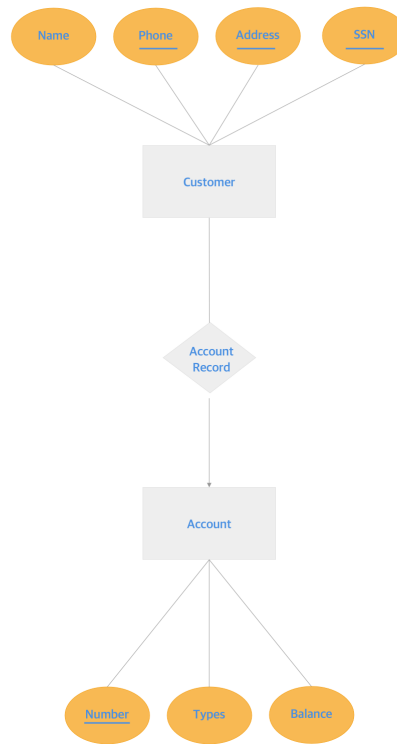


CSC343 Worksheet 15 Solution (Final)

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



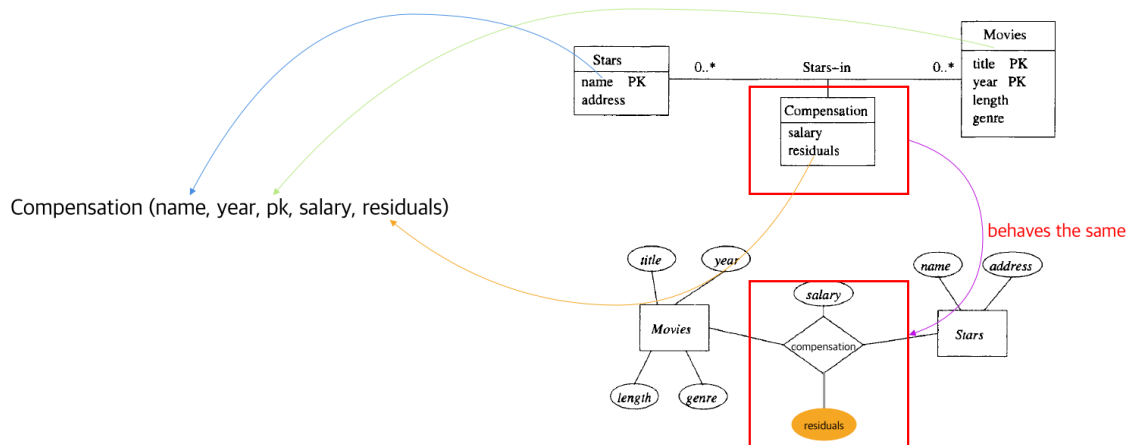
Means one studio can have **at least one** movies
and there could have many more (to infinity!)

