EXERCISE 0

Checkout and do composer install

https://github.com/lmuzinic/webcamp-pragmatic-tdd

```
git clone git@github.com:lmuzinic/webcamp-pragmatic-tdd.git
cd webcamp-pragmatic-tdd
composer install
vendor/bin/phpunit
```

OK (1 test, 1 assertion)

There is <10 MB of packages to download, so you can use your mobile data if WIFI does not work.

PRAGMATIC
TDD

HELLO

Luka Muzinic
@lmuzinic

WORKSHOP RULES

ASK QUESTIONS

IF YOU STILL DO NOT UNDERSTAND, ASK QUESTIONS AGAIN

DISCUSS RIGHT NOW, DO NOT WAIT FOR THE "RIGHT MOMENT"

WHY WE NEED TESTING?

WHY AM I HERE?

ARE WE SOFTWARE TESTERS?

AND YET
WE KEEP ON SAYING
WE WRITE TESTS…

WHERE CAN I GET MORE OF THOSE TESTS?

EXCUSES, EXCUSES

TESTS SLOW US DOWN

WE WILL NEVER GET TO 100% CODE COVERAGE

WE DO NOT HAVE TIME TO LEARN TESTING, WE'RE TO BUSY SHIPPING CODE

EXCUSES, EXCUSES

TESTS SLOW US DOWN?

STOP TESTFILEING
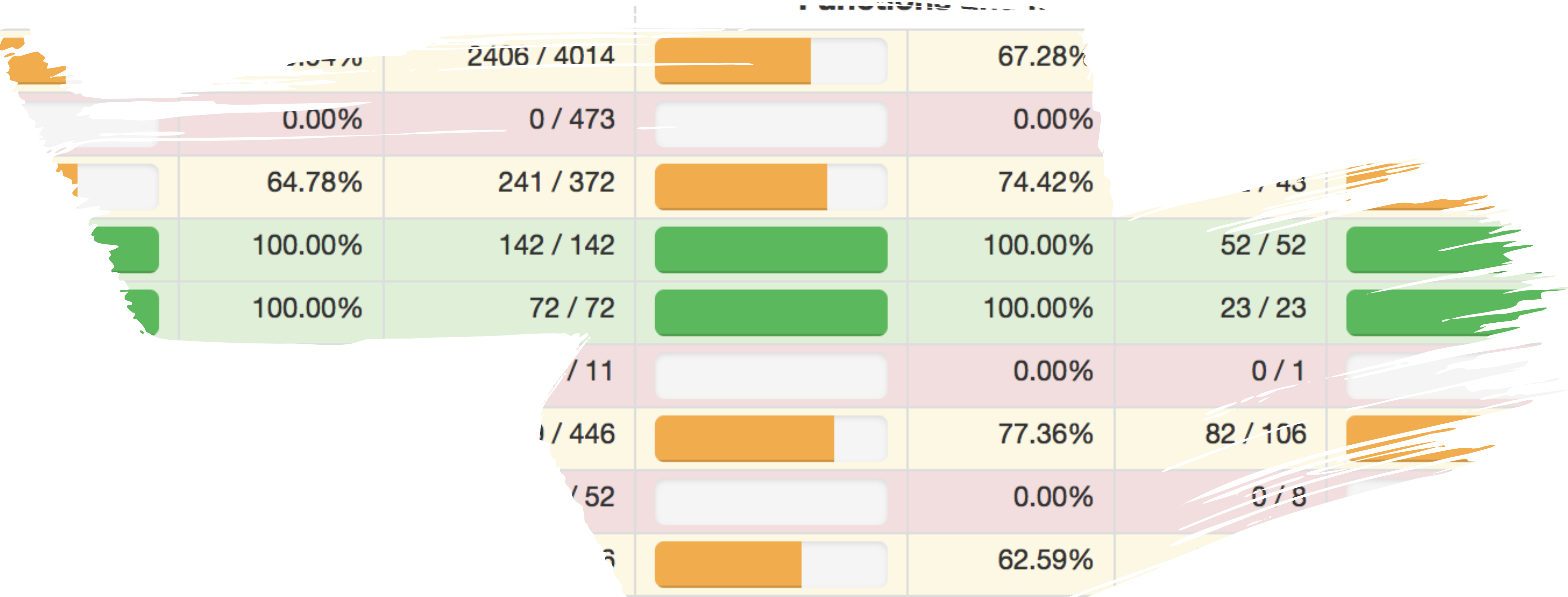
DO YOU OFTEN DO THIS?

