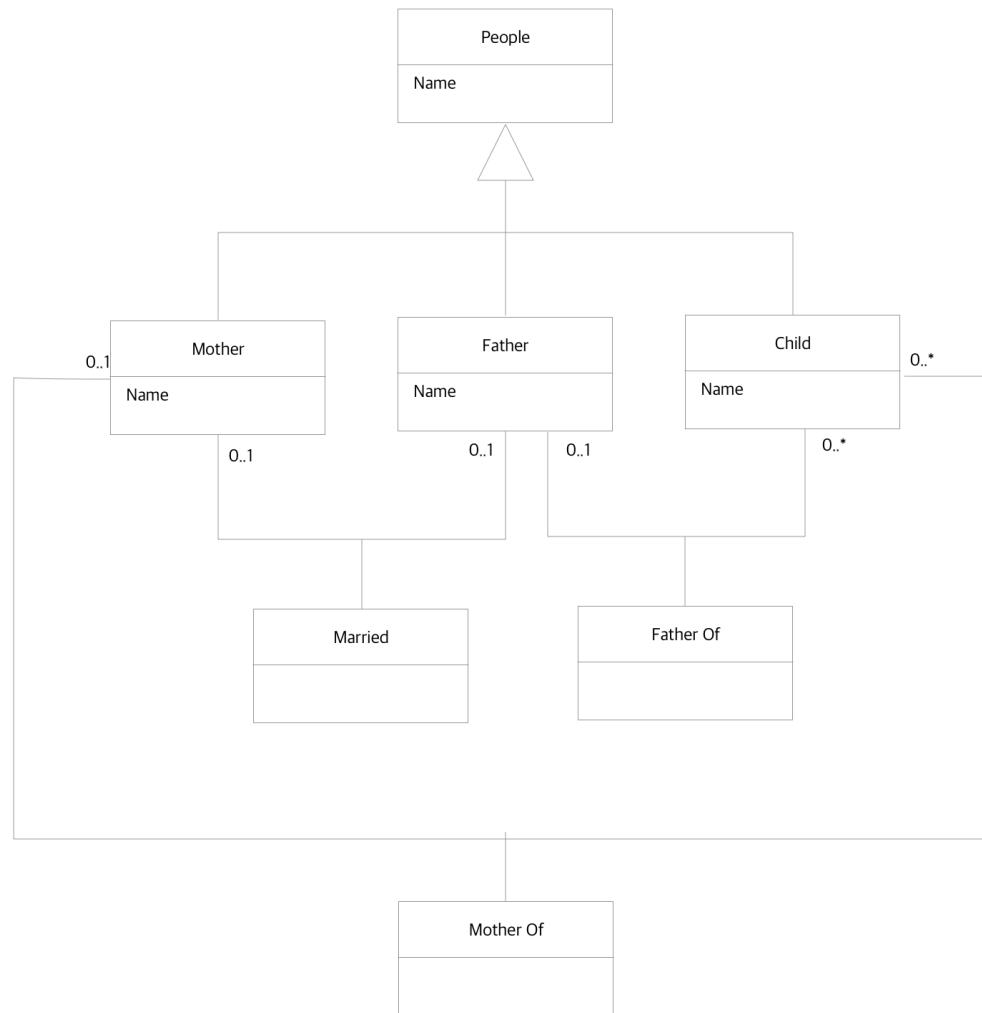


#### 4. • E/R Diagram

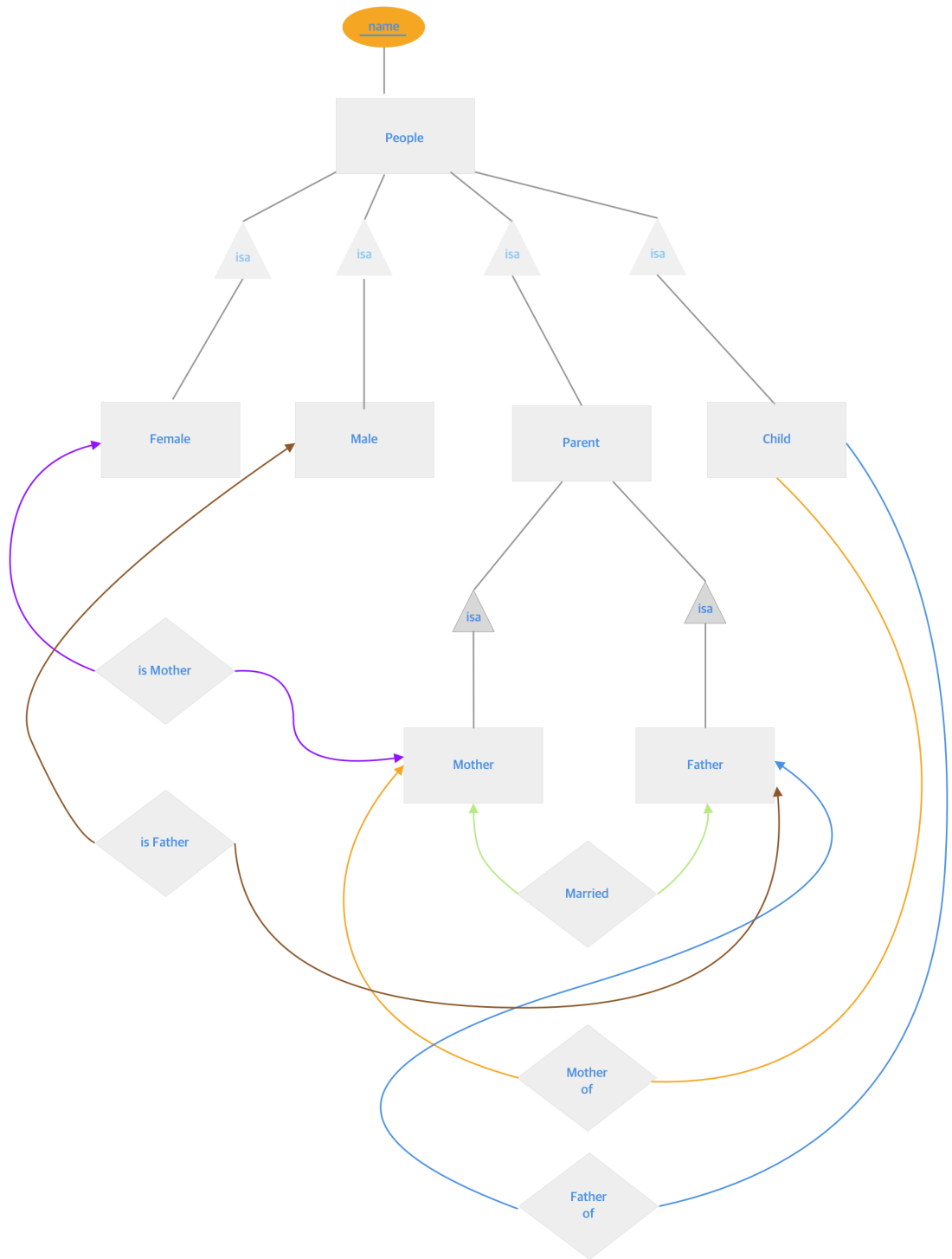




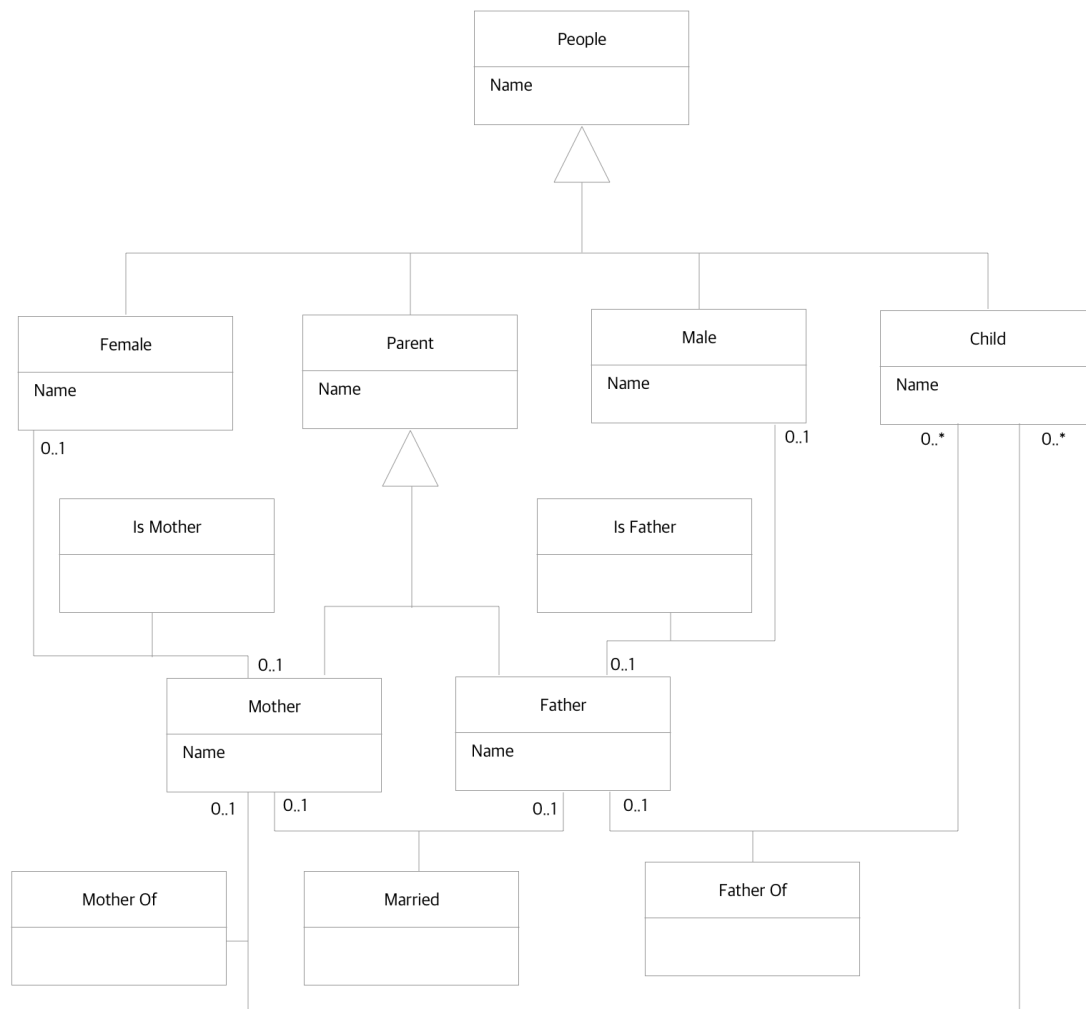
