

ASSOCIATION

CLASS ASSOCIATION [INHERITANCE]

OBJECT ASSOCIATION [COMPOSITION]

Association

- ④ Objects in an object model interact with each other
- ④ Usually an object provides services to several other objects
- ④ An object keeps associations with other objects to delegate tasks

Kinds of Association

- ⦿ Class Association
 - Inheritance
- ⦿ Object Association
 - Simple Association
 - Composition
 - Aggregation

Simple Association

- Is the weakest link between objects
- Is a reference by which one object can interact with some other object
- Is simply called as “association”

Kinds of Simple Association

- ⦿ w.r.t navigation
 - One-way Association
 - Two-way Association
- ⦿ w.r.t number of objects
 - Binary Association
 - Ternary Association
 - N-ary Association

One-way Association

- ④ We can navigate along a single direction only
- ④ Denoted by an arrow towards the server object

Example – Association



- Ali lives in a House

Example – Association



- Ali drives his Car

Two-way Association

- ④ We can navigate in both directions
- ④ Denoted by a line between the associated objects

Example – Two-way Association



- Employee works for company
- Company employs employees

Example – Two-way Association



- Yasir is a friend of Ali
- Ali is a friend of Yasir

Binary Association

- ⦿ Associates objects of exactly two classes
- ⦿ Denoted by a line, or an arrow between the associated objects