~ php test.php

OR THIS

http://localhost/test_problem.php

EXCUSES, EXCUSES

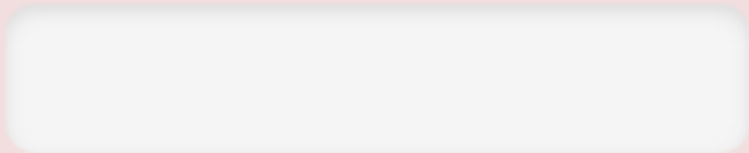## WE WILL NEVER GET TO 100% CODE COVERAGE

CODE COVERAGE

		Functions		
	2406 / 4014		67.28%	
0.00%	0 / 473		0.00%	
64.78%	241 / 372		74.42%	
100.00%	142 / 142		100.00%	52 / 52
100.00%	72 / 72		100.00%	23 / 23
	/ 11		0.00%	0 / 1
	/ 446		77.36%	82 / 106
	/ 52		0.00%	0 / 8
			62.59%	
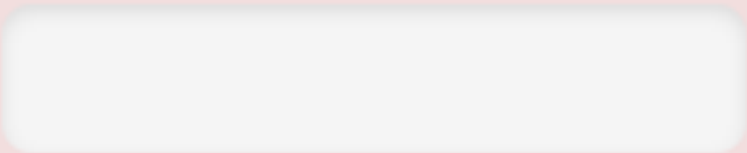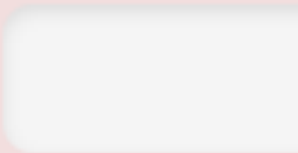
CODE COVERAGE

Classes and Traits		
	56.88%	62 / 109
	0.00%	0 / 8
	64.29%	9 / 14
	100.00%	9 / 9
	100.00%	5 / 5
	76.47%	13 / 17
	48.15%	26 / 54
	n/a	0 / 0

CODE COVERAGE

Code Coverage

Functions and Methods			Classes and Traits		
	67.28%	368 / 547		56.88%	62 / 109
	0.00%	0 / 28		0.00%	0 / 8
	74.42%	32 / 43		64.29%	9 / 14
	100.00%	52 / 52		100.00%	9 / 9
	100.00%	23 / 23		100.00%	5 / 5
	77.36%	82 / 106		76.47%	13 / 17
	62.59%	179 / 286		48.15%	26 / 54
	n/a	0 / 0		n/a	0 / 0

CODE COVERAGE

	Code Coverage			
	Lines		Functions and Methods	
	59.94%	2406 / 4014	67.28%	368 / 547
	0.00%	0 / 473	0.00%	0 / 28
	64.78%	241 / 372	74.42%	32 / 43
	100.00%	142 / 142	100.00%	52 / 52
	100.00%	72 / 72	100.00%	23 / 23
	67.04%	299 / 446	77.36%	82 / 106
	67.54%	1652 / 2446	62.59%	179 / 286
	n/a	0 / 0	n/a	0 / 0

20 > 80

		Lines		Cod
				Functi
Total	▮▮▮▮▮▮	59.94%	2406 / 4014	▮▮▮▮▮
📁 Command		0.00%	0 / 473	
📁 Controller	▮▮▮▮▮	64.78%	241 / 372	▮▮▮▮▮
📁 Entity	▮▮▮▮▮▮▮	100.00%	142 / 142	▮▮▮▮▮▮▮
📁 Model	▮▮▮▮▮▮▮	100.00%	72 / 72	▮▮▮▮▮▮▮
📁 Repository	▮▮▮▮▮	67.04%	299 / 446	▮▮▮▮▮
📁 Service	▮▮▮▮▮	67.54%	1652 / 2446	▮▮▮▮▮
📄 AppBundle.php		n/a	0 / 0	

EXCUSES, EXCUSES

WE DO NOT HAVE TIME TO LEARN TESTING, WE'RE TO BUSY SHIPPING CODE

//@TODO: STANDSTILL

DON'T BE SCARED OF PHPUNIT*

IT IS JUST A CODE RUNNER

UNIT, INTEGRATION OR ACCEPTANCE TESTS

SMOKE TESTS

WEBSITE SCRAPER

…

TESTS ANSWER QUESTIONS

IS MY CODE WORKING CORRECTLY?

WILL MY CODE WORK CORRECTLY?

HOW IS MY CODE SUPPOSED TO WORK?

IS MY CODE DESIGNED WELL?

CAN I REFACTOR MY CODE?

TESTS ANSWER QUESTIONS

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HOW TO WRITE TESTS?

