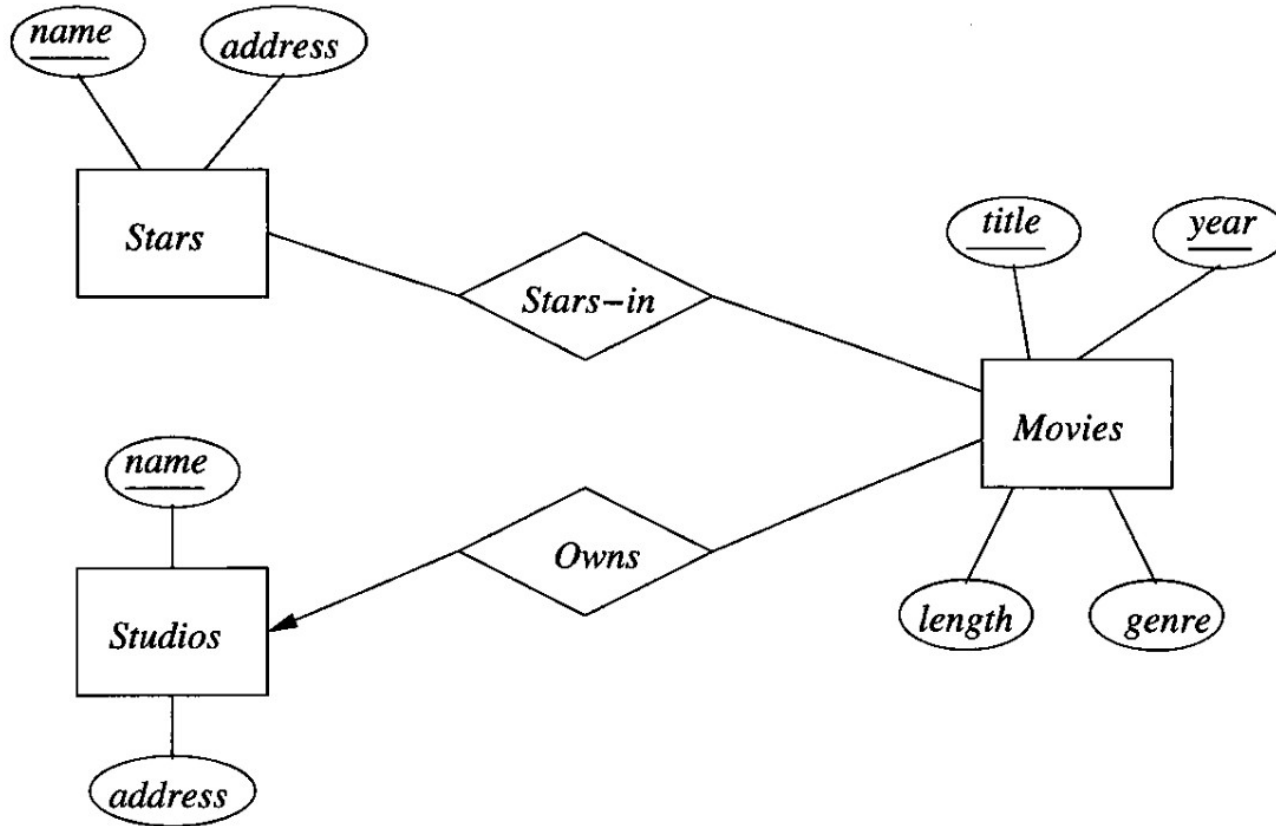# E/R Diagrams
Mapping to Relations

E/R to Relations
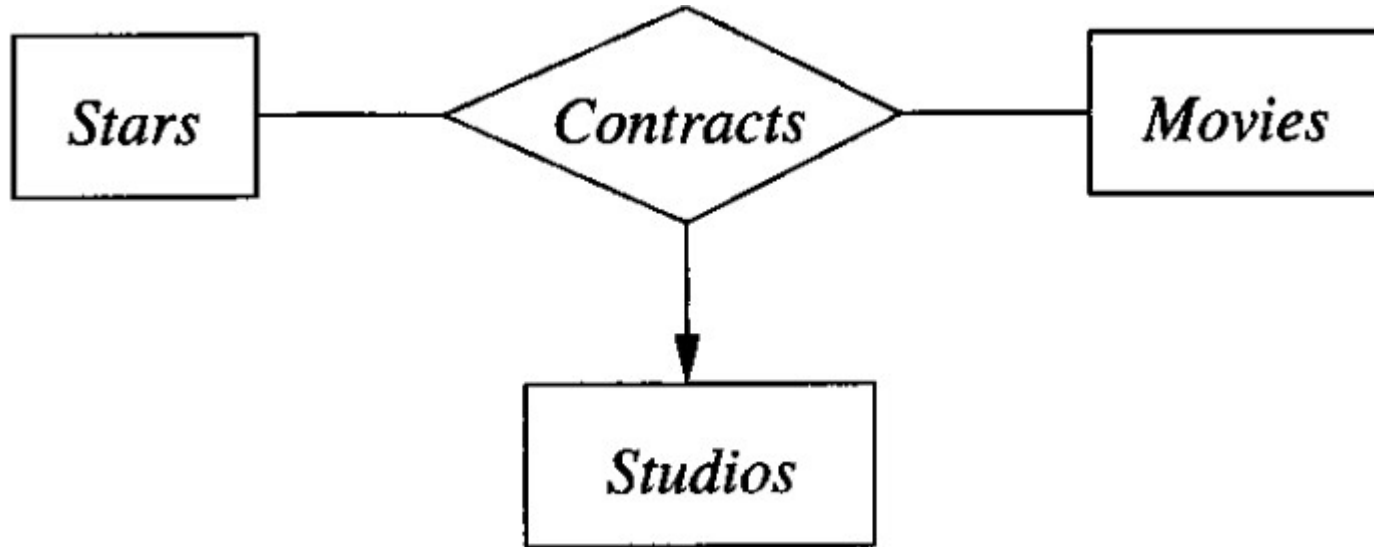

- Entities
  - Stars (**name**, address)
  - Movies (**title**, **year**, length, genre, **studioName**)
  - Studios (**name**, address)

- Many-to-many relationships
  - Stars-in (**starName**, **movieTitle**, **movieYear**)