Example – Binary Association



- Association “works-for” associates objects of exactly two classes

Example – Binary Association

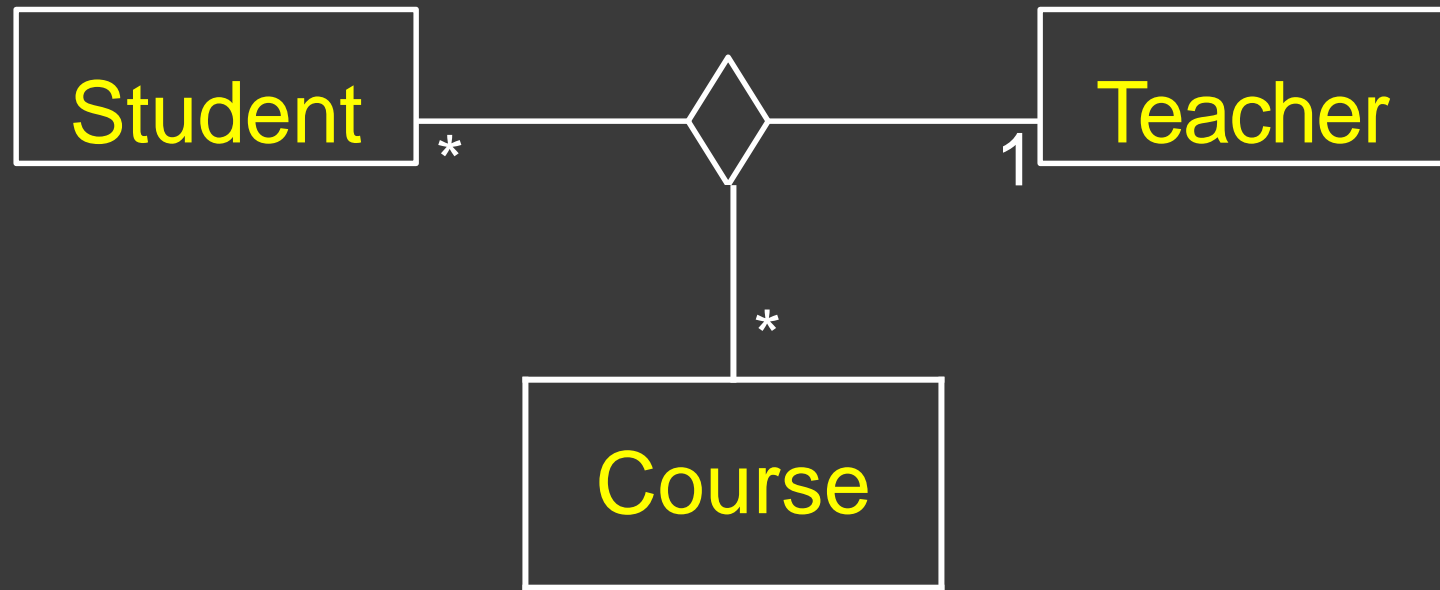


- Association “drives” associates objects of exactly two classes

Ternary Association

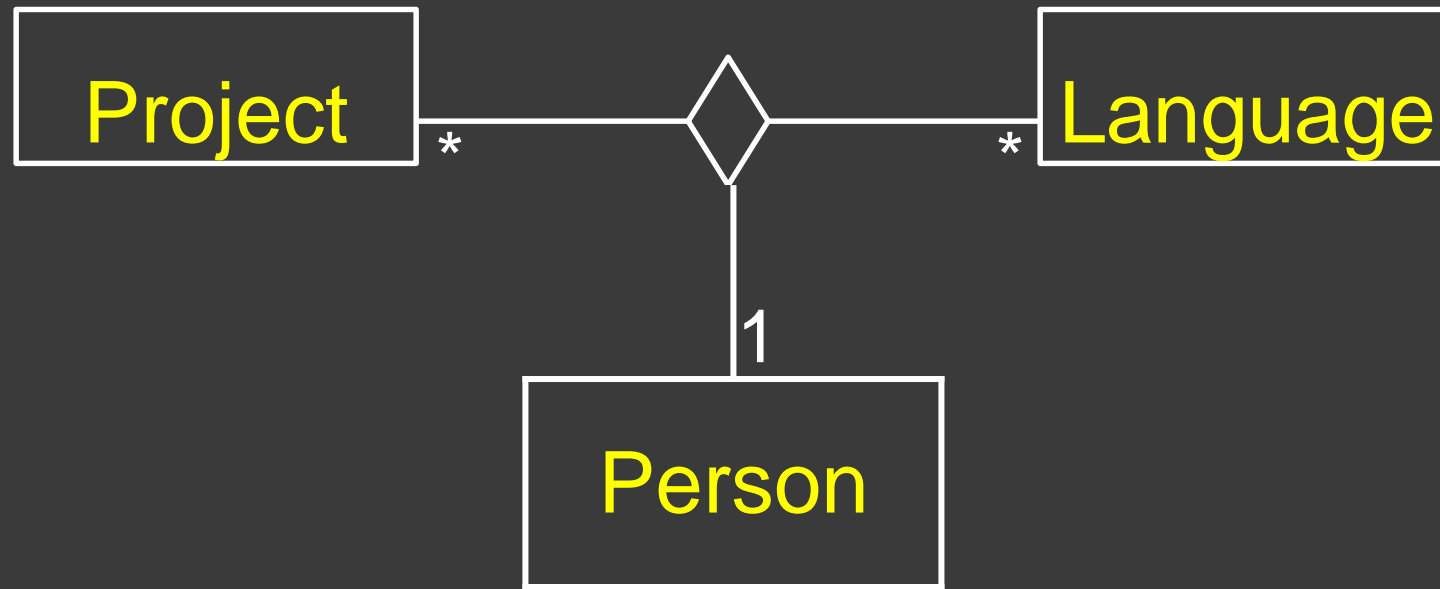
- ⦿ Associates objects of exactly three classes
- ⦿ Denoted by a diamond with lines connected to associated objects

