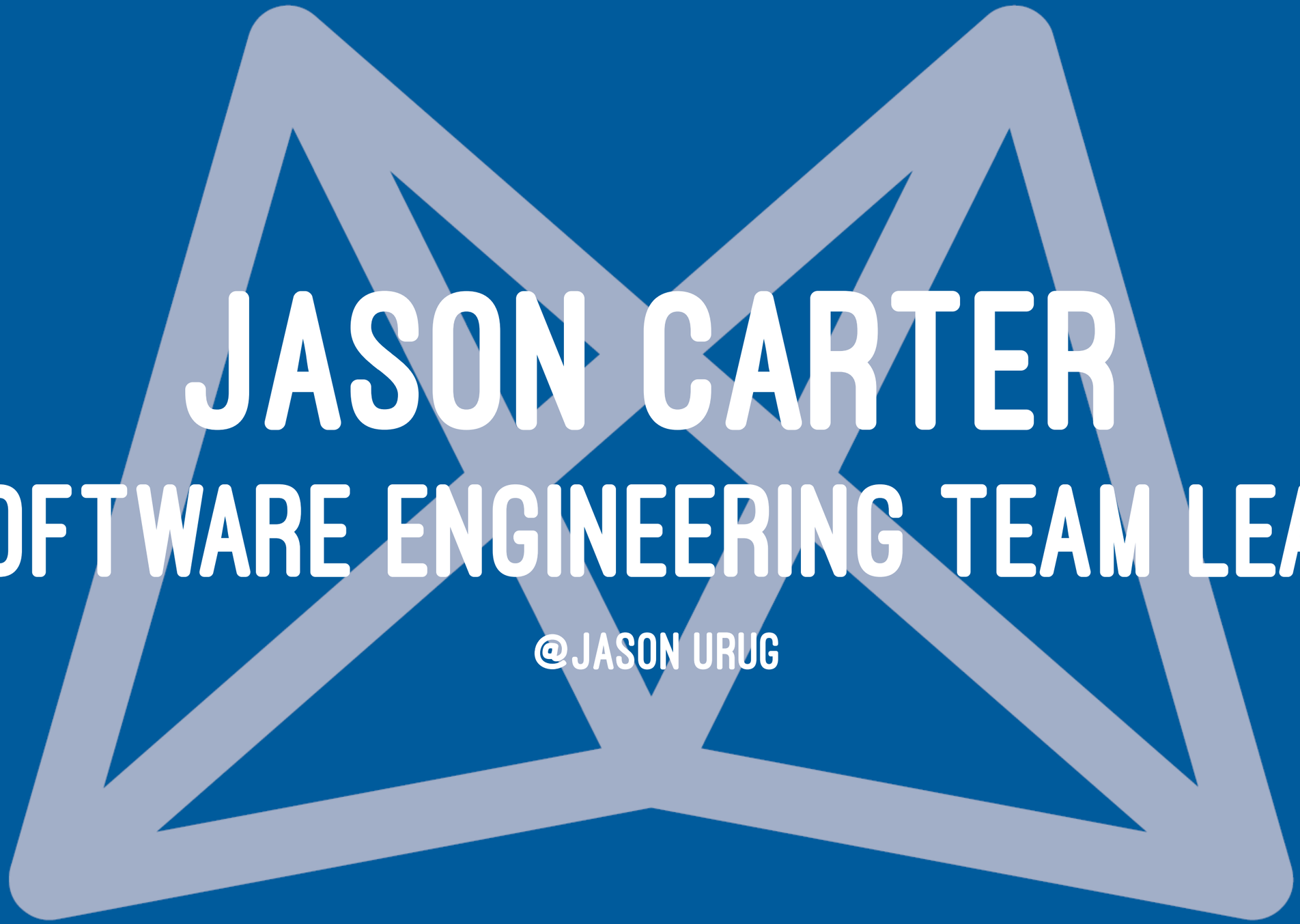
HOW I LEARNED TO LOVE ACCEPTANCE TESTING