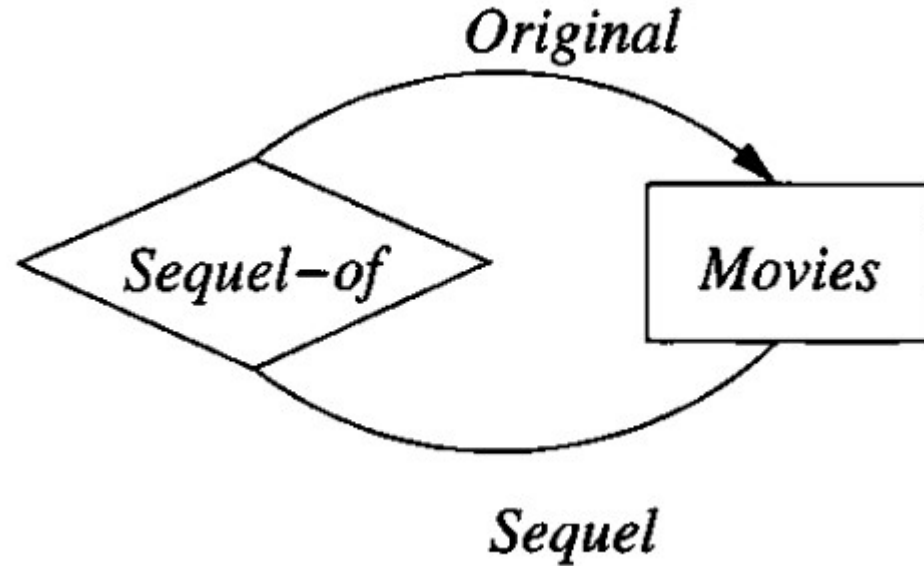# One-to-one (-many) Relationships

- Studios (**name**, address, **presidentName**)
- Presidents (**name**, **studioName**)
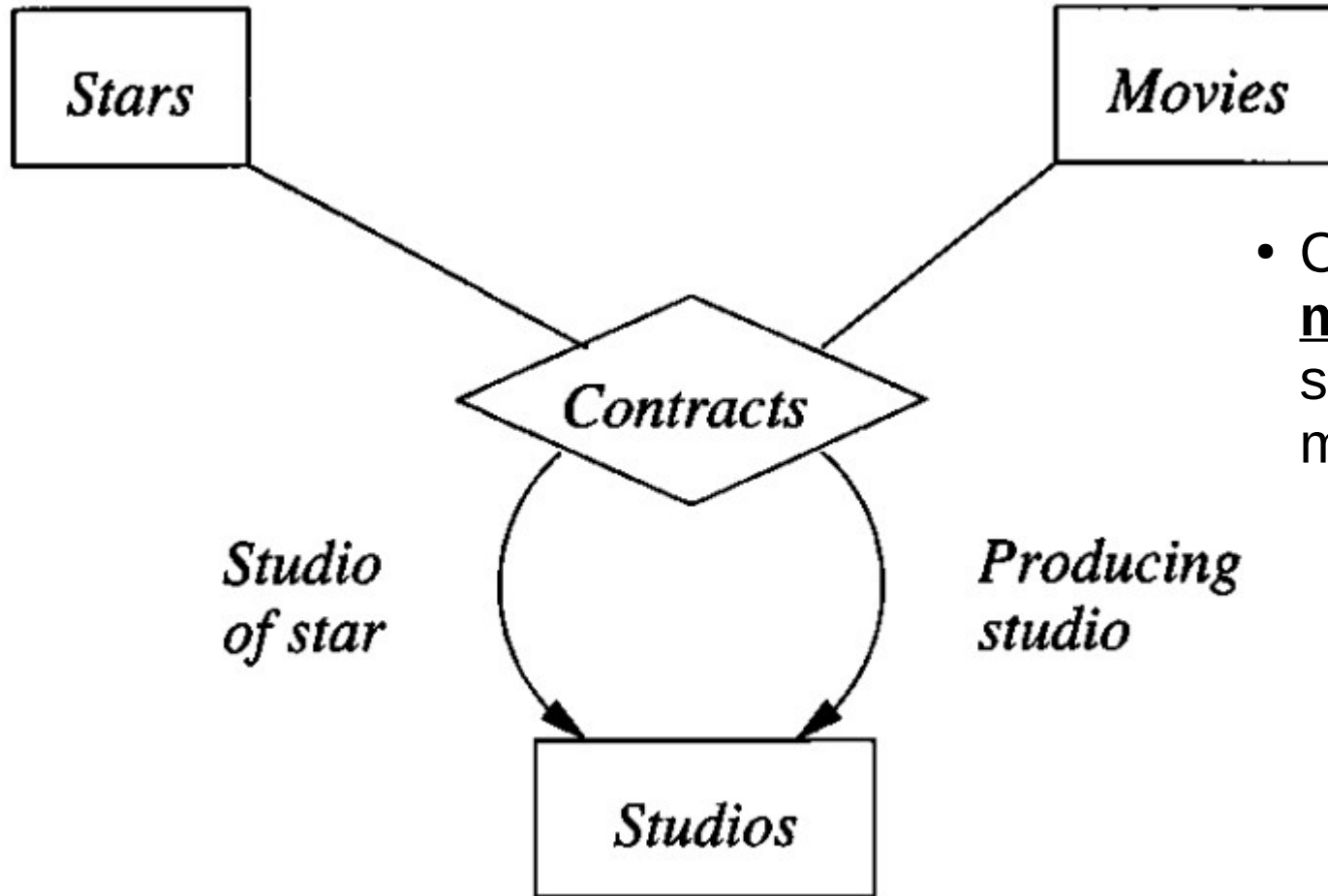
Multi (Three)-Way Relationships