Example – Ternary Association



- Objects of exactly three classes are associated

Example – Ternary Association



- Objects of exactly three classes are associated

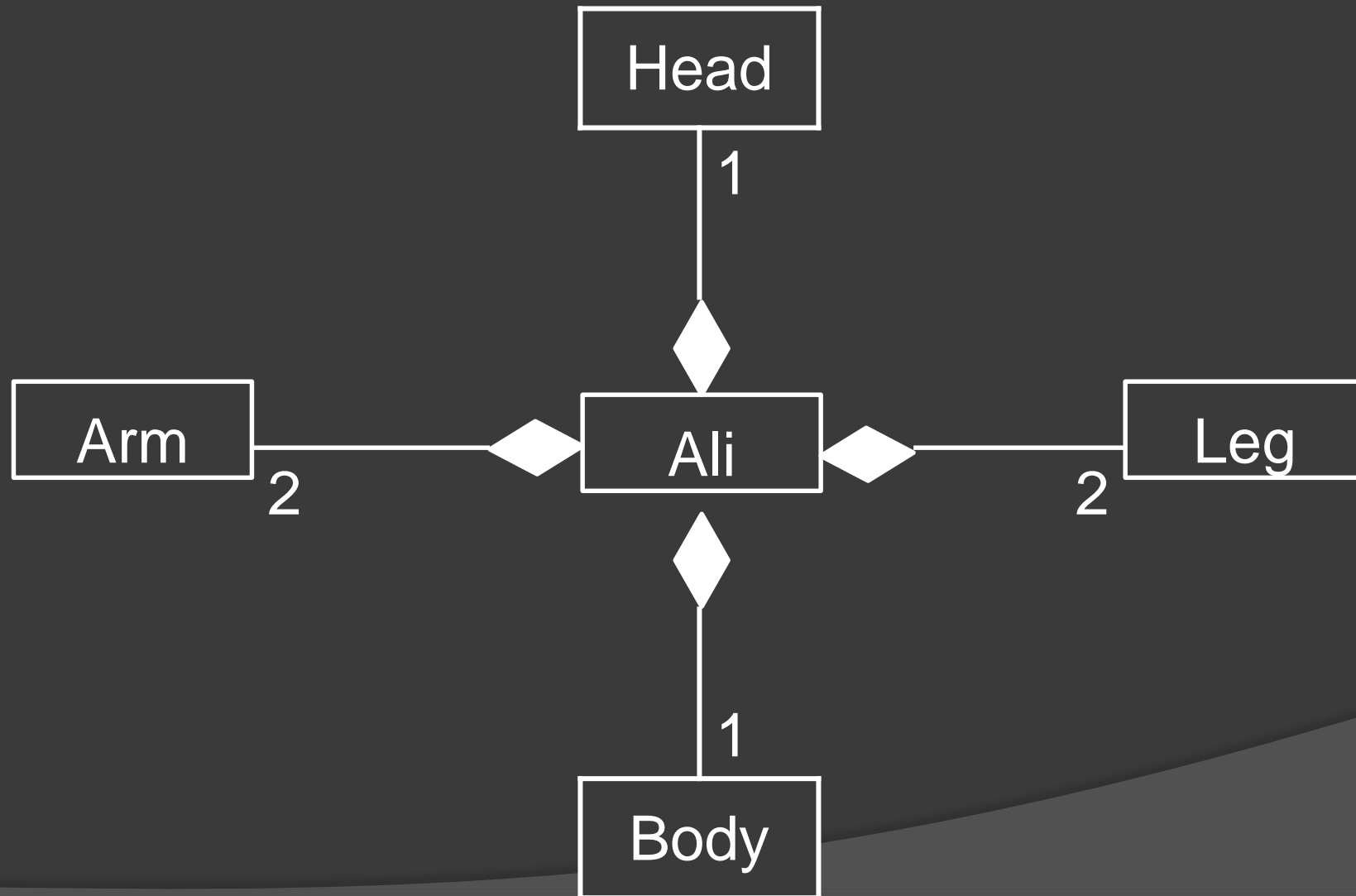
N-ary Association

- ⦿ An association between 3 or more classes
- ⦿ Practical examples are very rare