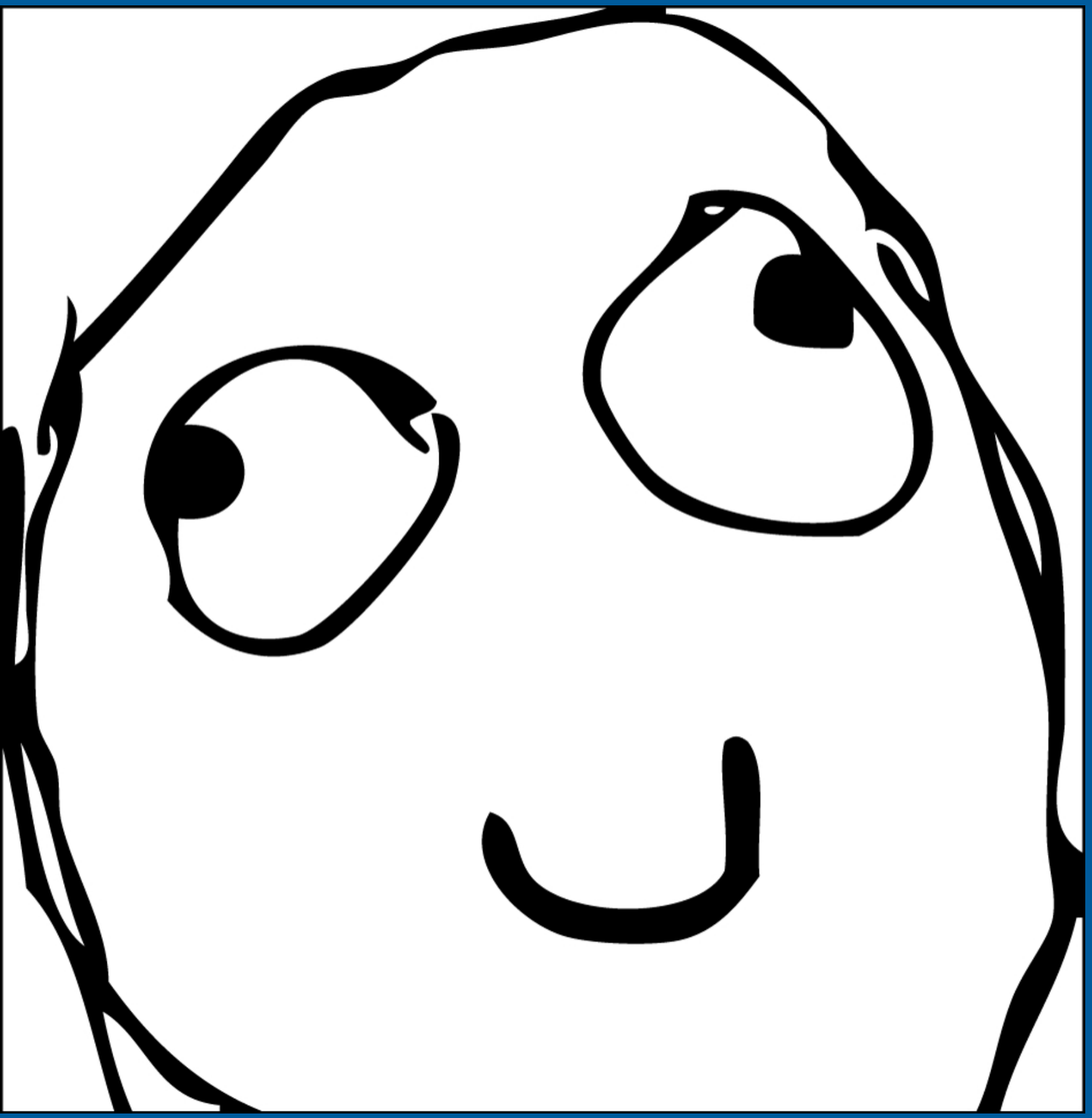
JASON CARTER

SOFTWARE ENGINEERING TEAM LEAD

@JASON URUG


EXTREME PROGRAMMING
PAIR PROGRAMMING