- Contracts (**starName**, **movieTitle**, **movieYear**, studioName)
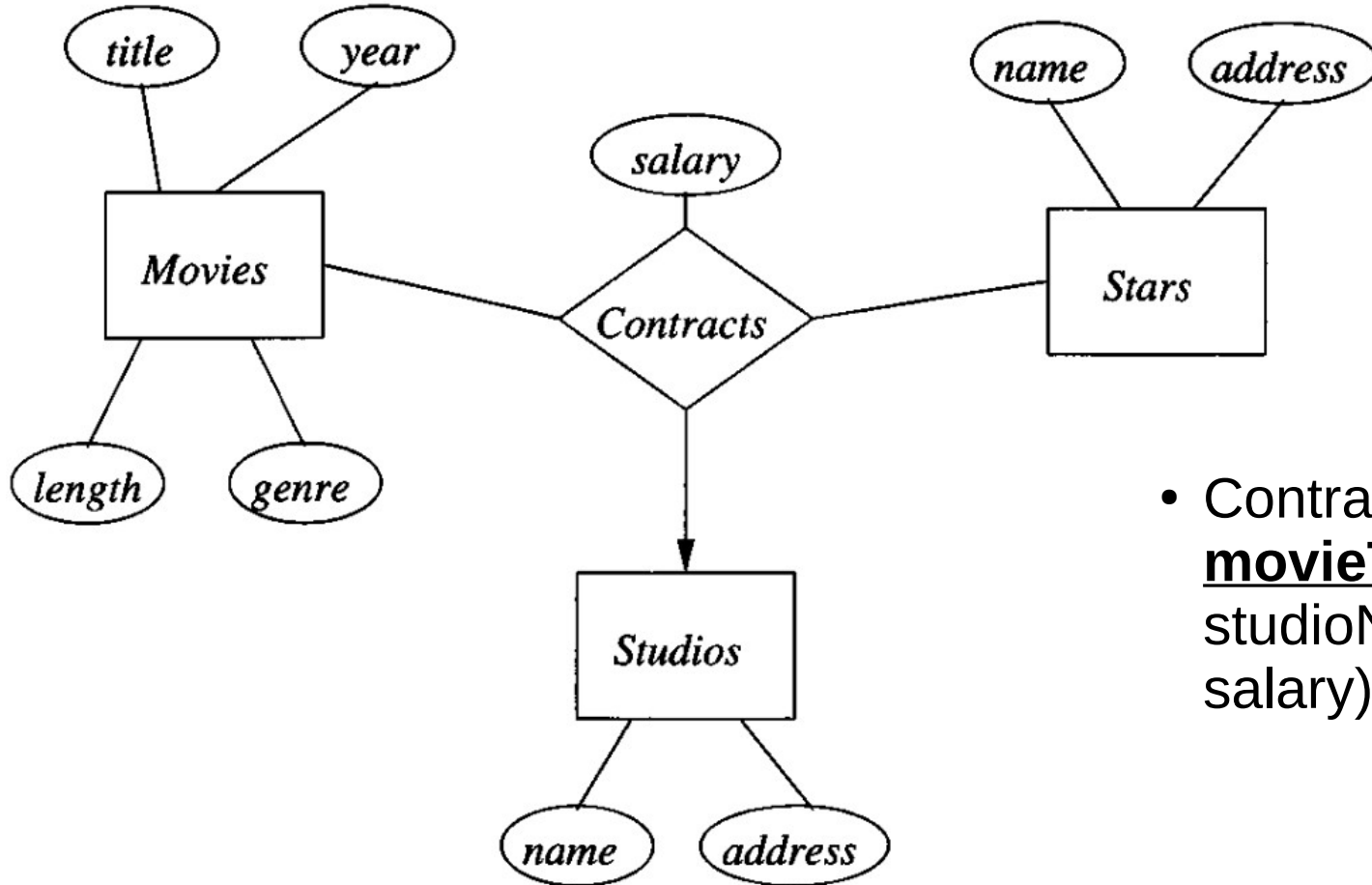
Relationship with Roles

- Movies (**title**, **year**, length, genre, studioName, **originalTitle**, **originalYear**)
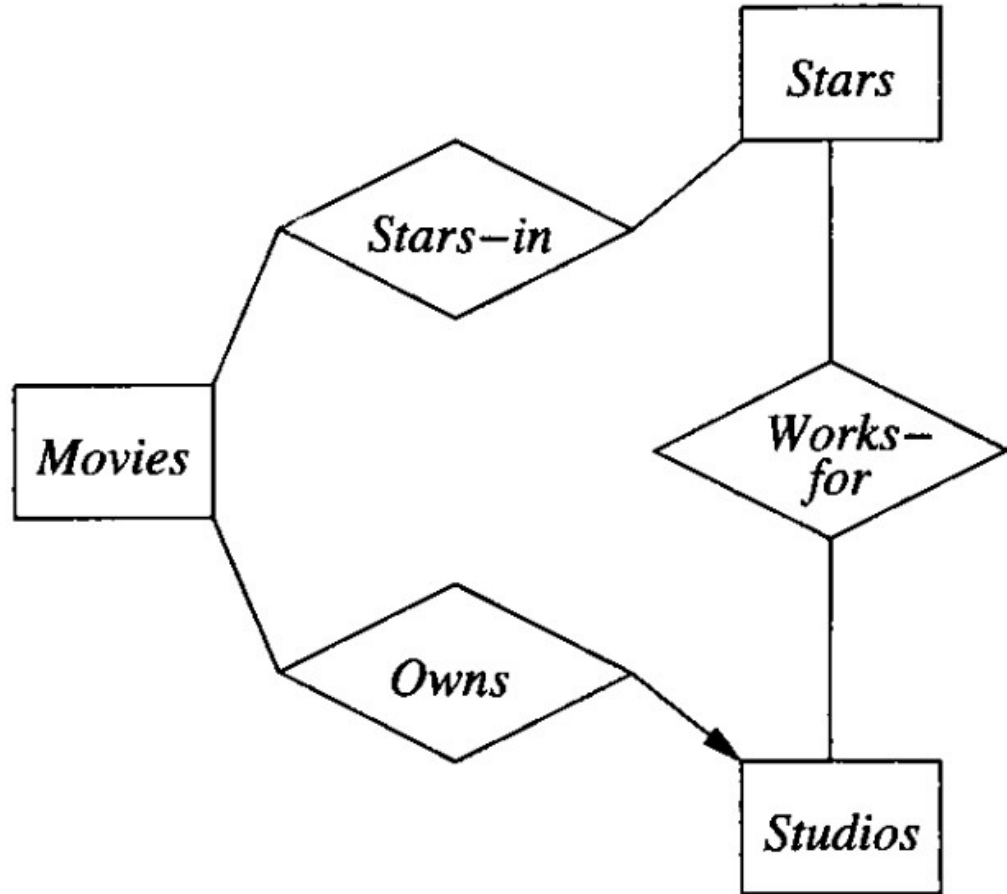
Multi (Four)-Way Relationships