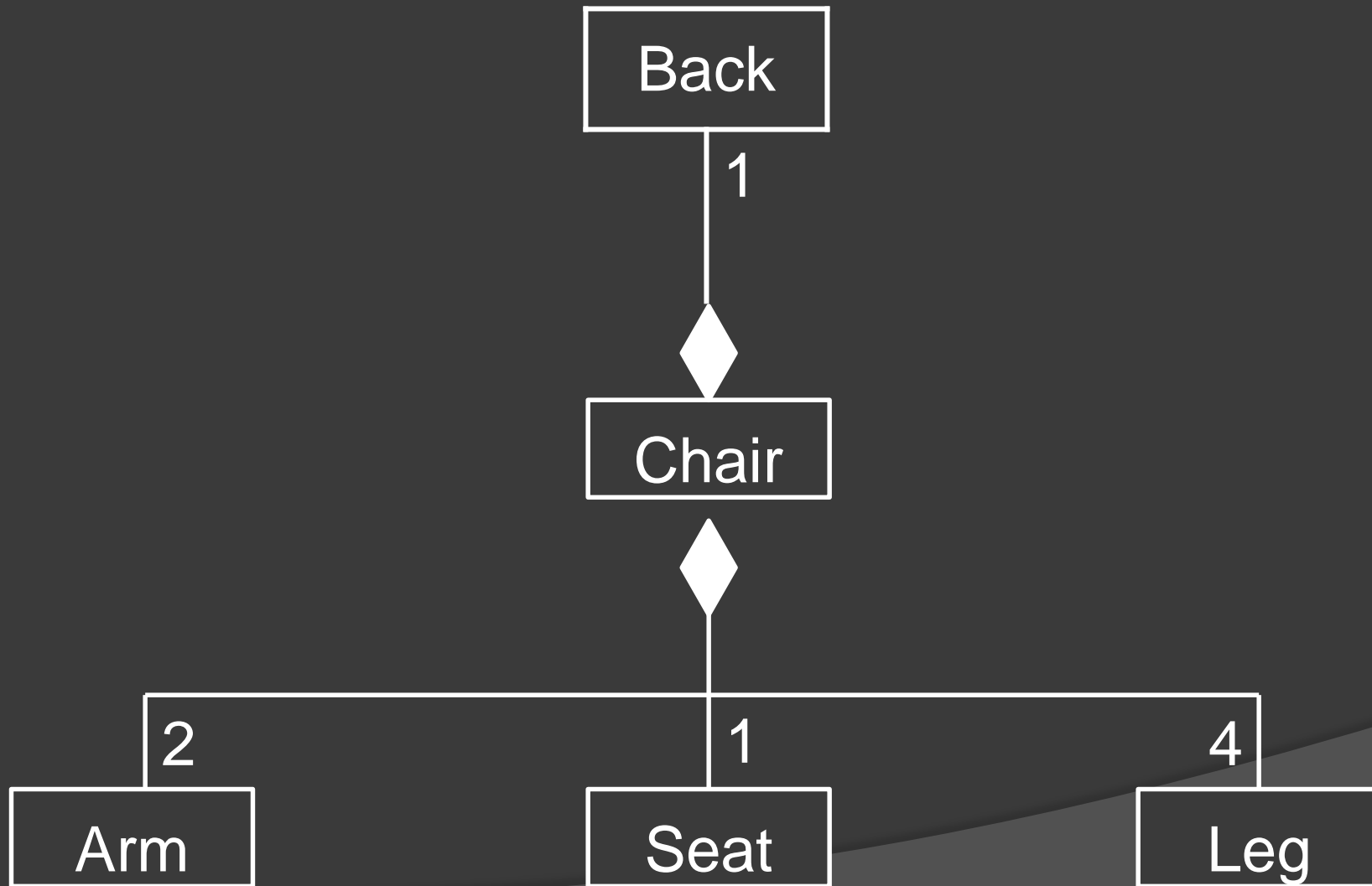
Composition

- ⦿ An object may be composed of other smaller objects
- ⦿ The relationship between the “part” objects and the “whole” object is known as Composition
- ⦿ Composition is represented by a line with a filled-diamond head towards the composer object

Example – Composition of Ali



Example – Composition of Chair



Composition is Stronger

- ⦿ Composition is a stronger relationship, because
 - Composed object becomes a part of the composer
 - Composed object can't exist independently

Example – Composition is Stronger

- ⦿ Ali is made up of different body parts
- ⦿ They can't exist independent of Ali