TEST DRIVEN DEVELOPMENT
RAD HYPE VIDEOS
MAVENLINK.COM/ENGINEERING

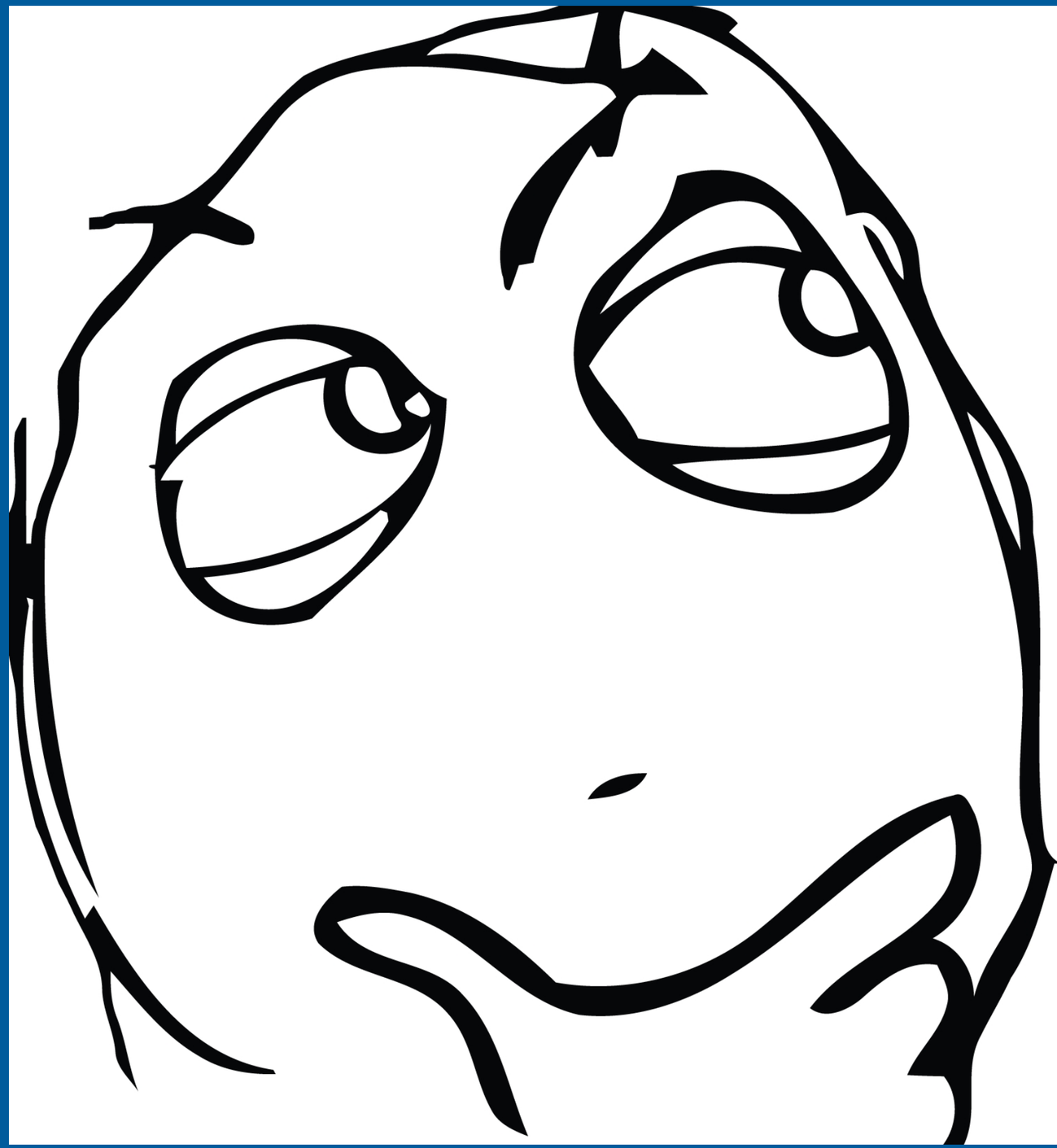
A QUICK STORY...



