Advanced Object-Oriented Design

# DieHandle new vs. self class new

When classes are first class citizen

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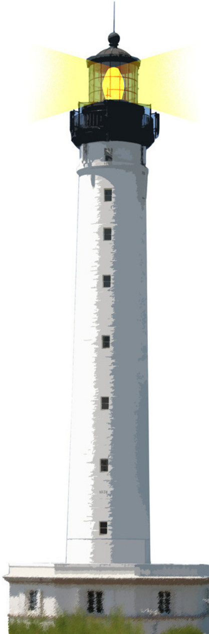

http://www.pharo.org

# Goal

- self represents the receiver
- Class receive messages

# Imagine

To support

```
(DieHandle new add: (Die faces: 4); yourself)
  + (DieHandle new add: (Die faces: 6); yourself)
```

We defined + as

```
DieHandle >> + aDieHandle
  | handle |
  handle := DieHandle new.
  self dice do: [ :each | handle addDie: each ].
  aDieHandle dice do: [ :each | handle addDie: each ].
  ^ handle
```

# What Is the difference...

Between

```
DieHandle >> + aDieHandle
  | handle |
  handle := DieHandle new.
```

And

```
DieHandle >> + aDieHandle
  | handle |
  handle := self class new.
```

Let us see....

# What if we create a new subclass

```
DieHandle subclass: MemoDieHandle
  ....
```

```
(MemoDieHandle new add: (Die faces: 4); yourself)
  + (MemoDieHandle new add: (Die faces: 6); yourself)
> aDieHandle
```

We get a DieHandle instance back and not a MemoDieHandle instance!!!

# Solution 1: Creating a hook

```
DieHandle >> + aDieHandle
  | handle |
  handle := self handleClass new.
  self dice do: [ :each | handle addDie: each ].
  aDieHandle dice do: [ :each | handle addDie: each ].
  ^ handle
```

```
DieHandle >> handleClass
  ^ DieHandle
```

A subclass may redefine handleClass

```
MemoDieHandle >> handleClass
  ^ MemoDieHandle
```

# Solution 1: Creating a hook

```
(MemoDieHandle new add: (Die faces: 4); yourself)
  + (MemoDieHandle new add: (Die faces: 6); yourself)
> aMemoDieHandle
```

We get an instance of the subclass!

# But we can do better!

Let us see

- In each subclass we should redefine the hook method `handleClass`
- This is tedious

# Solution 2

```
DieHandle >> + aDieHandle
 | handle |
 handle := self class new.
 self dice do: [ :each | handle addDie: each ].
 aDieHandle dice do: [ :each | handle addDie: each ].
 ^ handle
```

- self class always returns the class of the receiver
- We get instances of the same kind of the receiver

# Conclusion

If we define a subclass of DieHandle, and send the message + to an instance

- With DieHandle new, + does not return an instance of the subclass but of DieHandle
- With self class new, + returns an instance of the receiver: an instance of a potential subclass

A course by

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