- Contracts (**starName**, **movieTitle**, **movieYear**, starStudioName, movieStudioName)
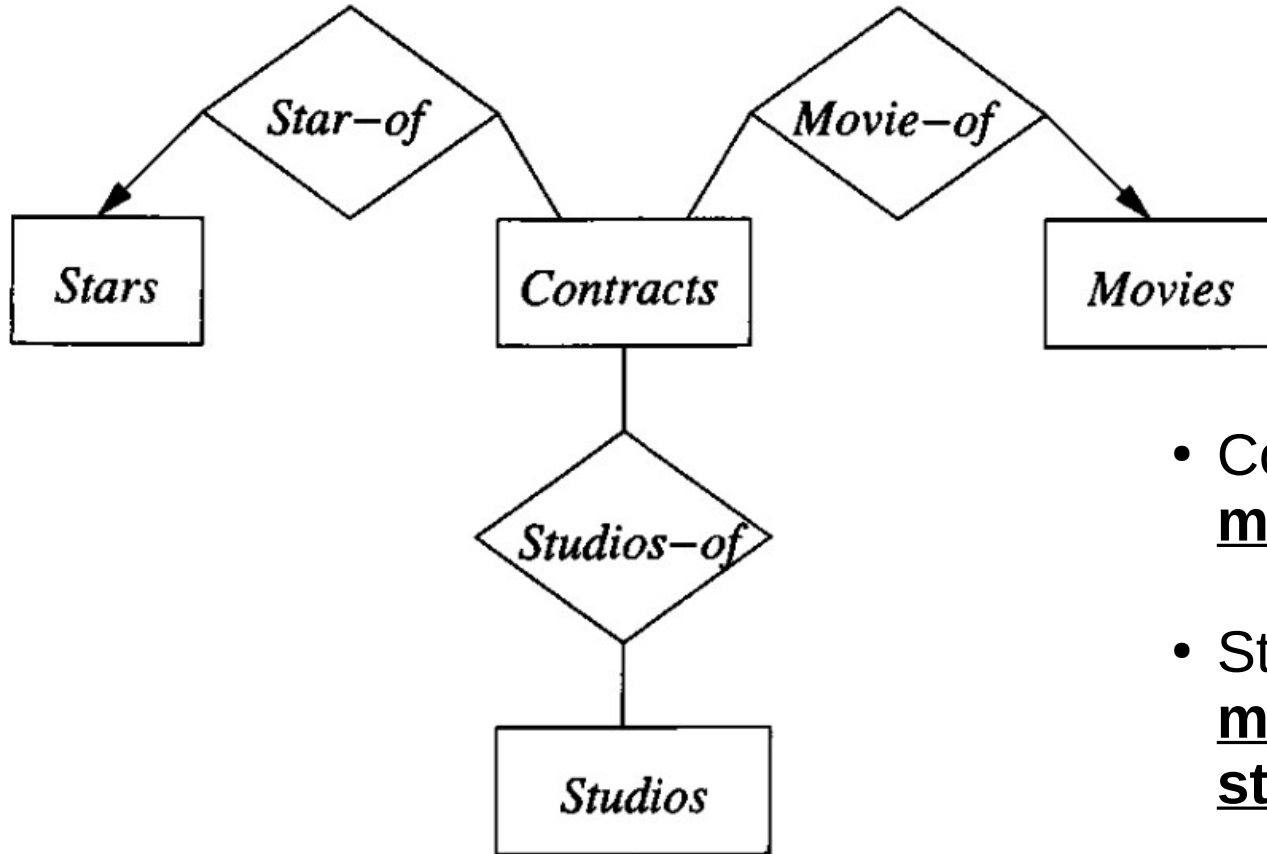
Relationships with Attributes

- Contracts (**starName**, **movieTitle**, **movieYear**, studioName, salary)
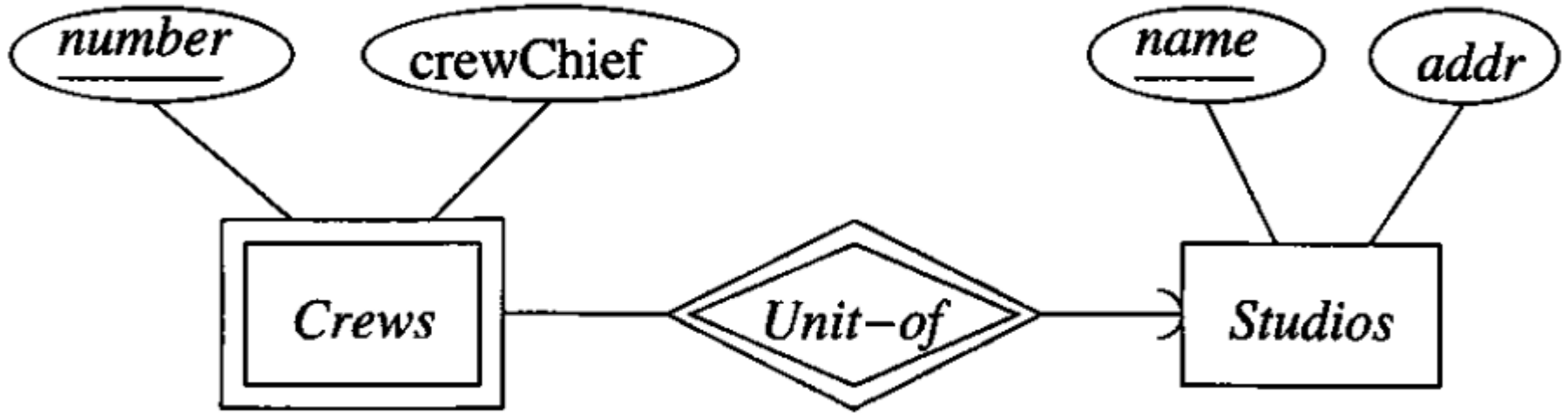
E/R to Relations

- Works-for (**starName**, **studioName**)

Multi-Way Relationships
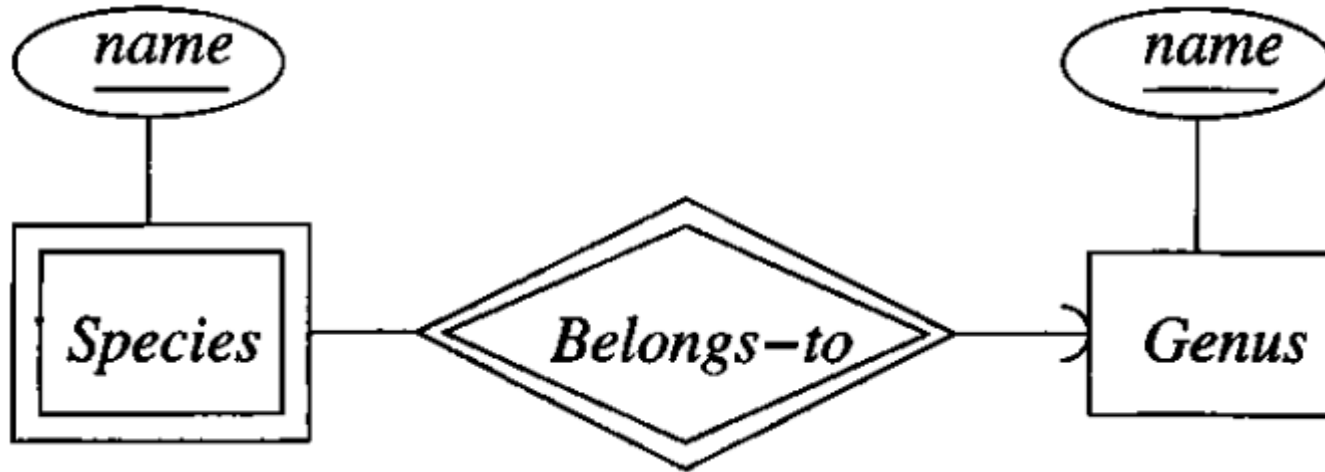

- Contracts (**starName**, **movieTitle**, **movieYear**)