LE ME

TEST DRIVEN DEVELOPMENT

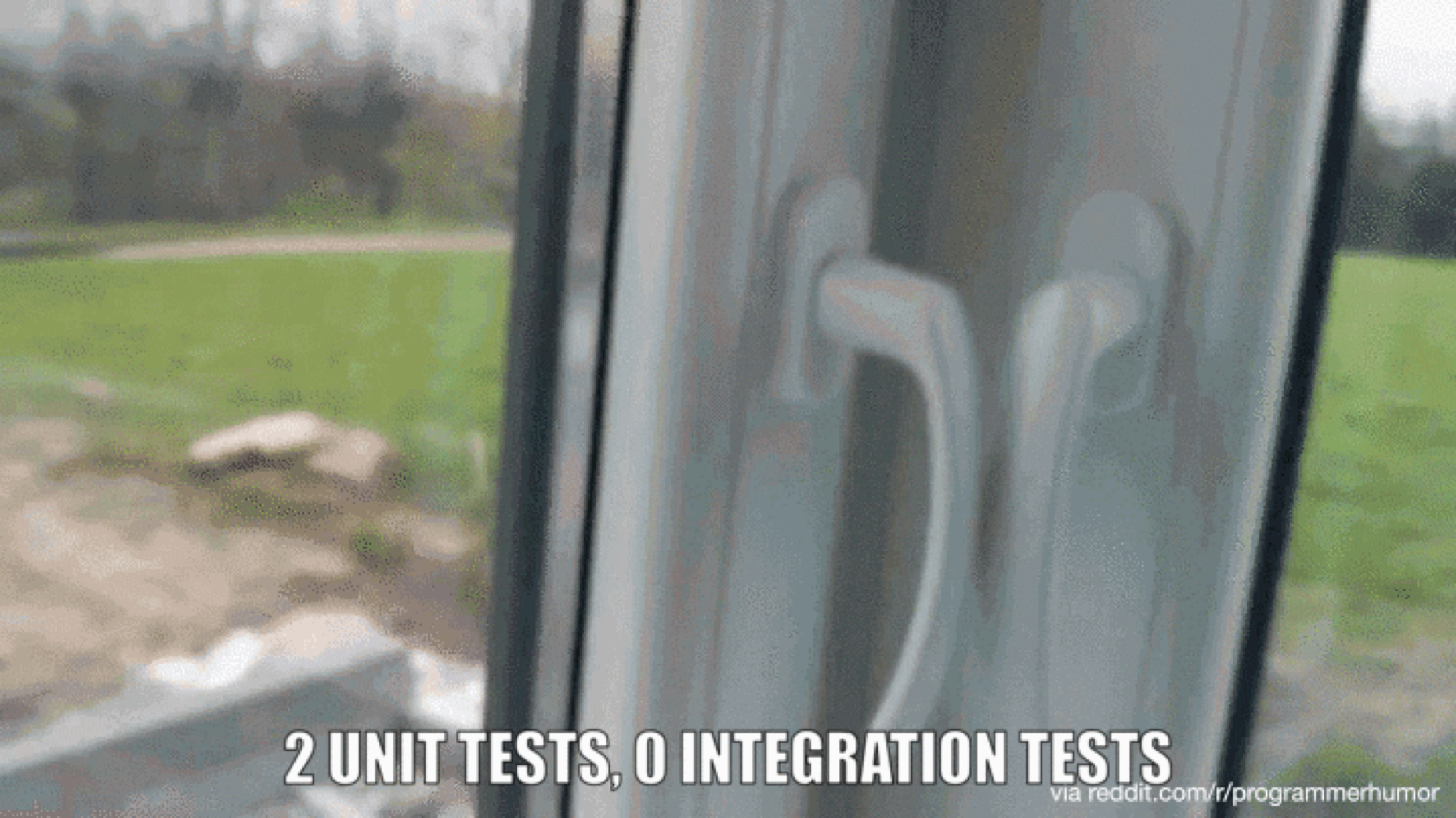
...SO THAT MEANS.
WRITE A UNIT TEST.
IMPLEMENT IT



UNIT TESTS GAVE ME CONFIDENCE THAT MY CLASS WORKED AS EXPECTED

ON UNIT TESTS...

