Introduction to RSpec

Our Goals

- Understand Test-Driven Development as a concept
- Understand the benefits and importance of TDD
- Understand the TDD process
- To be able to write basic RSpec tests

History of TDD

- Ada Lovelace
- Mercury Space Program - punch cards from 1959 - 1963
- Gerry Weinberg - punch cards
- Kent Beck - SUnit, jUnit, Extreme Programming, Test Driven Development by Example
- 24/07/2004 - Rails

Why do we need it?

- We are in a battle
- We need certainty
- We need it to be easy to find bugs
- We need it to be easy to work in teams
  - The Agile methodology all but relies on it

The benefits

- Less software defects
- Helps reveal design flaws
- Immediate feedback to the programmer
- Increased confidence
- Assists the refactoring process
- Cleaner and simpler designs

The types

- Unit testing
  - Tests one piece at a time
- Integration testing
  - Tests the way that pieces work together
- Performance testing

Is there only TDD?

No!

- **TDD**
- **ATDD** (Acceptance test driven development)
- **BDD** (Behavior driven development)
- **MDD** (Mortgage driven development)

The Approach

- Write a failing test
- Run the test to make sure it fails
- Write the code
- Run the test to make sure it passes
- Refactor the code
- Run the test again to make sure it still passes
- Repeat as necessary

The Red, Green, Refactor Cycle

Ruby and Testing

- Ruby developers are very in to testing
  - Rails was one of the first frameworks to actually include it by default
- RSpec is the most popular testing library in Ruby

Conventions

- Test the smallest possible pieces of granularity
    - A single function or class for example
- Write as little code as possible to make the test pass
- Seperate common logic
- Treat your tests with respect
- Make your tests expressive
    - Aim to make them self-documenting

Test Structure

- Setup
- Execution
- Validation
- Cleanup

Important Links

- The RSpec Website
- RSpec on Github
- RSpec Documentation
- BetterSpecs

Naming conventions

- Class methods
  - `describe ".new" do ... end`
- Instance methods
  - `describe "#admin?" do ... end`

Let's have a go of RSpec

```
gem install rspec

...

rspec --init
```

How to break tests up

- ***Describe*** - Creates a group of examples
- ***Context*** - Creates a state
- ***It*** - Creates a single example