- Studios-of (**starName**, **movieTitle**, **movieYear**, **studioName**)
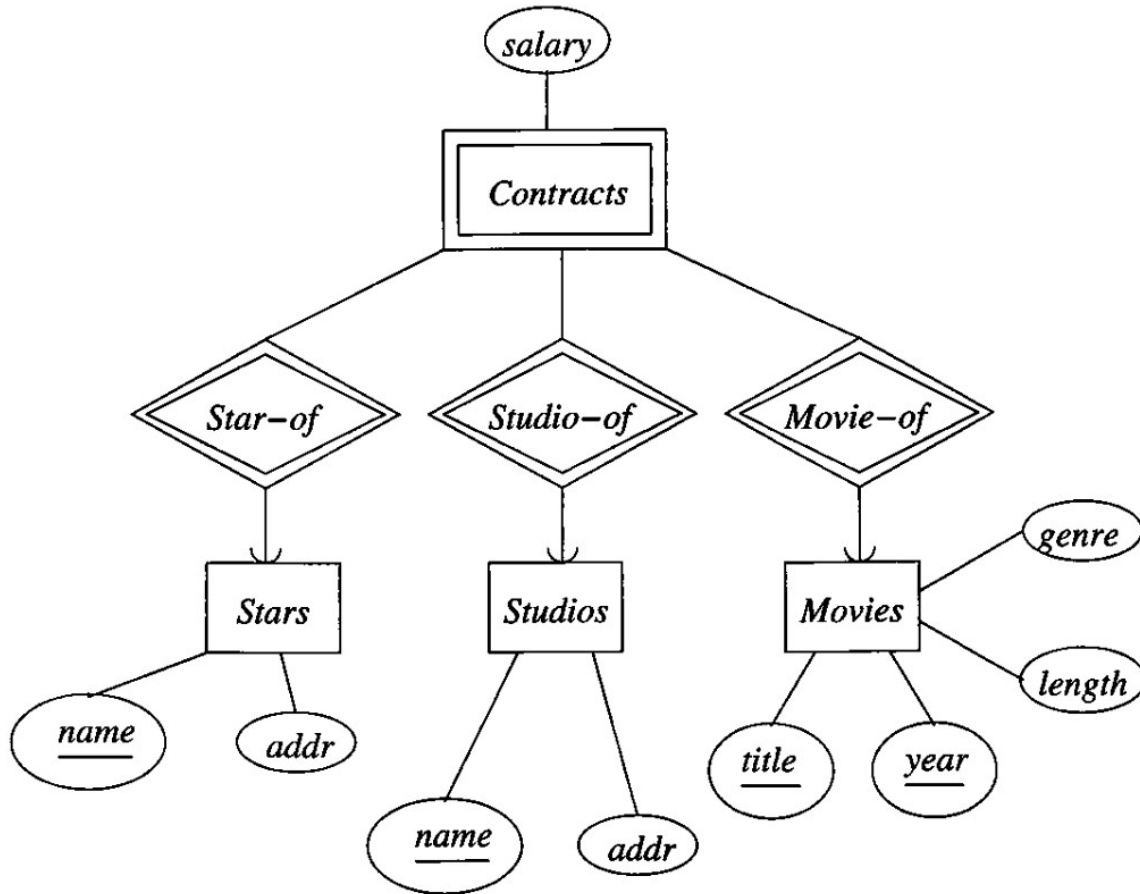
Weak Entities (1)

- Studios (**name**, addr)
- Crews (**studioName**, **number**, crewChief)

Weak Entities (2)

- Genus (**name**)
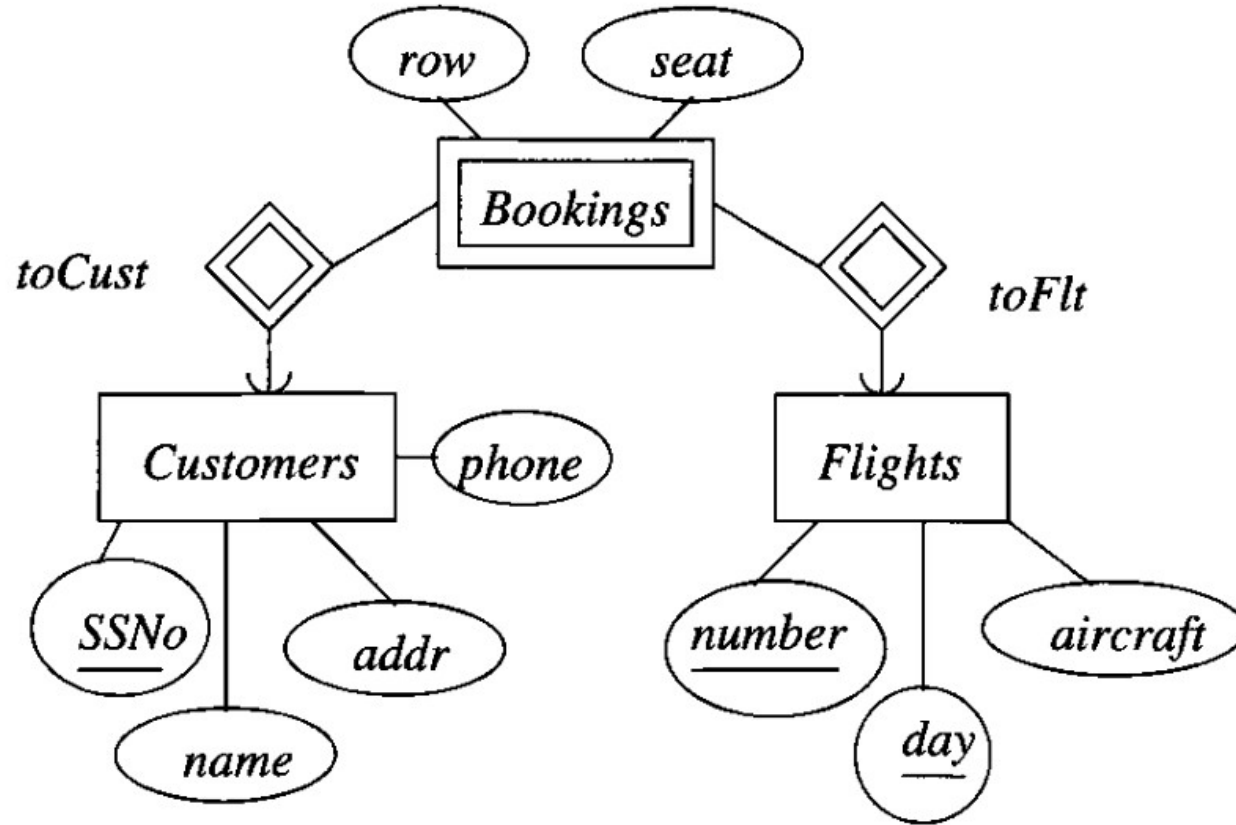- Species (**genusName**, **speciesName**)