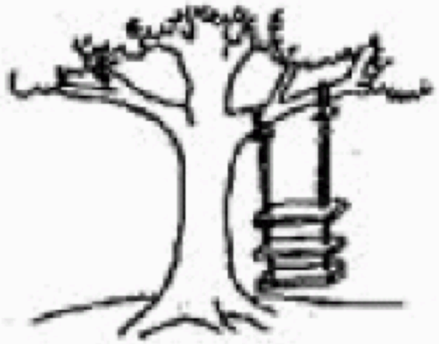
BUT THERE WAS A PROBLEM...


2 UNIT TESTS, 0 INTEGRATION TESTS
via reddit.com/r/programmerhumor

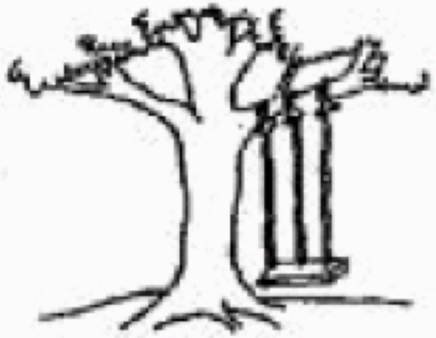
SO I GOT BETTER AT WRITING INTEGRATION TESTS...

INTEGRATION TESTS GAVE ME CONFIDENCE THAT MY CLASSES WORKED TOGETHER AS I EXPECTED

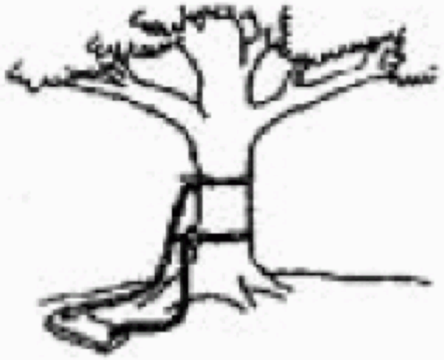
ON INTEGRATION TESTS...



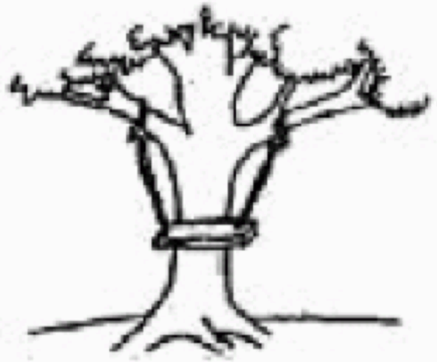
As proposed by the project sponsor.



As specified in the project request.

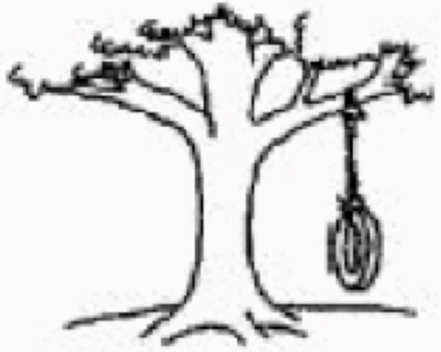


As designed by the senior architect.