GIVEN WHEN THEN

SETUP EXERCISE VERIFY TEARDOWN

ANATOMY OF PHPUNIT TEST CASE

```php
class TeamTest extends PHPUnit\Framework\TestCase;
{
    private $team;

    public function setUp()
    {
        $this->team = Team::create('Hellas Verona');
    }

    public function testGetName()
    {
        $name = $this->team->getName();

        $this->assertEquals('Hellas Verona', $name);
    }
}
```

WORKSHOP RULES

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DISCUSSION

IMPLEMENT A FOOTBALL LEAGUE MANAGEMENT APP

- We want to display standings table on our website

WHAT IS YOUR BIGGEST CONCERN?

EXERCISE 1

START IMPLEMENTING STANDINGS

Write a test for getting sorted standings

Talk about domain

Implementation

EXERCISE 2

IMPLEMENT TEAM POSITION

An object that will hold position inside the league table

Focus just on this class, use `--filter`

GO TO VACATION

WHO WILL IMPLEMENT STANDINGS?

Your colleagues that stayed in the office.

Checkout branch `step-1`

EXERCISE 3

REFACTOR

Replace spl_object_hash with sha1 from team name

Move checking, creating and returning an TeamPosition into separate method

EXERCISE 4

NEXT YEAR FEATURES

League manager wants to change the rules for scoring – teams that have equal number of points, sort by points scored (higher points scored moves up). Keep the possibility to show scoring for last year as well.

Introduce RuleBookInterface::decide

Extract sorting logic into separate class, cover all cases with tests.

EXERCISE 5

TEST DUMMIES/MOCK OBJECTS

Refactor the test using stubs

EXERCISE 6

ADVANCED RULEBOOK

Write the test.

Write the implementation.

Push the both rulebooks into standings tests.

EXERCISE 7

CODECOVERAGE & CRAP

Run codecoverage

`~ vendor/bin/phpunit --coverage-html var/coverage`

Explain CRAP

CRAP = CC^2 x U^3 + CC

EXERCISE 8

EXCEPTIONS

Last year I have entered a match with same teams

Last year I have created a team with no name

EXERCISE 9

REPOSITORIES

It makes sense that Standings should use a Repository

Implement such repository, add `sleep(1)` to each method.

Figure out how to make test suite fast again.

WORKSHOP RECAP

QUESTIONS? /r/AMA?

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luka.muzinic.net/pdf/webcamp-pragmatic-tdd.pdf

READING & LIBRARIES

Reading list

https://www.devmynd.com/blog/five-factor-testing/

https://martinfowler.com/articles/practical-test-pyramid.html

https://dev.to/theobendixson/the-problem-that-unit-tests-solve-b2l

https://blog.liplex.de/testing-private-and-protected-methods-with-phpunit/

Libraries

https://github.com/sebastianbergmann/phpunit

https://github.com/phpspec/phpspec

https://github.com/Codeception/Codeception

https://github.com/phpstan/phpstan

https://github.com/infection/infection

HOMEWORK 1

BINARY GAP

https://app.codility.com/programmers/lessons/1-iterations/binary_gap/

Find longest sequence of zeros in binary representation of an integer.

A binary gap within a positive integer N is any maximal sequence of consecutive zeros that is surrounded by ones at both ends in the binary representation of N.

For example, number 9 has binary representation 1001 and contains a binary gap of length 2. The number 529 has binary representation 1000010001 and contains two binary gaps: one of length 4 and one of length 3. The number 20 has binary representation 10100 and contains one binary gap of length 1. The number 15 has binary representation 1111 and has no binary gaps. The number 32 has binary representation 100000 and has no binary gaps.

HOMEWORK 2

ODD OCCURRENCES IN ARRAY

https://app.codility.com/programmers/lessons/2-arrays/odd_occurrences_in_array/

A non-empty array A consisting of N integers is given. The array contains an odd number of elements, and each element of the array can be paired with another element that has the same value, except for one element that is left unpaired.

A[0] = 9 A[1] = 3 A[2] = 9 A[3] = 3 A[4] = 9 A[5] = 7 A[6] = 9

HOMEWORK 4

COMPLETE EXERCISES

- continue with BallGame example

- follow along/google/ask

HOMEWORK 5

GAMES WON

- implement the feature, given a scenario, where standings table displays game won

TIES

- implement the feature, given a scenario, where two teams have played a tie

TWO POINTS

- given a scenario where RuleBook also defines how much points should each team get after match win, write additional test case where each win gets you 2 points

ANYTHING GOES

- have an idea how to make this whole thing better?
- write tests and demonstrate :)

KTHXBAI

Photos by Les Anderson, Joshua Earle, Ian Espinosa and Tom Roberts on Unsplash