- UML



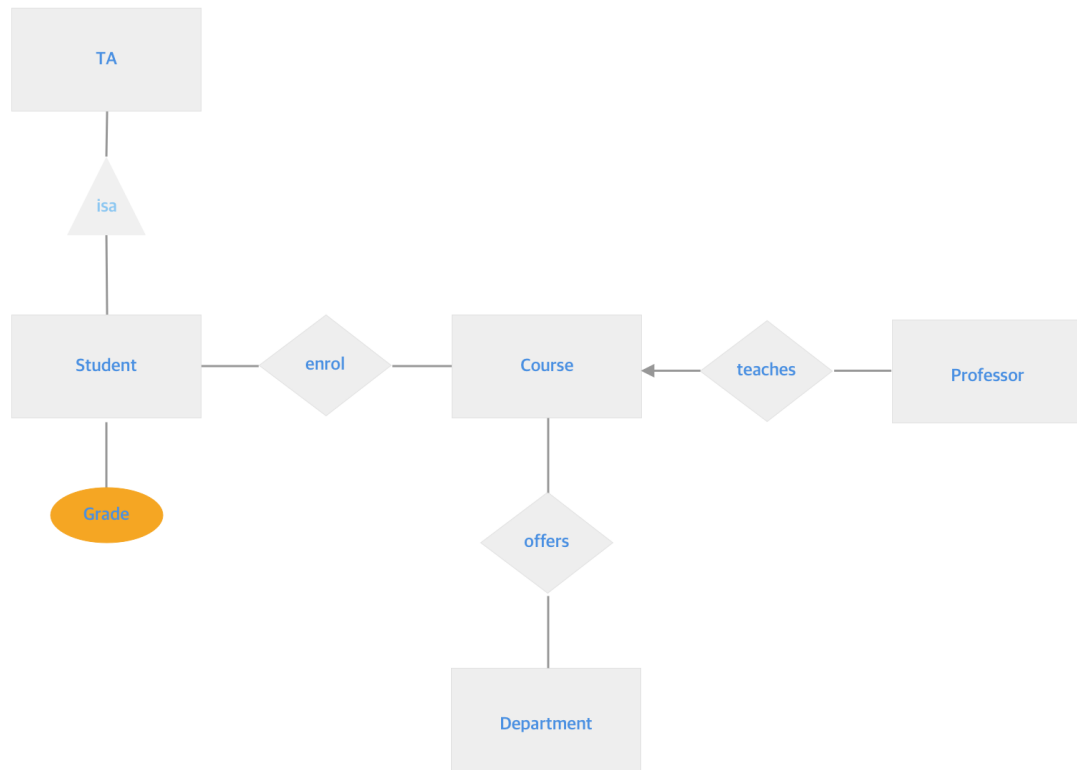
5. • E/R Diagram



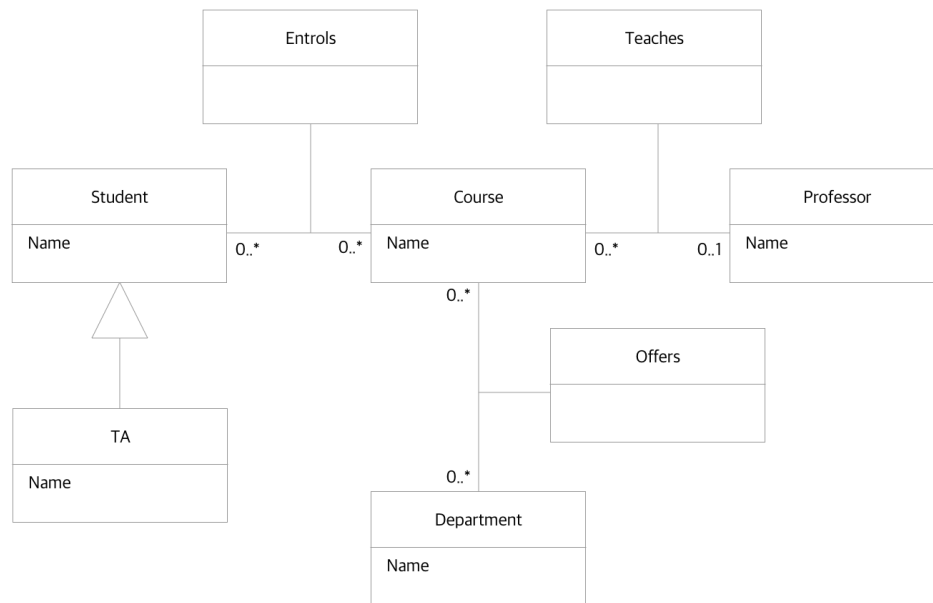
- UML



