Advanced Object-Oriented Design

Interfaces

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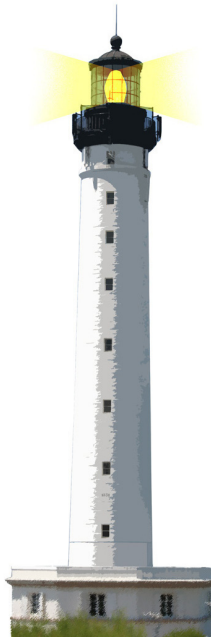

Pharo

http://www.pharo.org

Interfaces

- A good element of Java :)
- Group of method signatures
  - and since Java 80 default methods...
- Used by the type checker
- Support the manipulation of instances of classes not in subtype relation (i.e. not in the same hierachy)

```
interface {
  //methods
}
```

Example

All methods are implicitly public and all fields are public static final

```
interface Polygon {
  public static final String color = "blue";
  public double getArea();
}
```

```
interface Polygon {
  String color = "blue";
  double getArea();
}
```

class A Implements I

```
class Rectangle implements Polygon {
  ...
  public double getArea() {
    return length * width;
  }
}
```

Classes - Interfaces

Any class implementing an interface MUST defined the methods specified in the interface.

- A class can implement many interfaces
- A class inherits from a single superclass
- An interface can implement from multiple interfaces

```
interface Line {
  //members of Line interface
}

interface Polygon extends Line {
  //members of Polygon interface and Line interface
}
```

Interfaces: step back

A nice mechanism for statically checked languages

- defines what is expected
- lets the system evolve

When you use a class as a type:

- You freeze the possible instances
- You will only be able to have instances of type or subtypes

When you use an interface as a type:

- You will be able to use any instance of classes implementing the interface

Interfaces support evolution

- You can reuse a program expecting a given interface by passing a new class implementing the give interface
- This is key!
- This cannot be done if you use a class.
- With a class you can only pass a subclass.

Interfaces and nominal types

- Pay attention two interfaces with different names but the same contents are not compatible
- You will not be able to substitute instances of a class using one interface by instances of another class using another interface with the same contents

A course by

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