- Self-Associations



is the same

- Associations



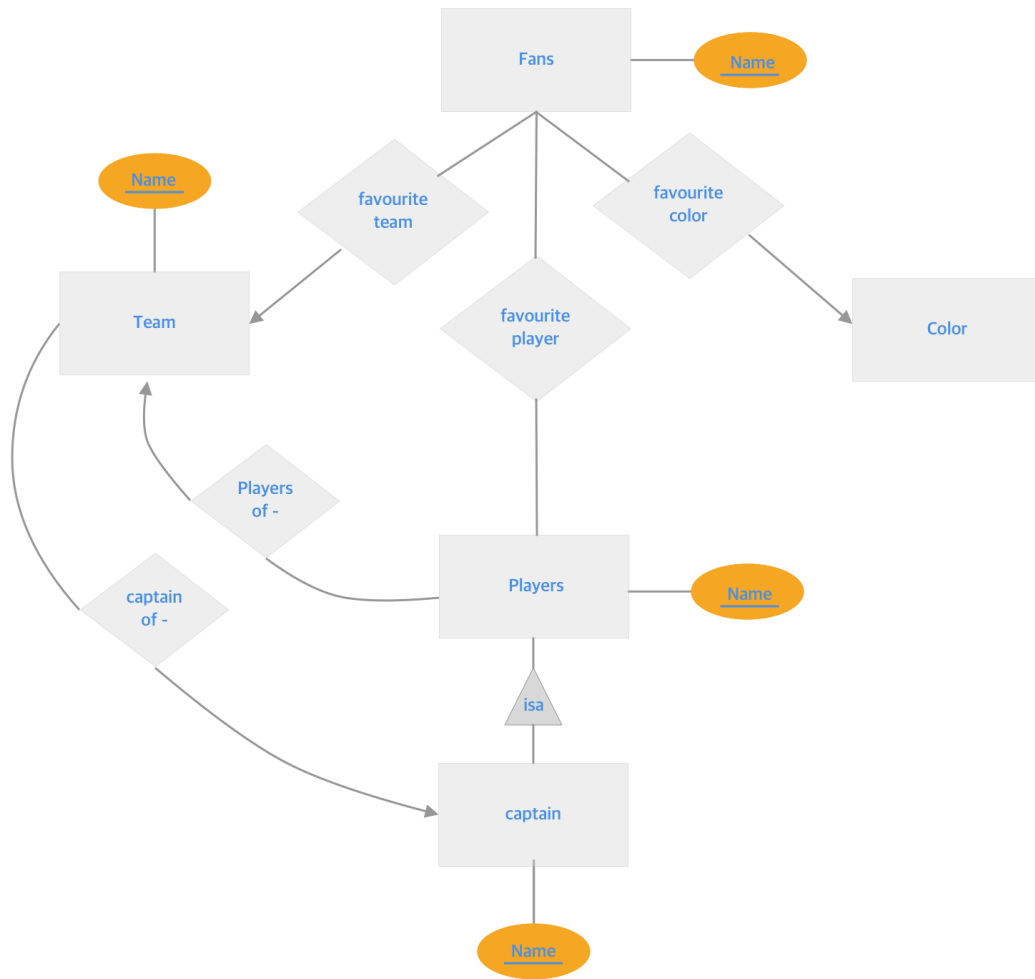
2. a) Solution:



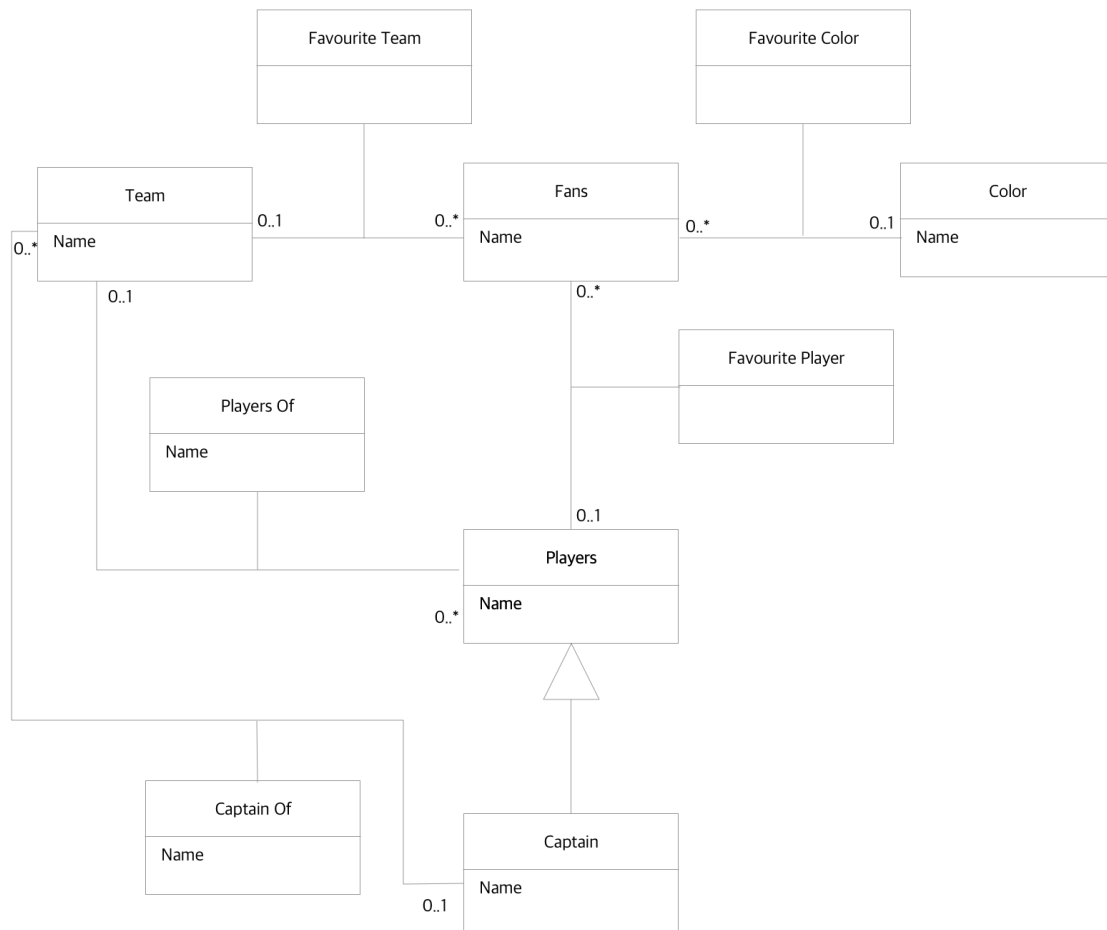
b) Solution:



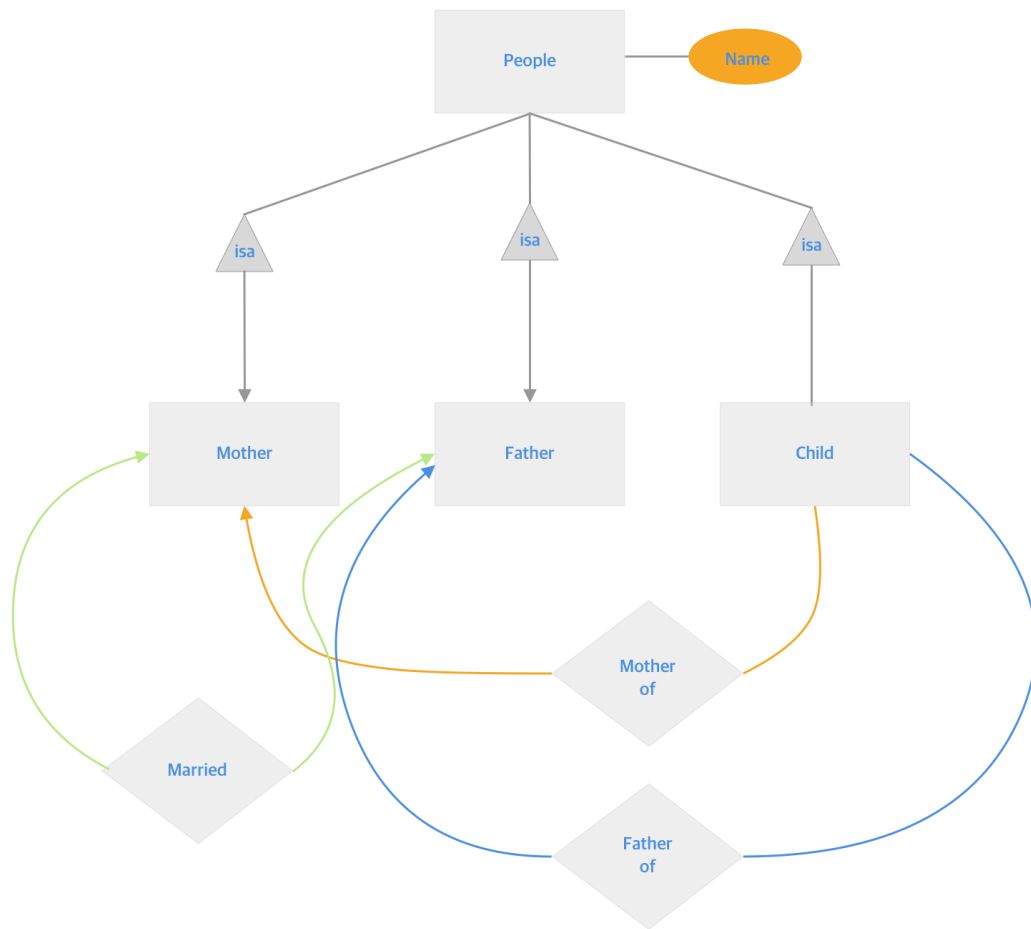
3. • E/R Diagram



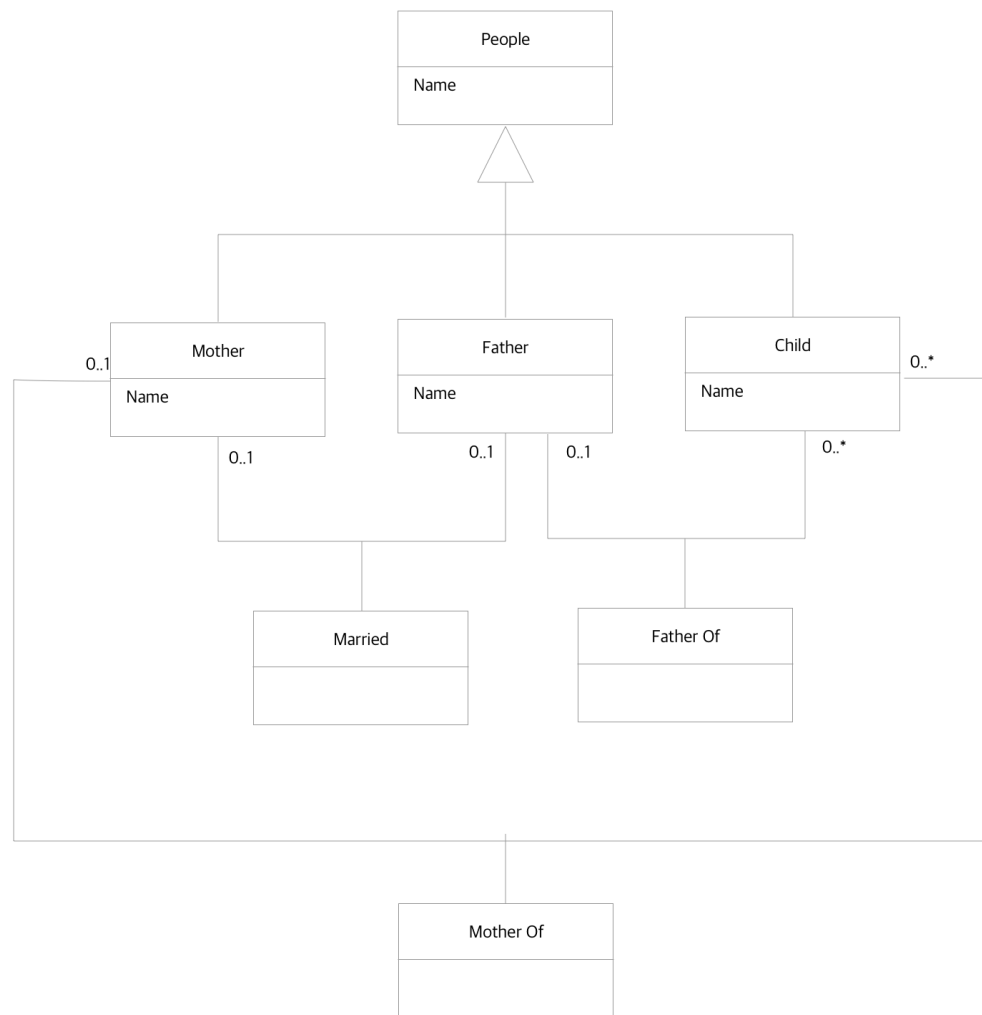
