Test Driven Development

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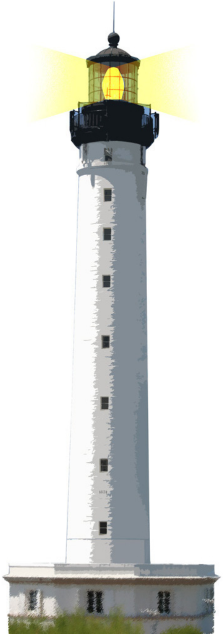
Tests

http://www.pharo.org



Outline

- Automated Tests
- Example of TDD
- Rethinking it

Automated Tests are your Life Insurance

- Our brain is to small to remember everything
- Our brain focuses on the last action
- You write it once and you run it million times
- Programming is modeling the world and the world is changing

Automated Tests

- Tests do not avoid breaking your system
- But they show what you broke

Automated Tests Let Software Evolve

- Tests make you **bold** in regards of changes
- Tests lower the fear of breaking
  - You can try and run the tests to get an idea
  - You can explore...

An Automated Test

In an automated test, we

- Create a context: Create an empty set
- Send a stimulus: Add twice the same element
- Check the results: Check that the set contains only one element

Set TestCase in Pharo

```
TestCase subclass: #SetTestCase
  ...
```

```
SetTestCase >> testAdd
 | empty |
 empty := Set new.   "Context"
 empty add: 5.   "Stimulus"
 empty add: 5.
 self assert: empty size equals: 1   "Check"

SetTestCase run: #testAdd
```

Set TestCase in Java

```
class  SetTestCase {
   ...
  }
```

```
public void testAdd(){
 Set empty = new Set(); //Context

 empty.add(5);  //Stimulus
 empty.add(5);

 assertEquals(empty.size(), 1);   "Check"
 }
```

TDD is about the flow

Write test first! Yes
"Whenever you are tempted to type something into a print statement or a debugger expression, write it as a test instead" - Martin Fowler

About the flow: Write your test

```
CounterTest >> testIncrement

  | c |
  c := Counter new.
  c count: 10.
  c increment; increment.
  self assert: c count equals: 12
```

```
@Test
public void testIncrement(){
  Counter c = new Count();
  c.setCount(10);
  c.increment();
  c.increment();
  assertEquals(c.getCount(), 12);
}
```

About the flow: Run your test

- It is red!
- Else you increase your test number
- When you are lucky, use XTDD and enjoy coding in the debugger

About the flow: Make your test pass

- Work until your test get green!

About the flow: Rerun all the tests

- Now you are super smart but run all your tests!
- Fix the broken tests
  - Either a test is now wrong
  - Or you broke something for real
- Commit and take a break

Why writing test first

- You specify what you want to get
- You get a clear context
- You can debug on the spot

If we have to keep one practice: Tests

- You specify what you want to get
- You get a clear context
- You can debug on the spot

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