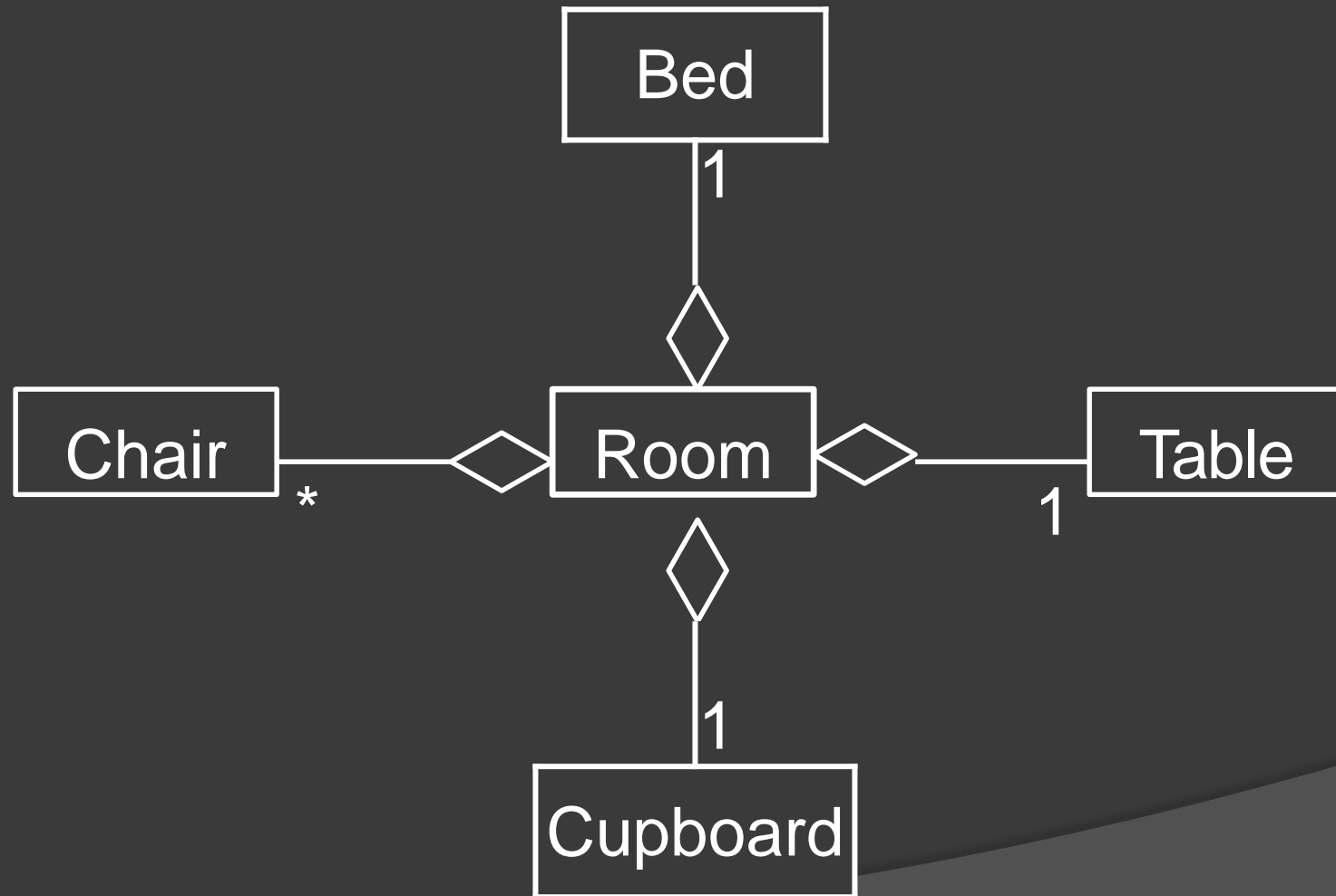
Example – Composition is Stronger

- ⦿ Chair's body is made up of different parts
- ⦿ They can't exist independently

Aggregation

- An object may contain a collection (aggregate) of other objects
- The relationship between the container and the contained object is called aggregation
- Aggregation is represented by a line with unfilled-diamond head towards the container

Example – Aggregation



Example – Aggregation



Aggregation is Weaker

- ⦿ Aggregation is weaker relationship, because
 - Aggregate object is not a part of the container
 - Aggregate object can exist independently

Example – Aggregation is Weaker

- ⦿ Furniture is not an intrinsic part of room
- ⦿ Furniture can be shifted to another room, and so can exist independent of a particular room

Example – Aggregation is Weaker

- ⦿ A plant is not an intrinsic part of a garden
- ⦿ It can be planted in some other garden, and so can exist independent of a particular garden