Weak Entities (3)

- Stars (**name**, addr)

- Studios (**name**, addr)

- Movies (**title**, **year**, genre, length)

- Contracts (**starName**, **studioName**, **movieTitle**, **movieYear**, salary)
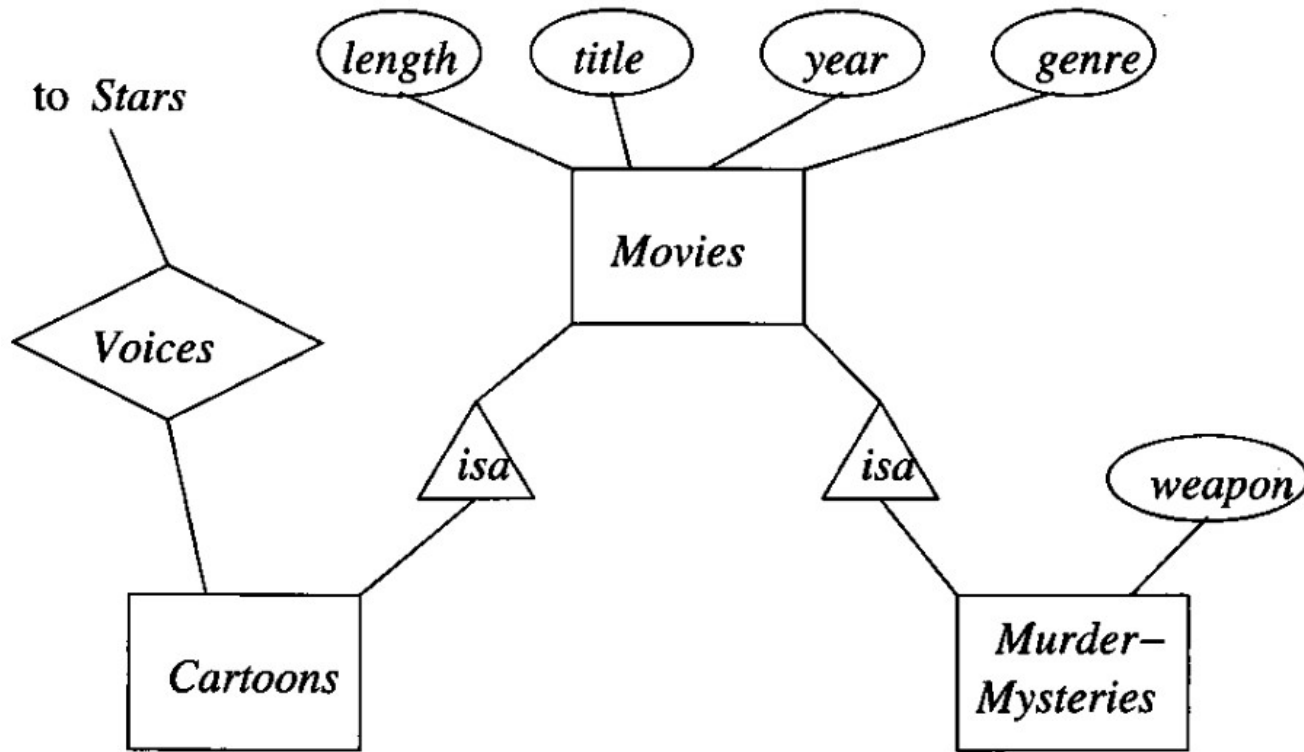
Example (1)

- Customers (**SSNo**, name, addr, phone)

- Flights (**number**, **day**, aircraft)

- Bookings (**custSSNo**, **flightNo**, **flightDay**, row, seat)
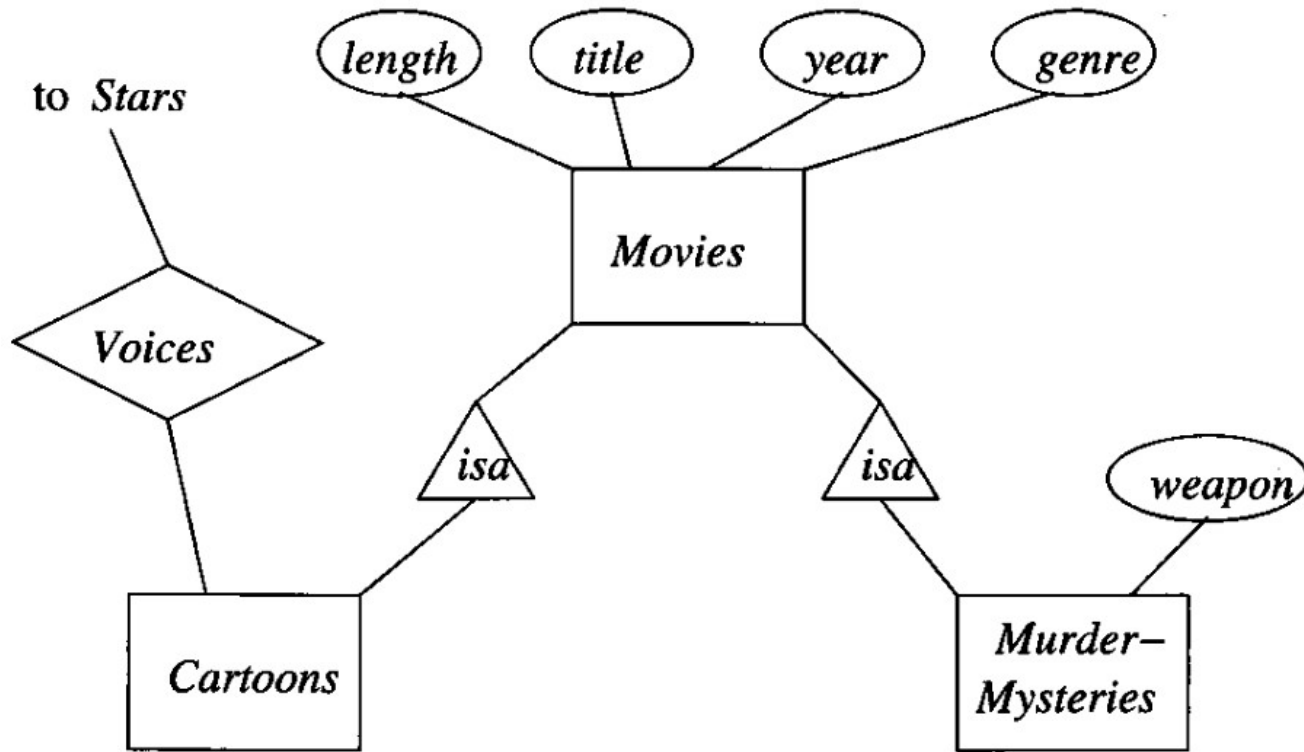
Example (2)