- UML



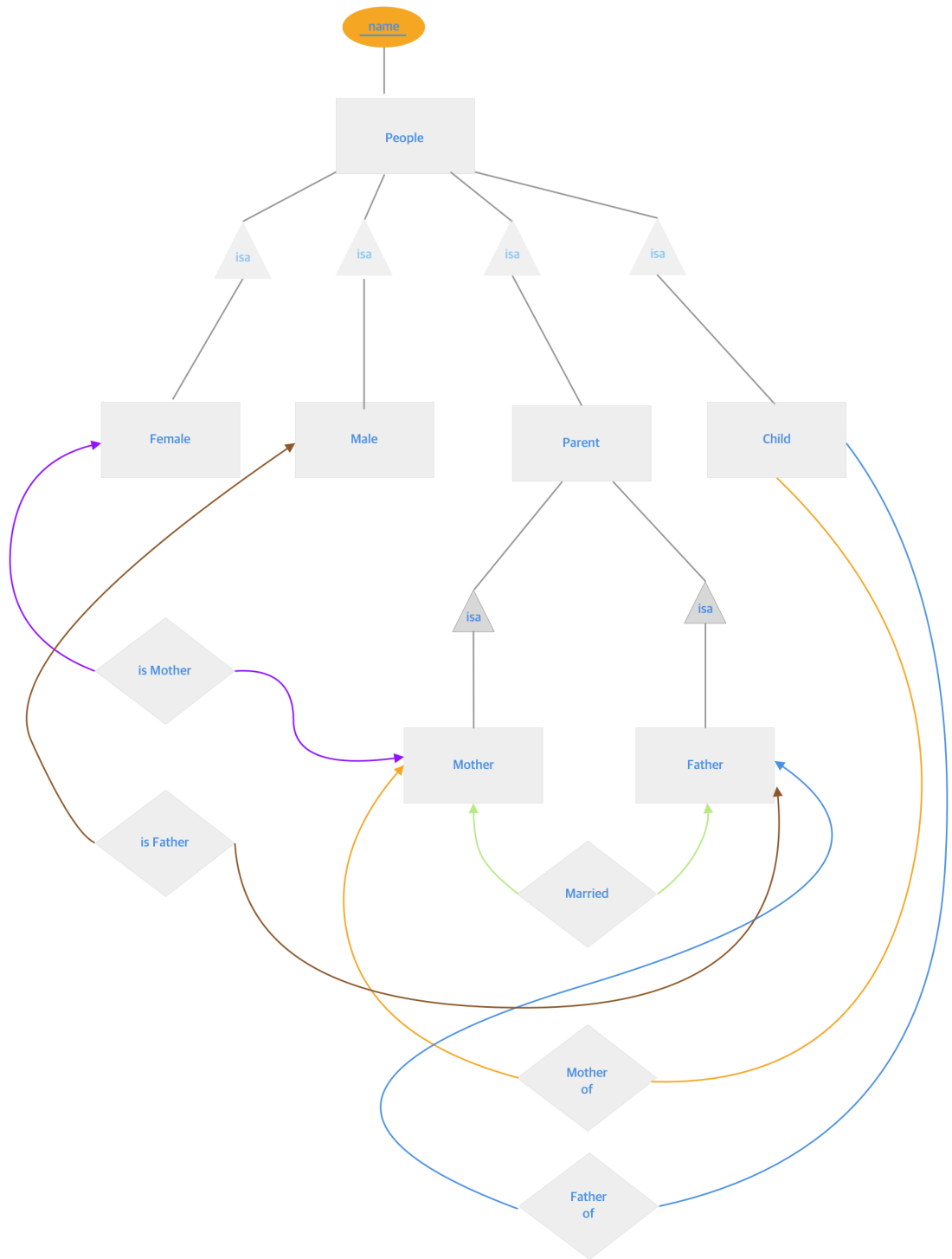
4. • E/R Diagram