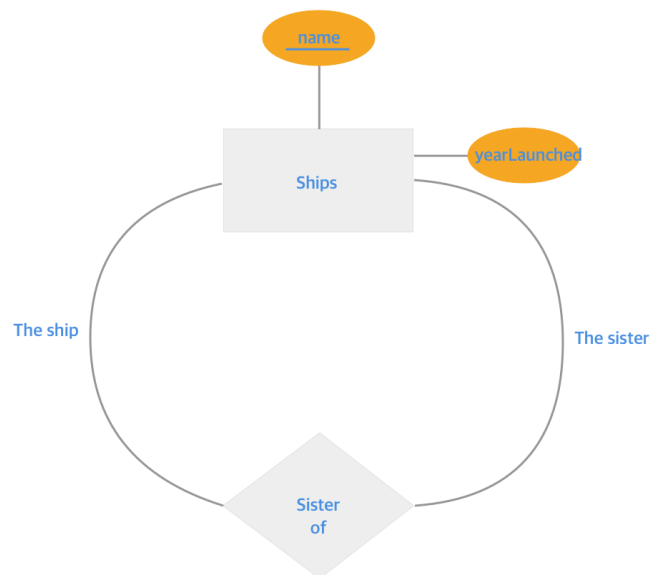
6. • E/R Diagram



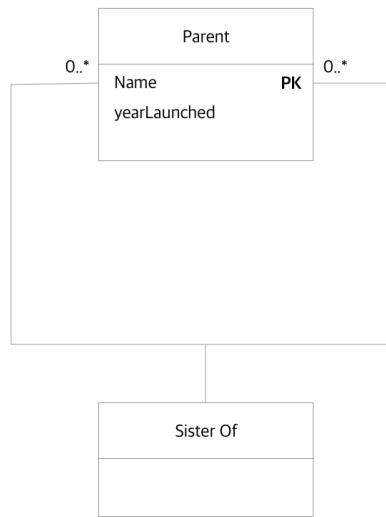
- UML



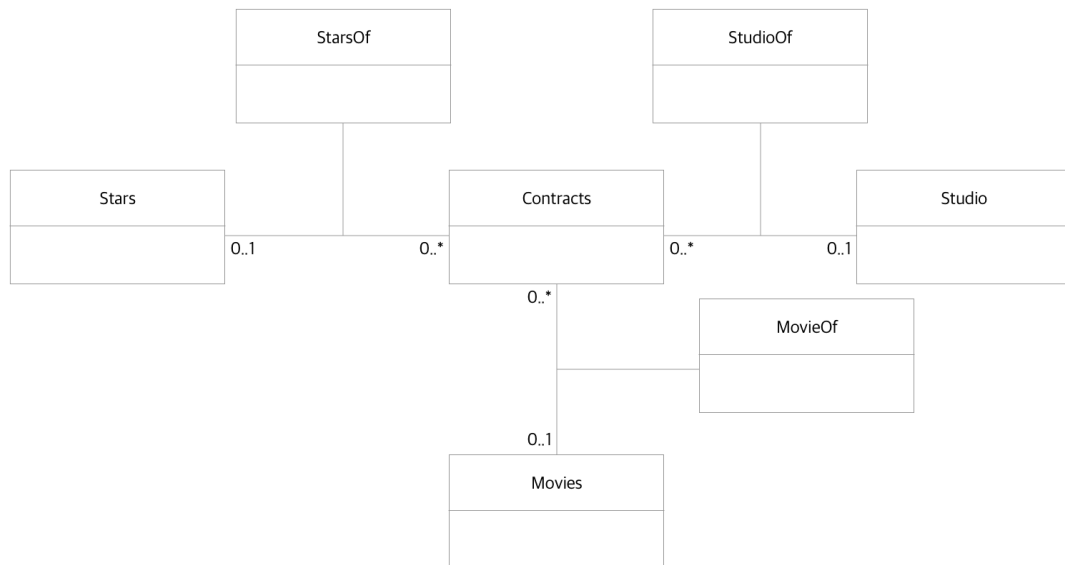
