

# CSC343 Worksheet 15 Solution (Final)

July 14, 2020

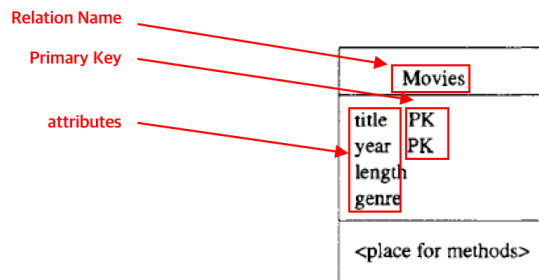
## 1. Notes:

- UML

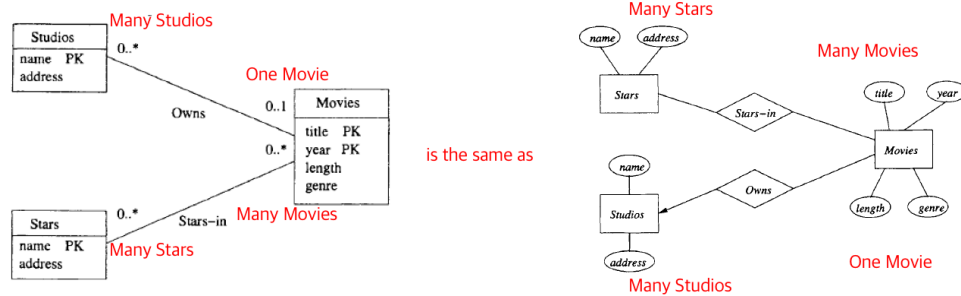
- Was developed originally as a graphical notation for describing software designs in an object-oriented style
- Offers the same as E/R model, with the exception of multiway relationship

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



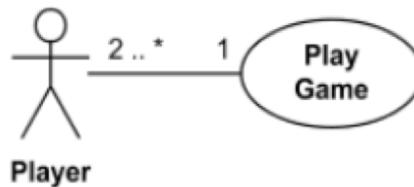
- Associations



### 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

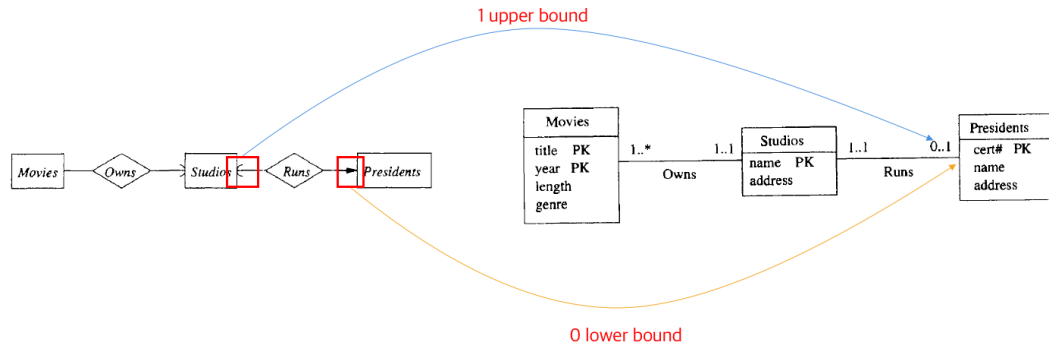
### Example:



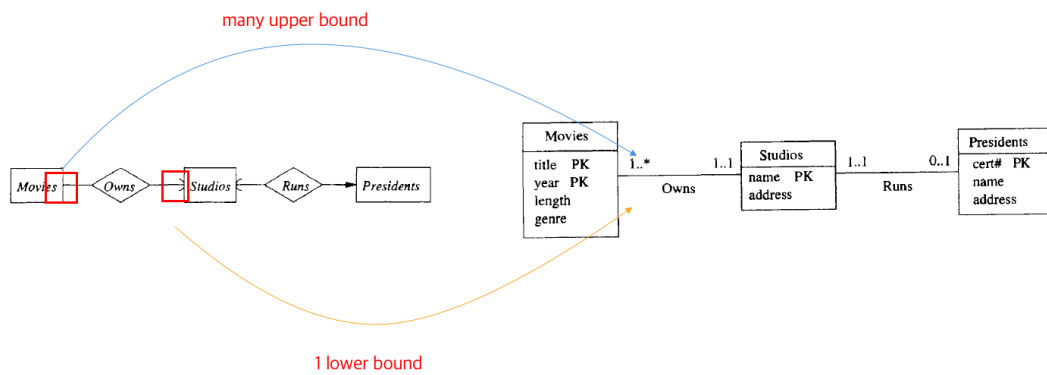
Two or more Player actors are required to initiate one Play Game use case.

### 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!)