- Ships (**name**, yearLaunched)

- Sister-of (**shipName**, **sisterShipName**)
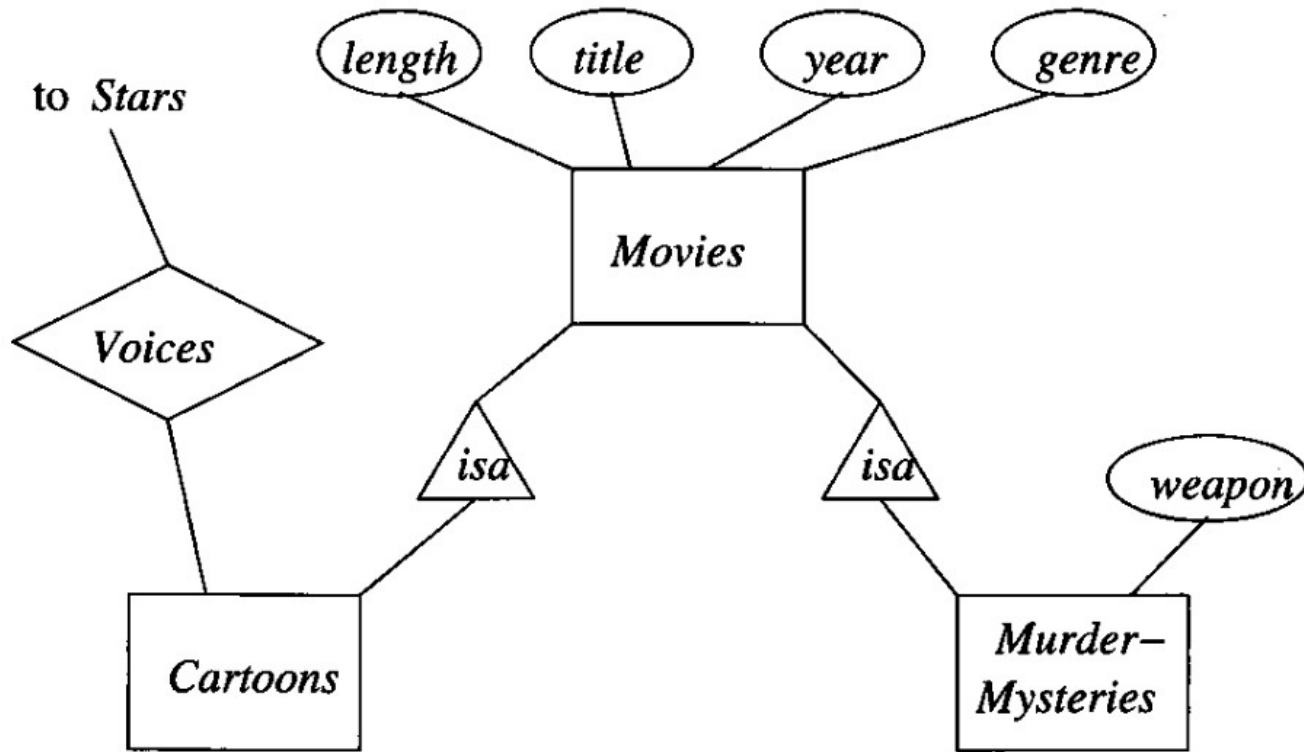
ISA Relationships: E/R Style

- Movies (**title**, **year**, genre, length)
- Cartoons (**title**, **year**)
- Murder-Mysteries (**title**, **year**, weapon)

- Stars (**name**, address)
- Voices (**title**, **year**, **starName**)
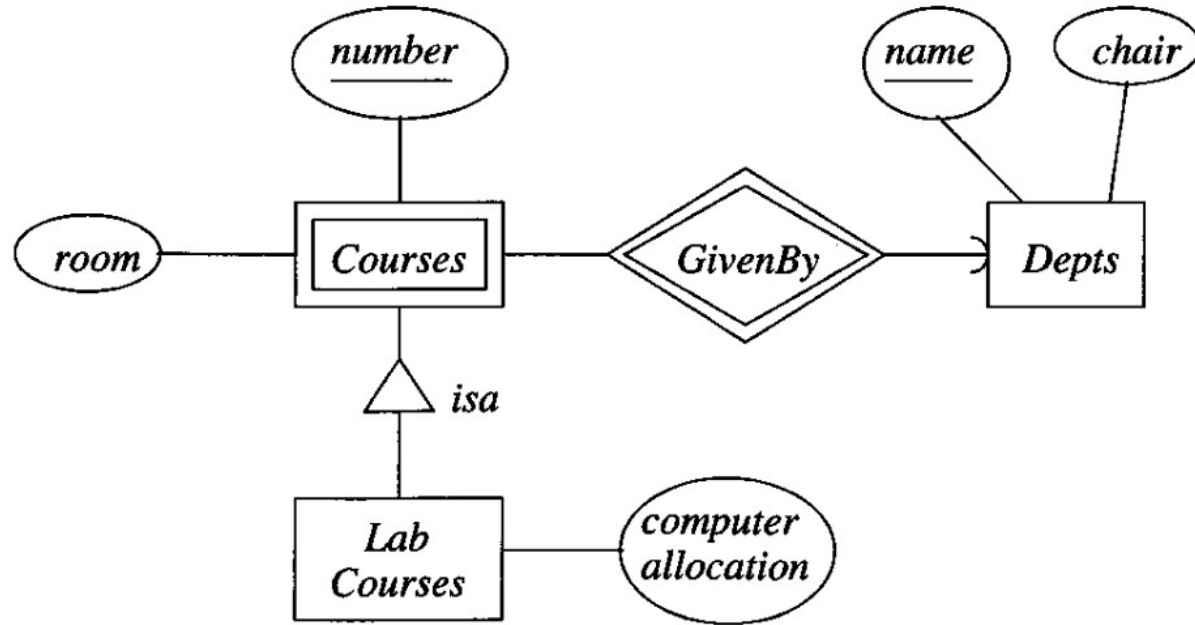
ISA Relationships: Object-Oriented