## 7. • E/R Diagram

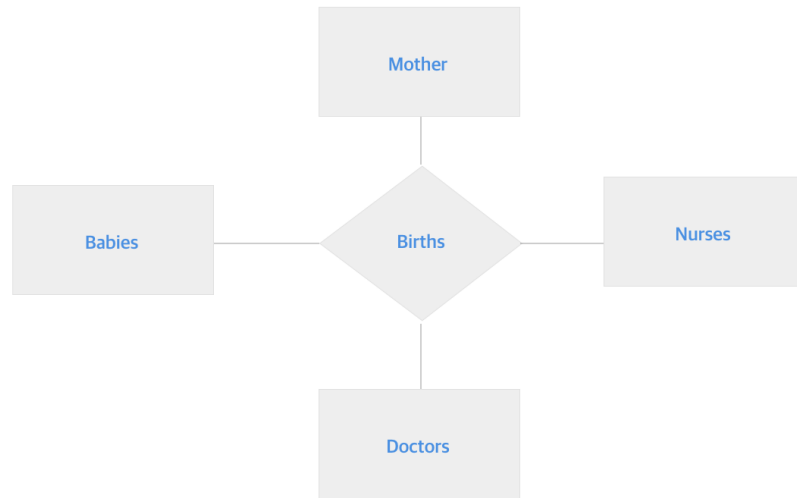


## • UML



8. • UML

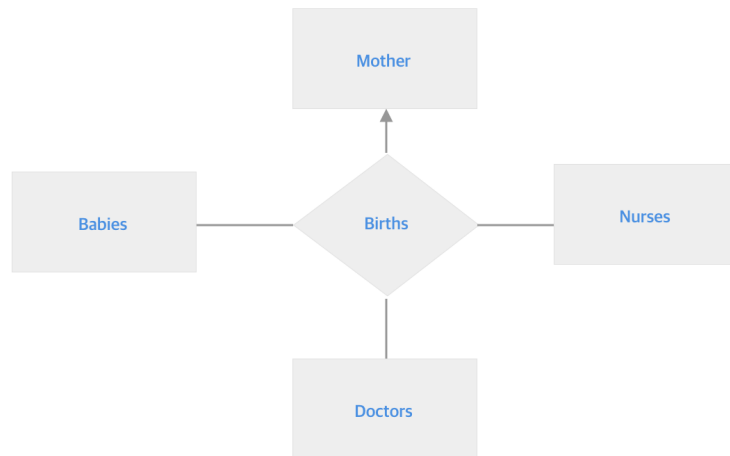




9.

