Object Composition

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COMPUTER SCIENCE 323 – SOFTWARE DESIGN

Object Composition

The combination of simple objects into a more complex object

Note: Object composition is different from object abstraction!

Object Terminology

Review

- Signature
- Interface (OOP and Language Specific)
- Inheritance
- Super-Class + Sub-Class
- Realizing
- Polymorphism

New

- Associations
- Aggregations
- Composition

http://msdn.microsoft.com/en-us/library/x9fsa0sw.aspx

Inheritance vs. Composition (1)

There are two basic ways to build objects

- Inheritance (previously discussed)
- Composition

Inheritance = Is A Composition = Has A

Inheritance vs. Composition (2)

With inheritance our intent is to capture object hierarchies through similarity relationships

With composition our intent is to capture object relationships

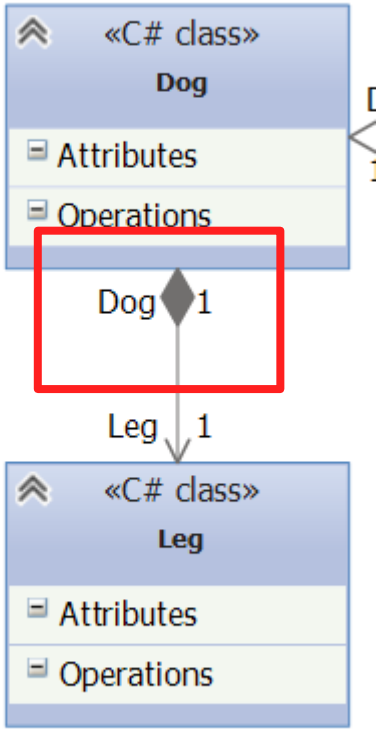
- A Dog has legs
- Legs are not a dog
- A Dog is not a legs

Modeling and UML

Generally, composition is displayed by a black diamond.

This indicates that the composite object (the dog) controls the life of the associated object (the leg)

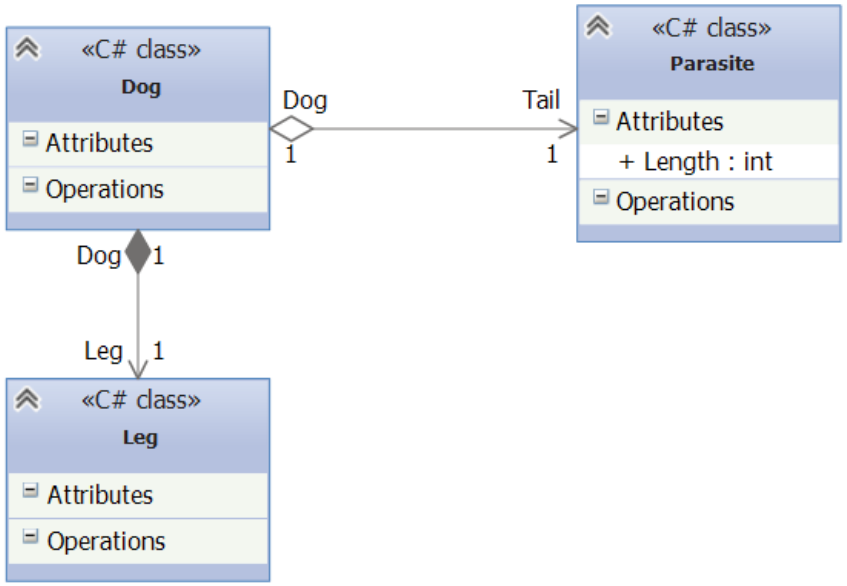
This is called ***aggregation,*** as the dog is a composite object of legs. The dog ***has*** legs