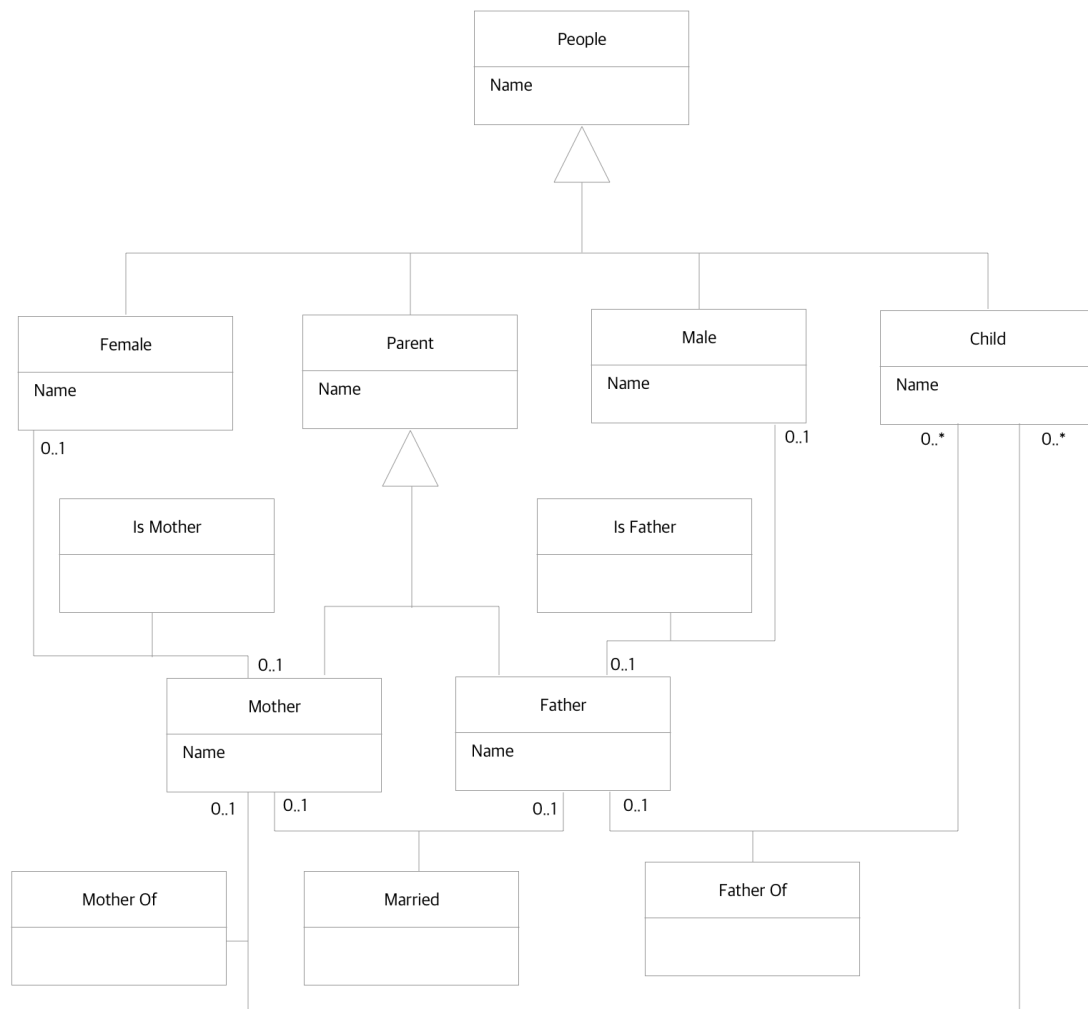
- UML



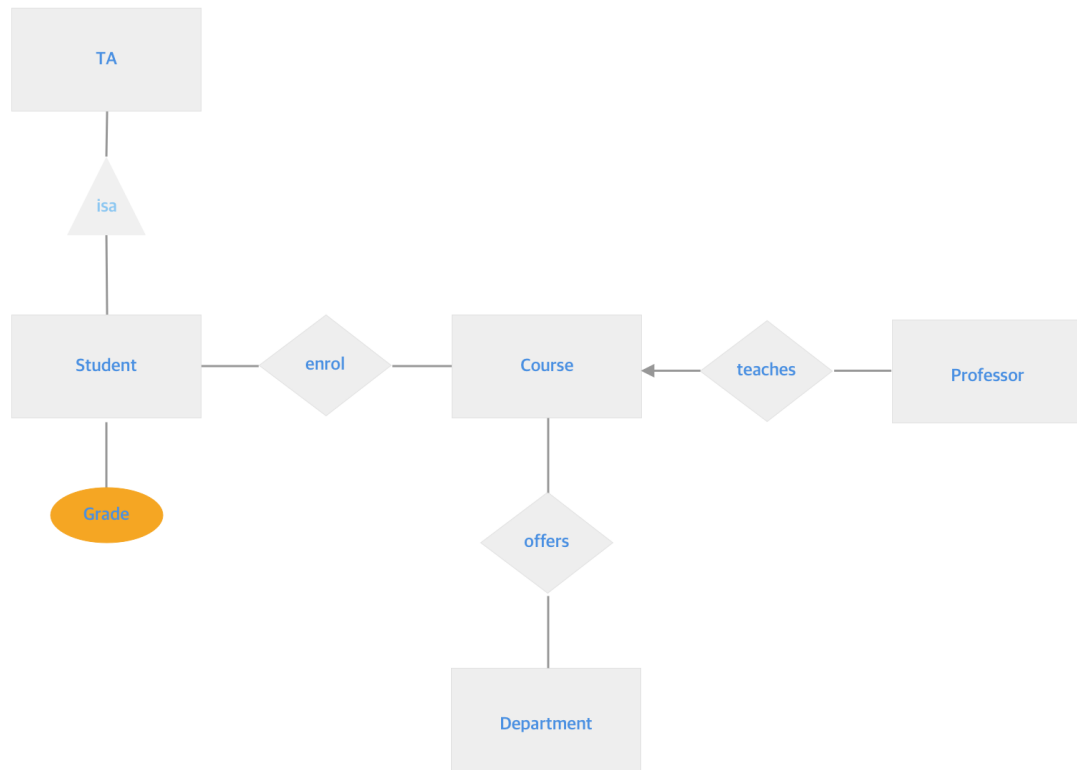