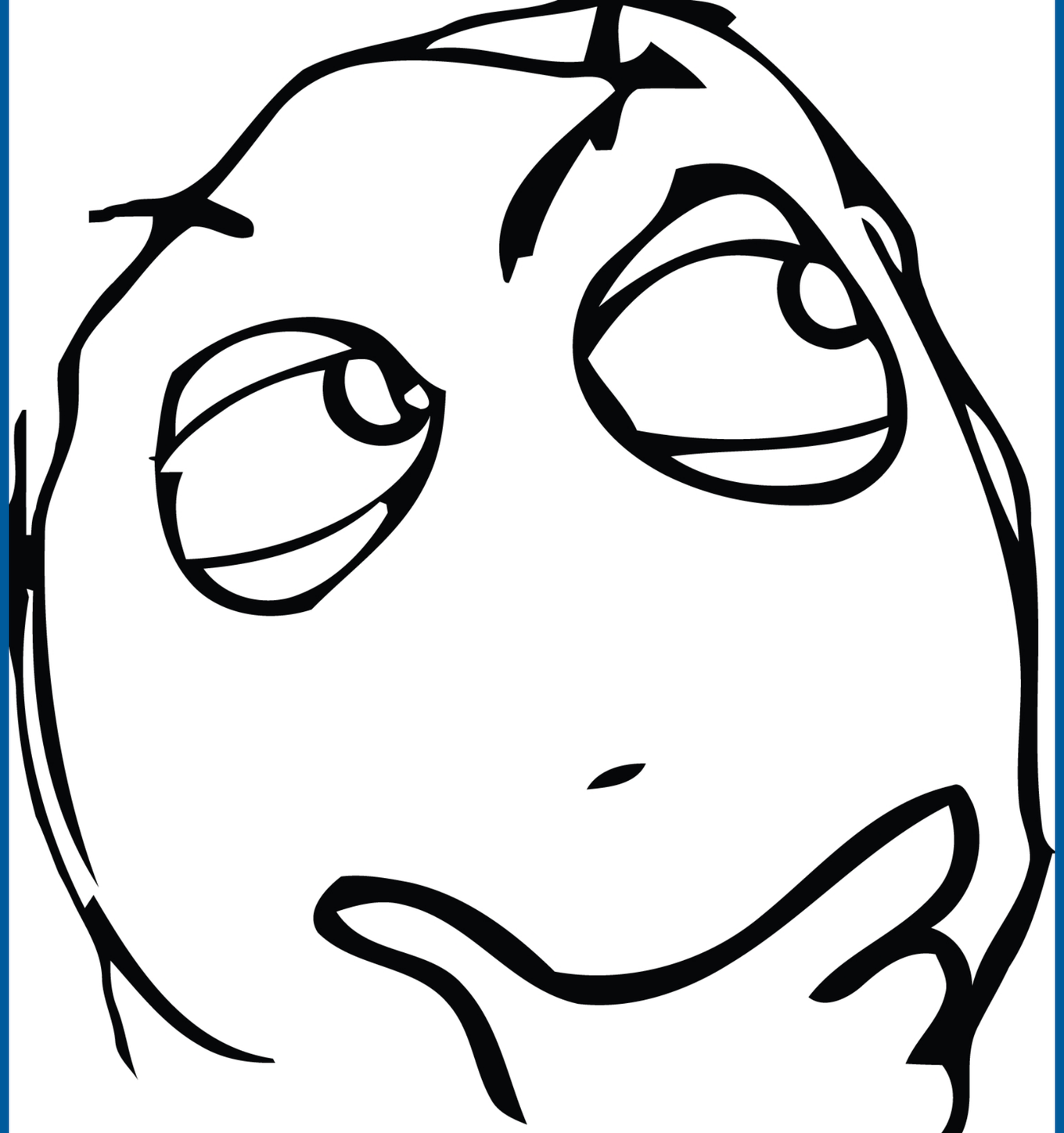
As produced by the engineers.

As installed at the user's site.