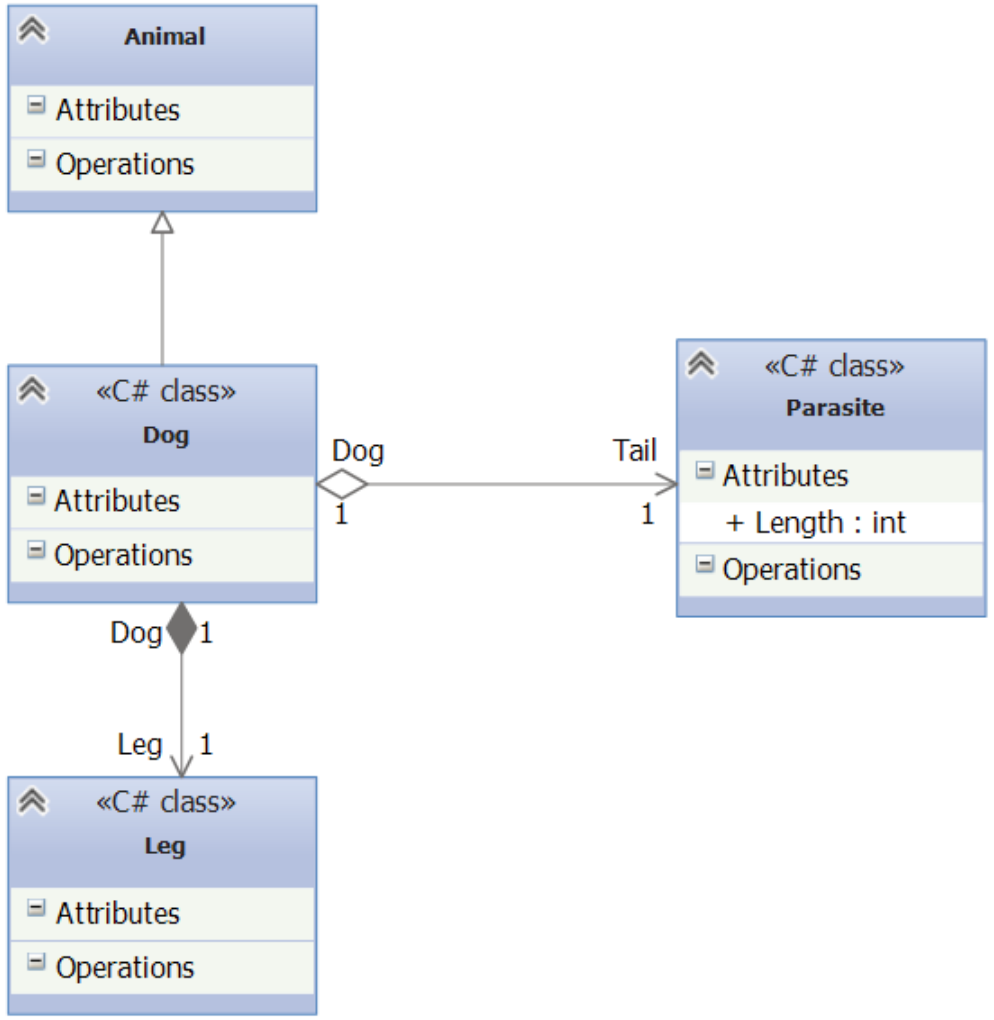
Aggregation

The dog can also **have** parasites, but may not control the parasite.

We represent this aggregation with an open diamond

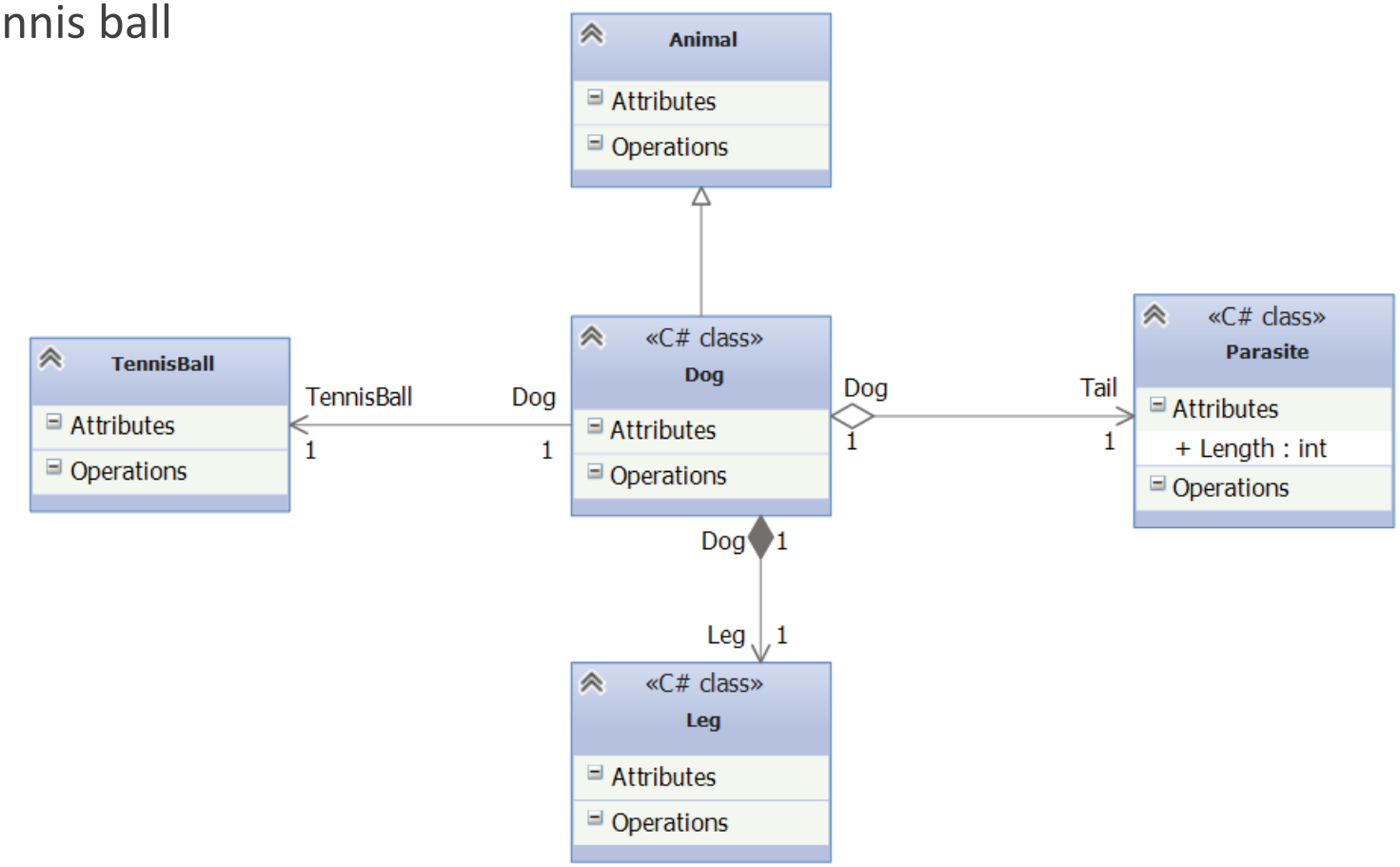


With Abstraction



Objects may also be associative

A dog may be associated with a tennis ball



Object Composition

Purpose:

The overall purpose of using object composition is to reduce dependencies between objects and increase modularity. This is a design principle we will talk about next called Coupling and Cohesion

Task

1. Build a singleton that creates a single Target Manager. Use Visual Studio to model this system first.

2. Then generate your code.

3. Finally, Integrate this model with your homework 3, and write a program that will read an INI file of targets, and add targets to the target manager.

4. Why create a target manager? Why use a singleton?