5. • E/R Diagram



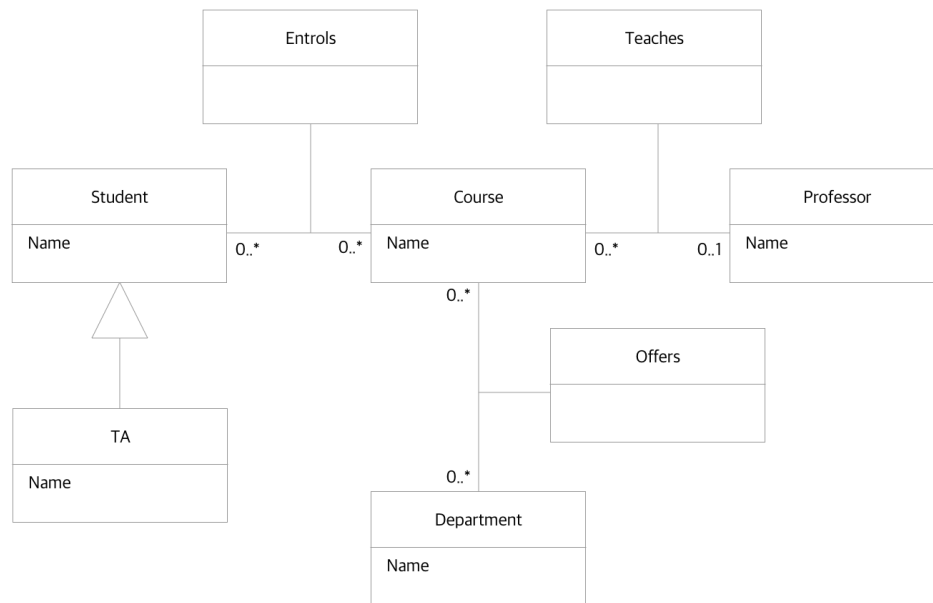
