



Learning Object-Oriented Programming and Design with TDD

What is a class?

a factory of objects

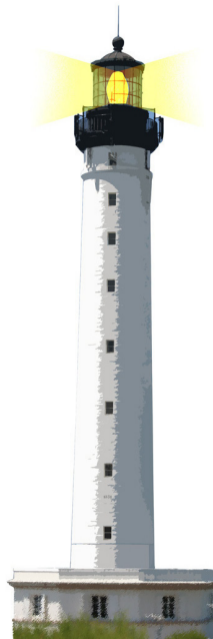
Stéphane Ducasse

<http://stephane.ducasse.free.fr>



<http://www.pharo.org>

W3S02



A Class is Mould of Objects

- A class is an object mould
 - A class creates many instances
- Each instance is still a separate entity
 - You can create mutiple baths and break one.



A Class is Factory of Objects

A class

- Defines all the variables of all its instances
- Defines all the behavior
 - no repetition in all the instances



A Class Factorises Object Properties

- **State:** All rectangles have an origin and an extent (containing different values)
- **Behavior:** Computing the top of a rectangle can be
 - defined once in the class
 - applied to all rectangles

Rectangle >> top

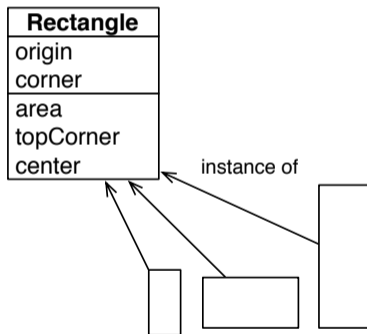
"Answer the position of the receiver's top horizontal line."

^ origin y

A Class is a Factory of Objects

A class describes the structure and the behavior of its instances

- Each instance has its own value
- All instances of class share the same behavior



An Instance has Specific Properties

- A class defines the structure and behavior of all its instances
- Instances have **specific** values for the properties defined by their class

```
(Rectangle origin: 10@10 corner: 50@110) extent
```

```
>>> 40@100
```

```
(Rectangle origin: 10@10 corner: 50@60) extent
```

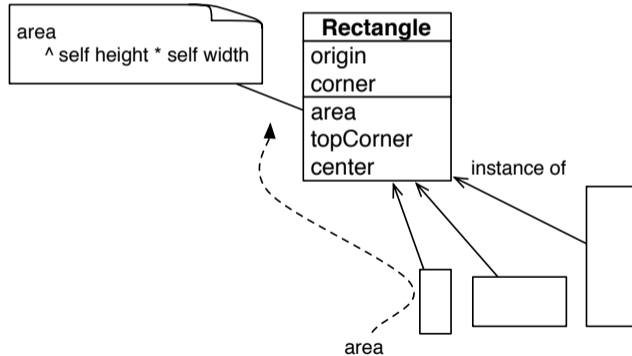
```
>>> 40@50
```

Class vs. Instances

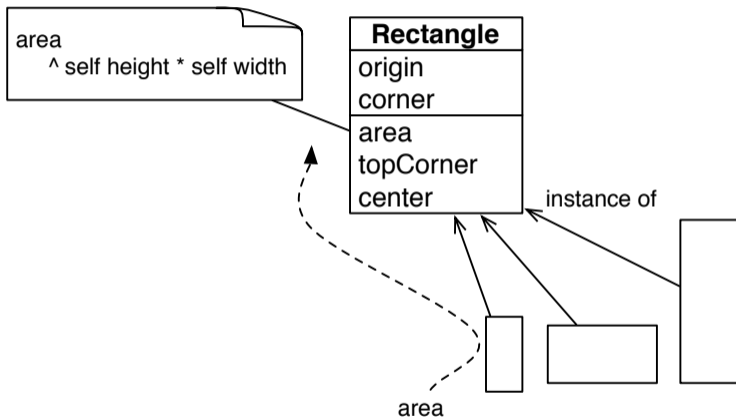
- An object is instance of a class
- An object has been created by a class
- All instances of a class react similarly to a message
- All instances of a class execute the same method in response to a message

Instances Share the Same Behavior

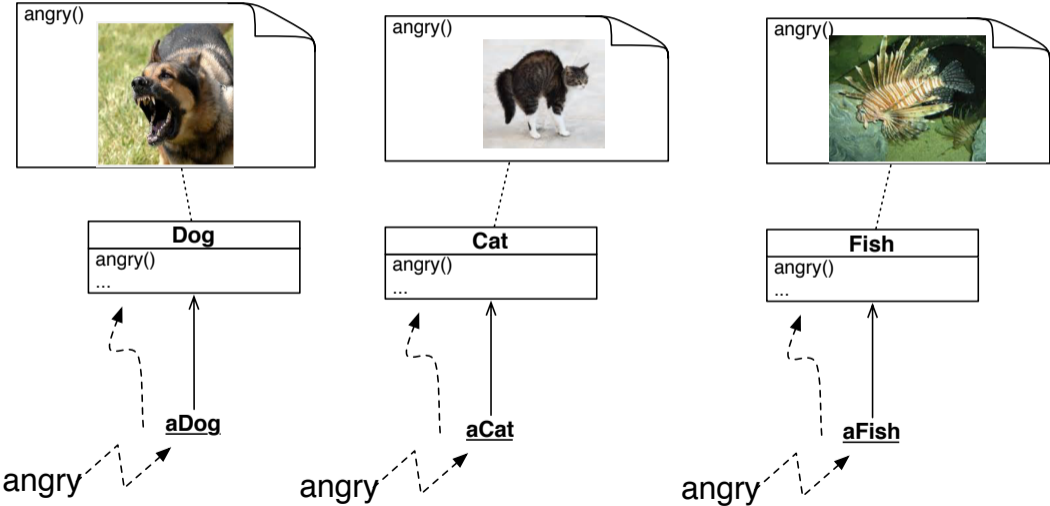
- All the instances of a class share the same behavior
- A class defines the methods that are executed when an instance receives a message



Methods are Looked up in the Class of the Receiver



Methods are looked up dynamically in the class of the receiver



What you should know

- Any object is instance of a class.
- A class is a factory: it creates instances.
- All the instances of class execute the same method in response to the same message.
- A class creates instances that share their behavior.
- A class defines methods that are executed on its instances.

A course by Stéphane Ducasse
<http://stephane.ducasse.free.fr>

Reusing some parts of the Pharo Mocc by

Damien Cassou, Stéphane Ducasse, Luc Fabresse
<http://mocc.pharo.org>



Except where otherwise noted, this work is licensed under CC BY-NC-ND 3.0 France
<https://creativecommons.org/licenses/by-nc-nd/3.0/fr/>