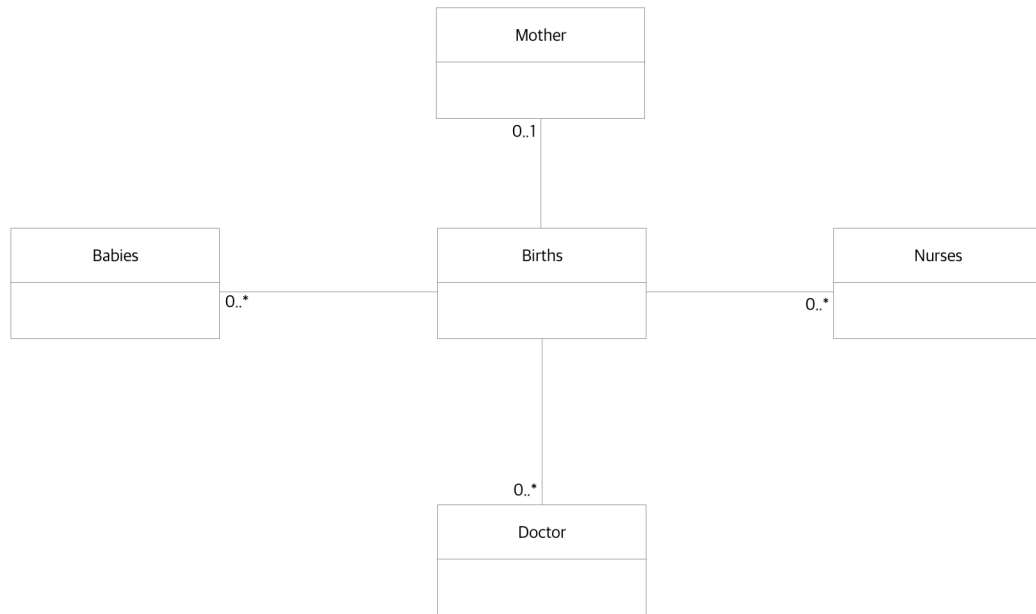
a) **Solution:**

- E/R Model

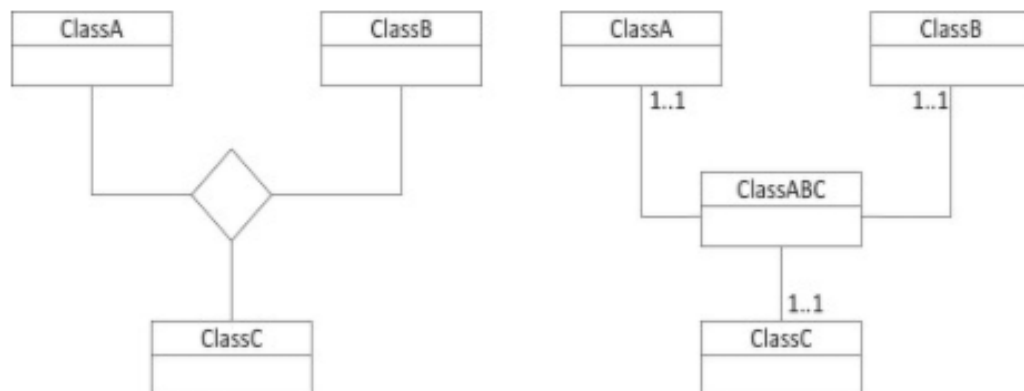


- UML



**Notes:**

- An N-ary association is equivalent to one “central” class and N binary associations connecting the central class to the participant classes of the N-ary association



b)