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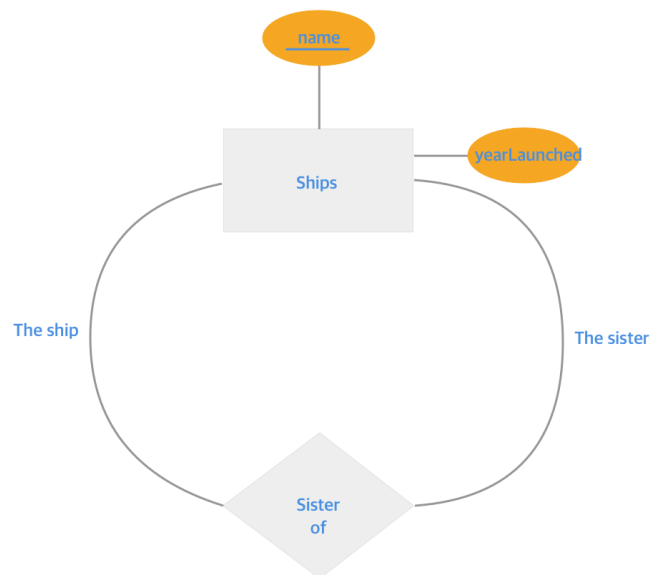
6. • E/R Diagram