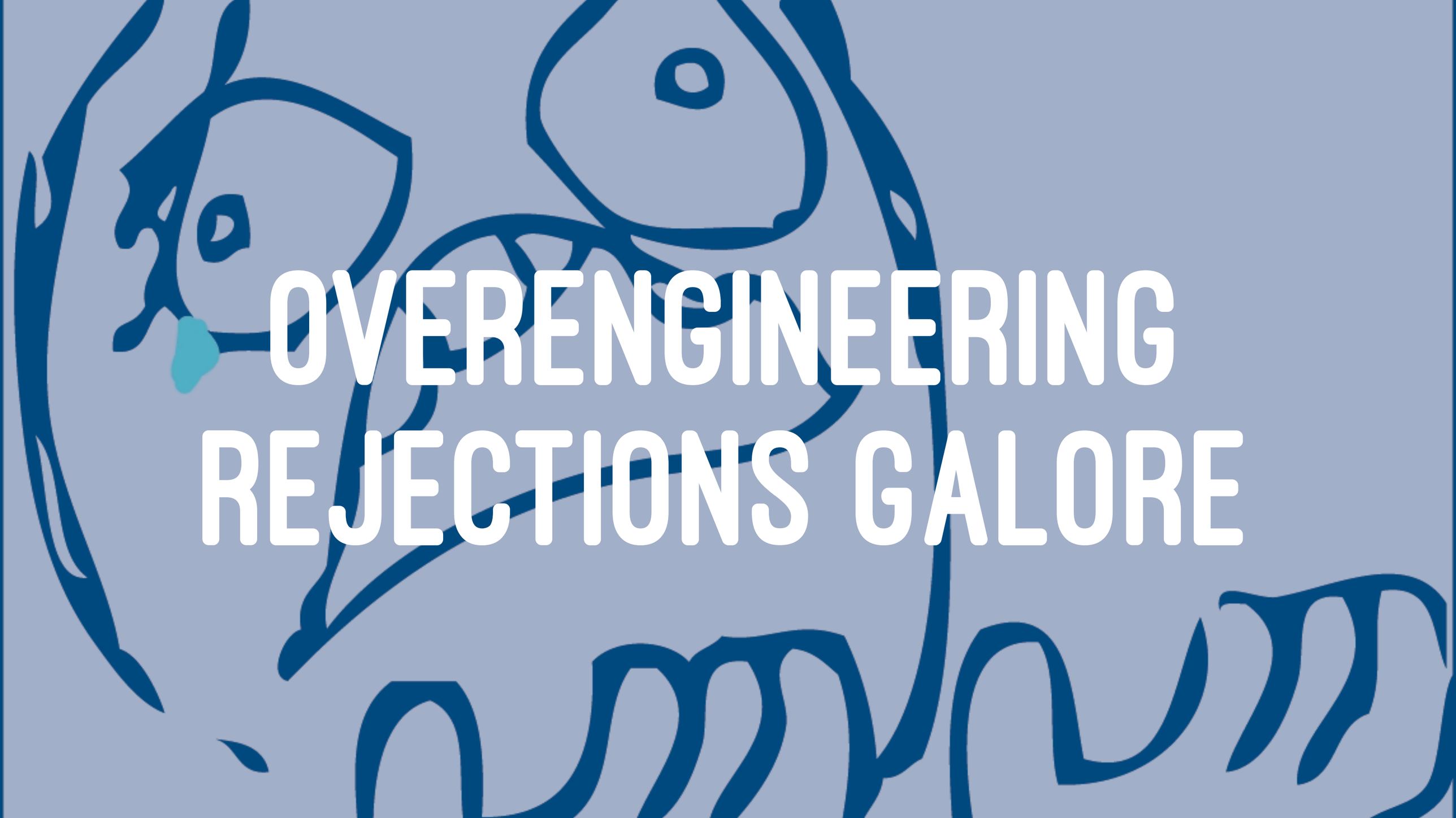
What the customer really wanted.

SO HOW DO YOU MAKE SURE THAT YOU'RE BUILDING THE RIGHT THING, AND THAT IT WORKS?



FAST FORWARD A YEAR...

FIRST BIG PROJECT AS A TEAM LEAD


OVERENGINEERING
REJECTIONS GALORE

START WITH AN ACCEPTANCE TEST

ACCEPTANCE TESTING

FORMAL TESTING WITH RESPECT TO USER NEEDS, REQUIREMENTS, AND BUSINESS PROCESSES CONDUCTED TO DETERMINE WHETHER OR NOT A SYSTEM SATISFIES THE ACCEPTANCE CRITERIA AND TO ENABLE THE USER, CUSTOMERS OR OTHER AUTHORIZED ENTITY TO DETERMINE WHETHER OR NOT TO ACCEPT THE SYSTEM.

