

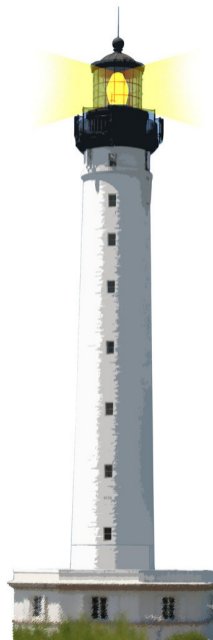
Test-Driven Development

Getting more out of tests

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Outline

- TDD (Test-Driven Development)
- Example of TDD
- Rethinking it



Write tests first

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



TDD is about the flow

1. Run **all** your tests:
 - 1.1. they should be **green!** Else fix it!
2. Turn a feature into a test
3. Make sure it **fails** (yes - failed or error)
4. Write some code
5. Run **the** test - loop until it **passes** else goto 4
6. Run **all** your tests:
 - 6.1. they should be green! Else fix it!
7. Commit
8. Think about **cleaning/refactoring** - goto 6
9. Take a break!



TDD: Write your test

- Imagine we just created the class Counter.
- A test for accessing the counter value

```
CounterTest >> testCount
| c |
c := Counter new.
c count: 10.
self assert: c count equals: 12
```



TDD: Run your test!

- It is red (the test produces an error)
 - This is normal since we did not define the methods `count` and `count:`.
- So far so good!
- If it is already green this is a bonus and may be your test is not good.



TDD: Make your test pass

- Work until your test gets green!
- [When you are lucky, use XTDD and enjoy coding in the debugger] See following lectures.



TDD: Rerun ""all"" the tests

- Yes we know, you are super smart BUT **rerun all your tests!**
- Fix the broken tests
 - Either a test is now **wrong**
 - Or you broke something else
 - In both cases, you should fix it



TDD: When all the tests are green

- Commit and take a break
- Then it is a good time to
 - **Refactor** your code if necessary
 - Revisit your code
 - Rerun **all** the tests

Why writing test first?

- You specify **what** you want to get
- You think **how you build/assemble** to get the action done
- In addition you are your first client: strengthen your APIs
- You get a **clear** context
- You can debug on the spot



Conclusion

- TDD is powerful
- XTDD is literally **TDD on steroids** (see following lectures)
- Do not miss XTDD it is gorgeous



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