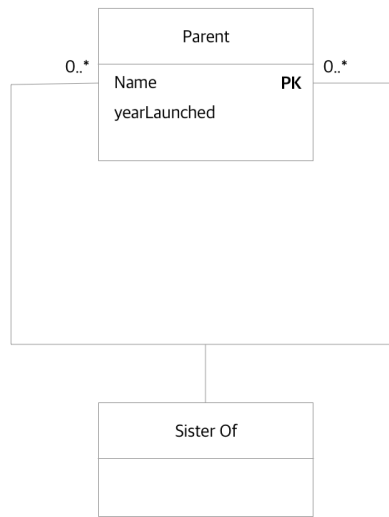
- UML



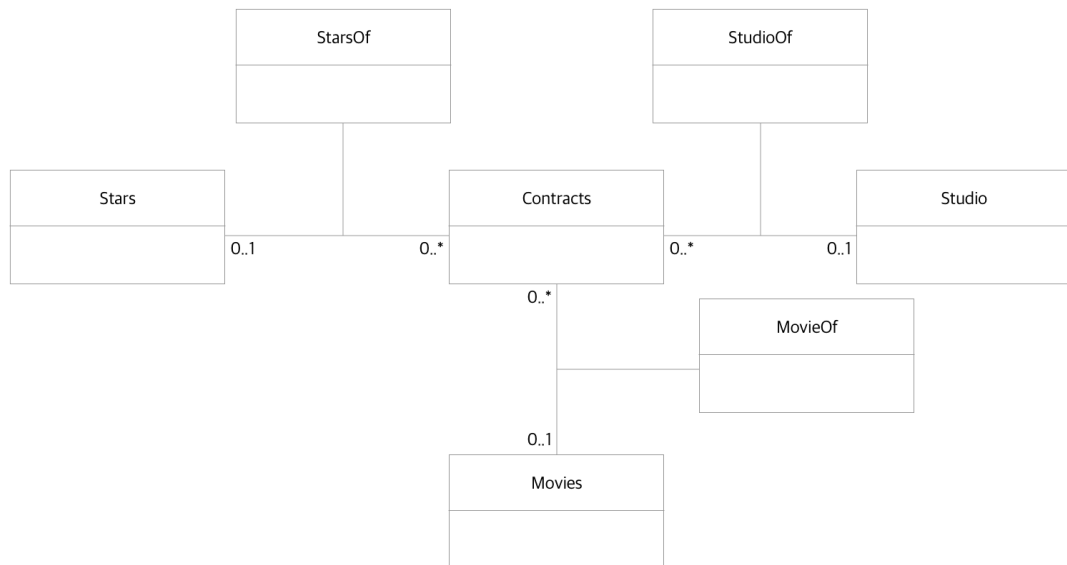
7. • E/R Diagram

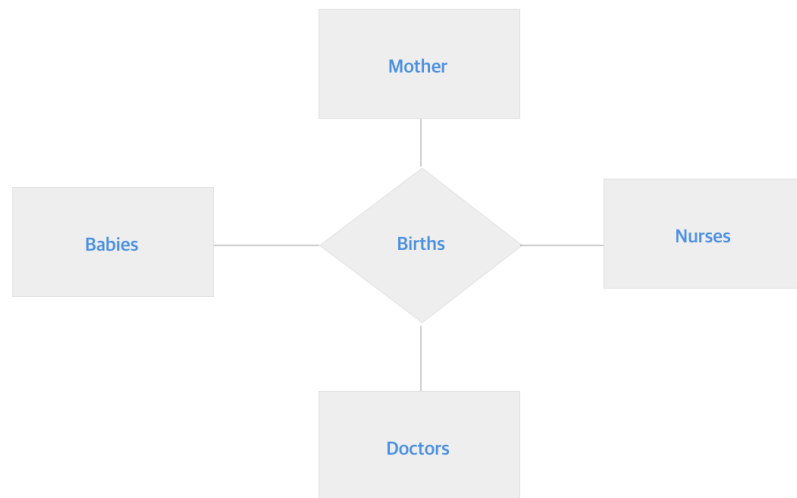


• UML



8. • UML





9.

a)