- Movies (**title**, **year**, genre, length)
- Cartoons (**title**, **year**, genre, length)
- Murder-Mysteries (**title**, **year**, genre, length, weapon)
- Cartoons-Murder-Mysteries (**title**, **year**, genre, length, weapon)
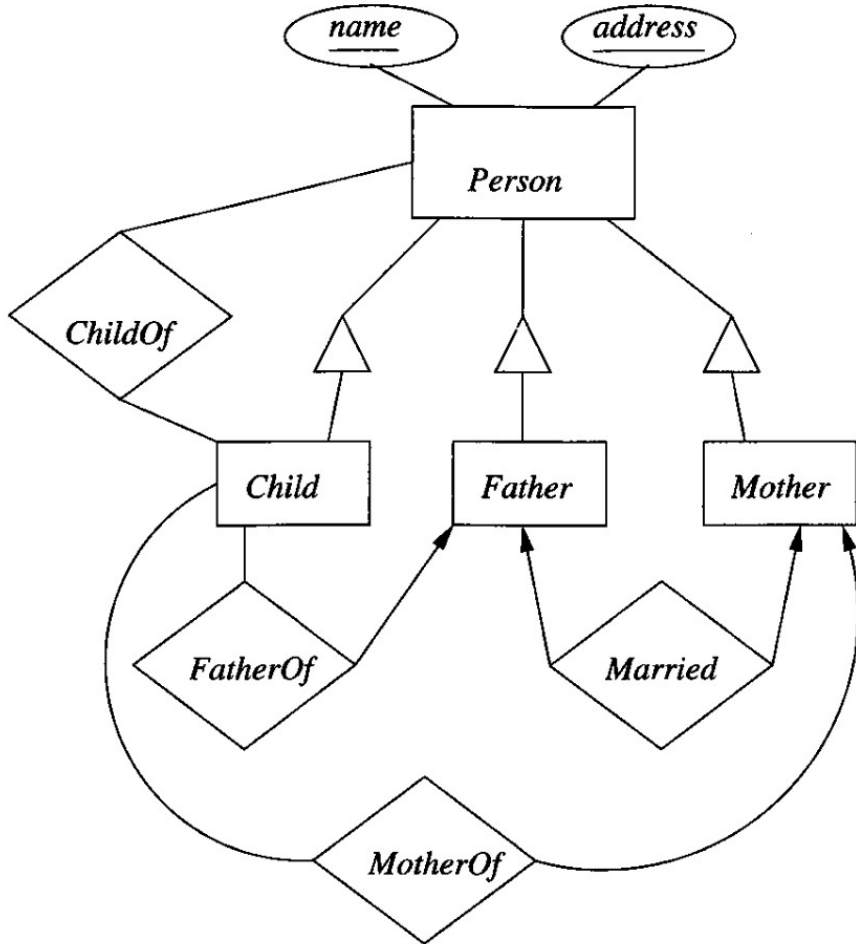
ISA Relationships: NULLs

- Movies (**title**, **year**, genre, length, weapon)

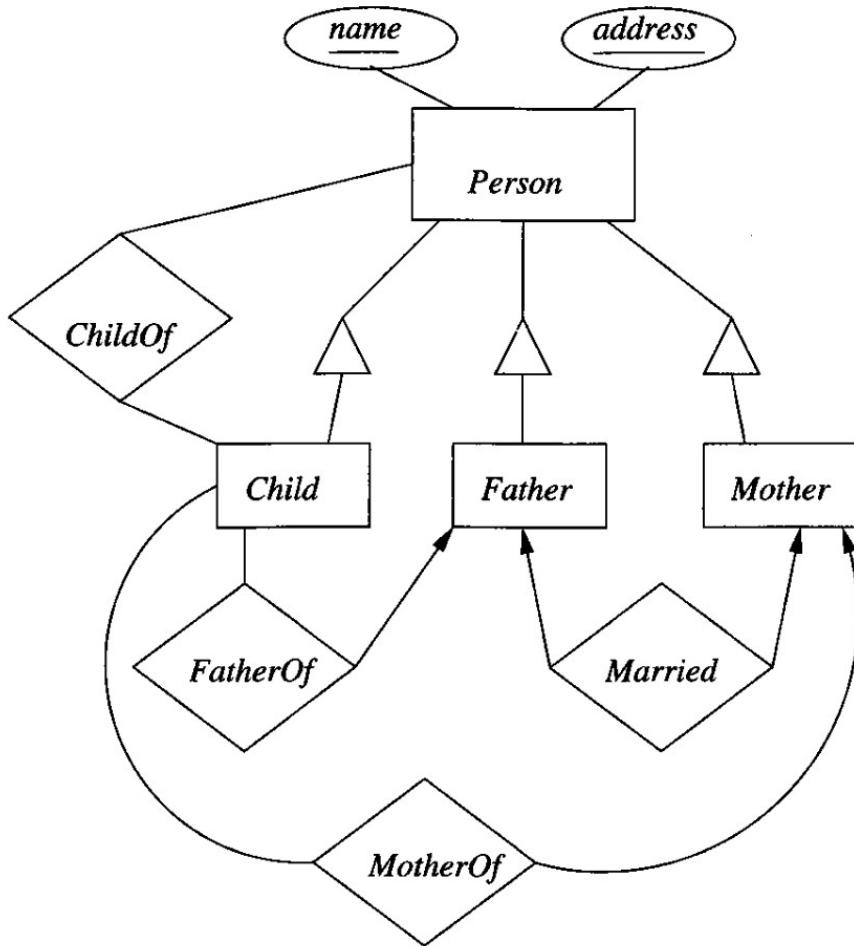# Example (3)

- Depts (**name**, chair)

- E/R style
  - Courses (**deptName**, **number**, room)
  - LabCourses (**deptName**, **number**, computerAllocation)

- Object-oriented
  - Courses (**deptName**, **number**, room)
  - LabCourses (**deptName**, **number**, room, computerAllocation)

- NULLs
  - Courses (**deptName**, **number**, room, computerAllocation)

Example (4) E/R-style

- Person (**name**, **address**)

- Child (<u>**name**</u>, <u>**address**</u>, fName, fAddr, mName, mAddr**)**

- Father (<u>**name**</u>, <u>**address**</u>, spouseName, spouseAddr)

- Mother (<u>**name**</u>, <u>**address**</u>)

- ChildOf (**pName**, **pAddr**, **cName**, **cAddr**)

Example (4) Object-Oriented

- Person (**name**, **address**)

- Child (**name**, **address**, fName, fAddr, mName, mAddr)

- Father (**name**, **address**, spouseName, spouseAddr)

- Mother (**name**, **address**)

- ChildFather (**name**, **address**, fName, fAddr, mName, mAddr, spouseName, spouseAddr)

- ChildMother (**name**, **address**, fName, fAddr, mName, mAddr)

Example (4) NULLs

- Person (**name**, **address**, fName, fAddr, mName, mAddr, spouseFName, spouseFAddr, spouseMName, spouseMAddr)