

Canvas Testing Framework

Don't Test Me

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Introduction

- Team Repository:
github.com/CSCI-362-02-2017/Don-t-Test-Me
- Application we tested:
Canvas LMS

About Canvas

- An open-source LMS developed and maintained by Instructure Inc. launched in 2011
- Why we chose to test Canvas:
 - Extensive documentation on GitHub
 - The repository is active
 - Ruby on Rails is well-structured, easy to learn and use

About Our Testing Framework

- 25 test cases that test five different model methods
- Each test case is a text file with the test number, requirement, model, method, inputs, oracle, and driver file name
- One driver per model method
- DRY drivers extend the `Testatron` class
- Exists within a copy of the Canvas repo to use gems and test database

Setting Up Our Testing Framework

- See the How-To Guide on our Wiki for complete installation instructions
- Hardware and software requirements:
 - Ubuntu 16.04 (64-Bit) *
 - Ruby version 2.4.2 *
 - PostgreSQL 9.5.10 *
 - Ruby-Bundler 1.15.3
- Clone our repository
- Install Ruby Libraries, PostgreSQL, Bundler and Ruby Gems
- Run the database setup script provided by Canvas
- Run our script from the TestAutomation directory

* Other versions may be used but have not been tested.

Models and Methods Tested

- Five test cases for each of the following methods:
 - Course#score_to_grade
 - LatePolicy#missing_points_deducted
 - LatePolicy#points_for_missing
 - Assignment#score_to_grade
 - LatePolicy#points_deducted

How To Add More Tests

- Add a new test case text file for *each* test to testCases/
- Add a new driver class for each method tested that extends Testatron
- Follow naming conventions for the driver class
- Follow the test case text file format, see testCases/testCase0.txt.example

Test Case Text File Format:

line 1: Test number (id)

line 2: Test requirement

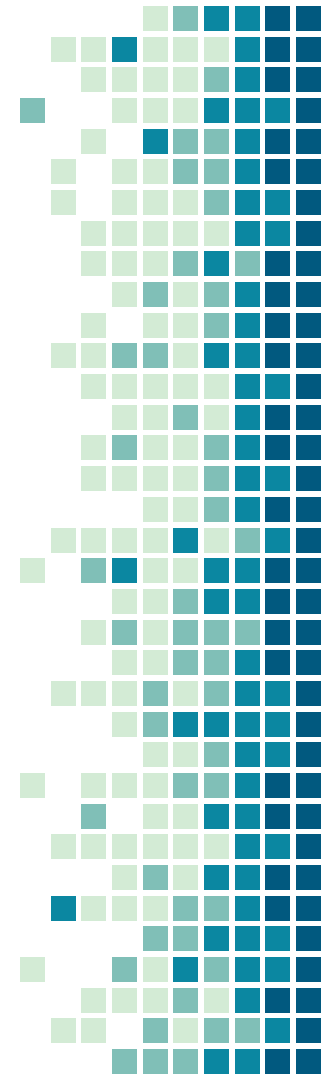
line 3: Model

line 4: Method

line 5: Input parameters

line 6: Oracle

line 7: Test driver name



Adding Faults to Canvas

- We tried to create small faults that developers likely make every day
 - Two unless statements changed to if statements
 - Changed "pass_fail" to "pass fail" twice
 - Changed a "-" to a "+"
- Caused a total of 13 tests to fail out of 25

Generated Report

Test Report Don't Test Me

Test Case	Model and Method	Requirements	Inputs	Oracle	Method Return	Result
01	Course#score_to_grade(score)	Converts a score of 0 to a grade when the grading scale is [["Pass",50],["Fail",0]]	0 [["Pass",0.5],["Fail",0.0]]	Fail	Fail	Pass
02	Course#score_to_grade(score)	Converts a score of 25 to a grade when the grading scale is [["Pass",50],["Fail",0]]	25 [["Pass",0.5],["Fail",0.0]]	Fail	Fail	Pass
03	Course#score_to_grade(score)	Converts a score of 49.999 to a grade when the grading scale is [["Pass",50],["Fail",0]]	49.999 [["Pass",0.5],["Fail",0.0]]	Fail	Fail	Pass
04	Course#score_to_grade(score)	Converts a score of 50 to a grade when the grading scale is [["Pass",50],["Fail",0]]	50 [["Pass",0.5],["Fail",0.0]]	Pass	Fail	Fail
05	Course#score_to_grade(score)	Converts a score of 100 to a grade when the grading scale is [["Pass",50],["Fail",0]]	100 [["Pass",0.5],["Fail",0.0]]	Pass	Fail	Fail

Next Steps for Our Framework

- Add more tests
- Make tests run faster
- Develop controller, view, and application tests
- Use a Continuous Integration (CI) environment

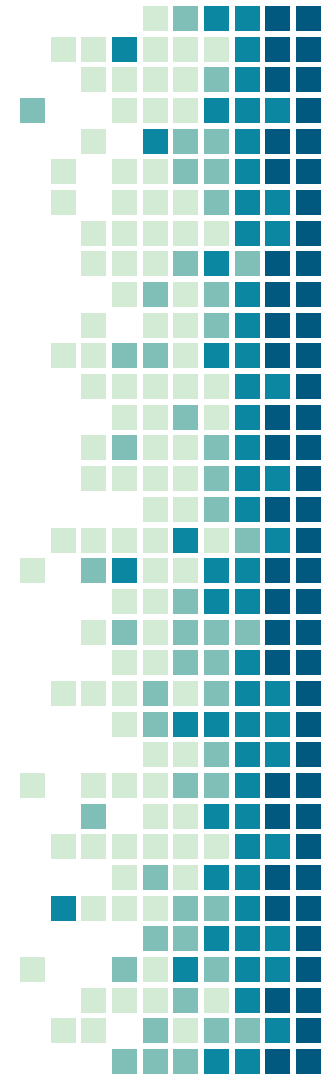
Team Experiences

What we did well:

- Communication
- Meeting deadlines
- Creating and managing our framework architecture

Challenges we faced:

- Initial Canvas installation
- Dependencies
- Handling the massive Canvas repository



Acknowledgements

- Canvas by Instructure
 - Website: canvaslms.com
 - GitHub: github.com/instructure/canvas-lms
- Dr. Jim Bowring

Demonstration