-- INTERNATIONAL SOFTWARE TESTING QUALIFICATIONS BOARD

ACCEPTANCE TESTING

A TEST THAT MUST PASS FOR THE USER STORY YOU'RE WORKING ON TO BE COMPLETE

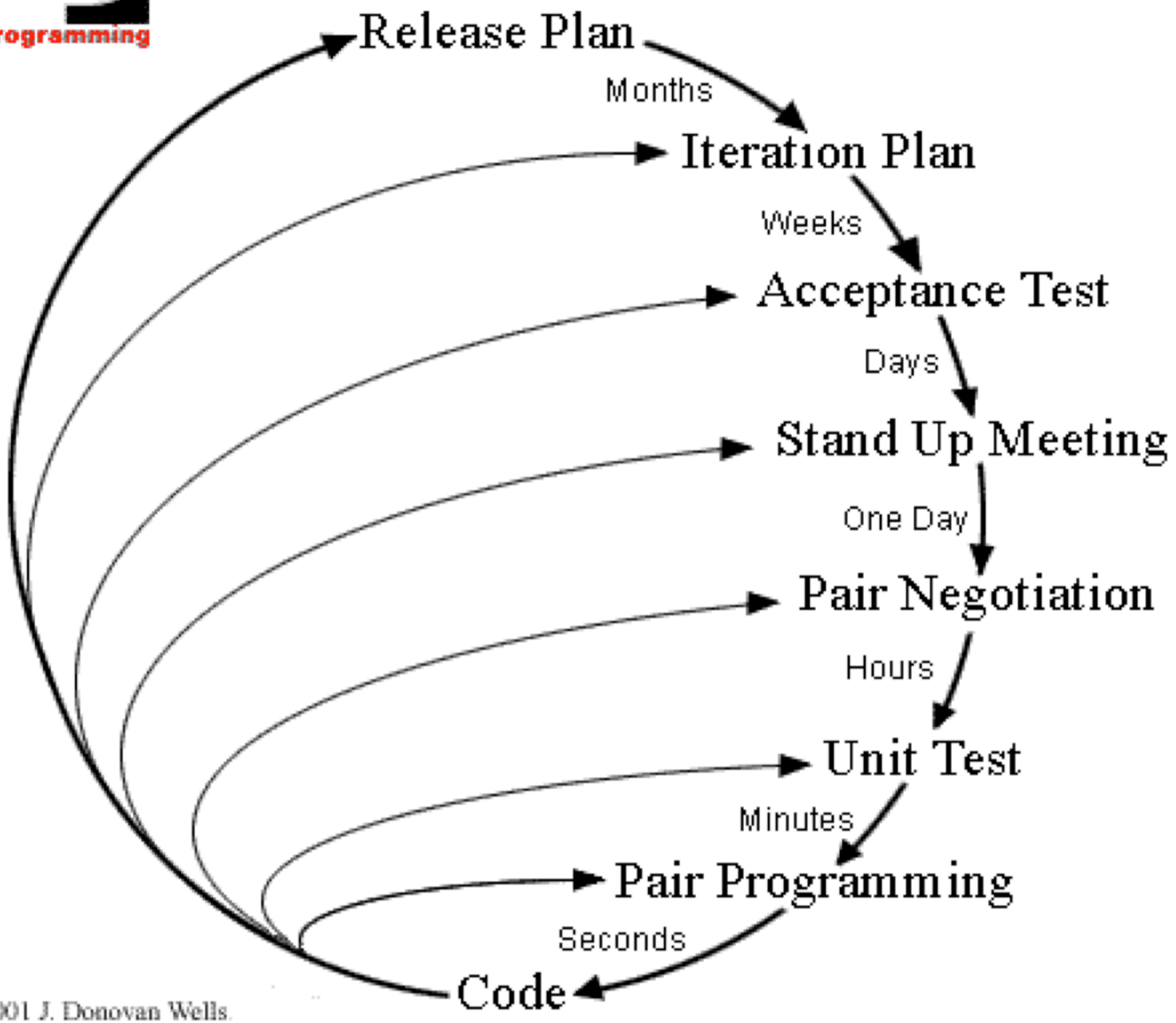
– JASON CARTER

TURNS OUT THIS IS TOTALLY PART OF XP

Extreme Programming

Planning/Feedback Loops

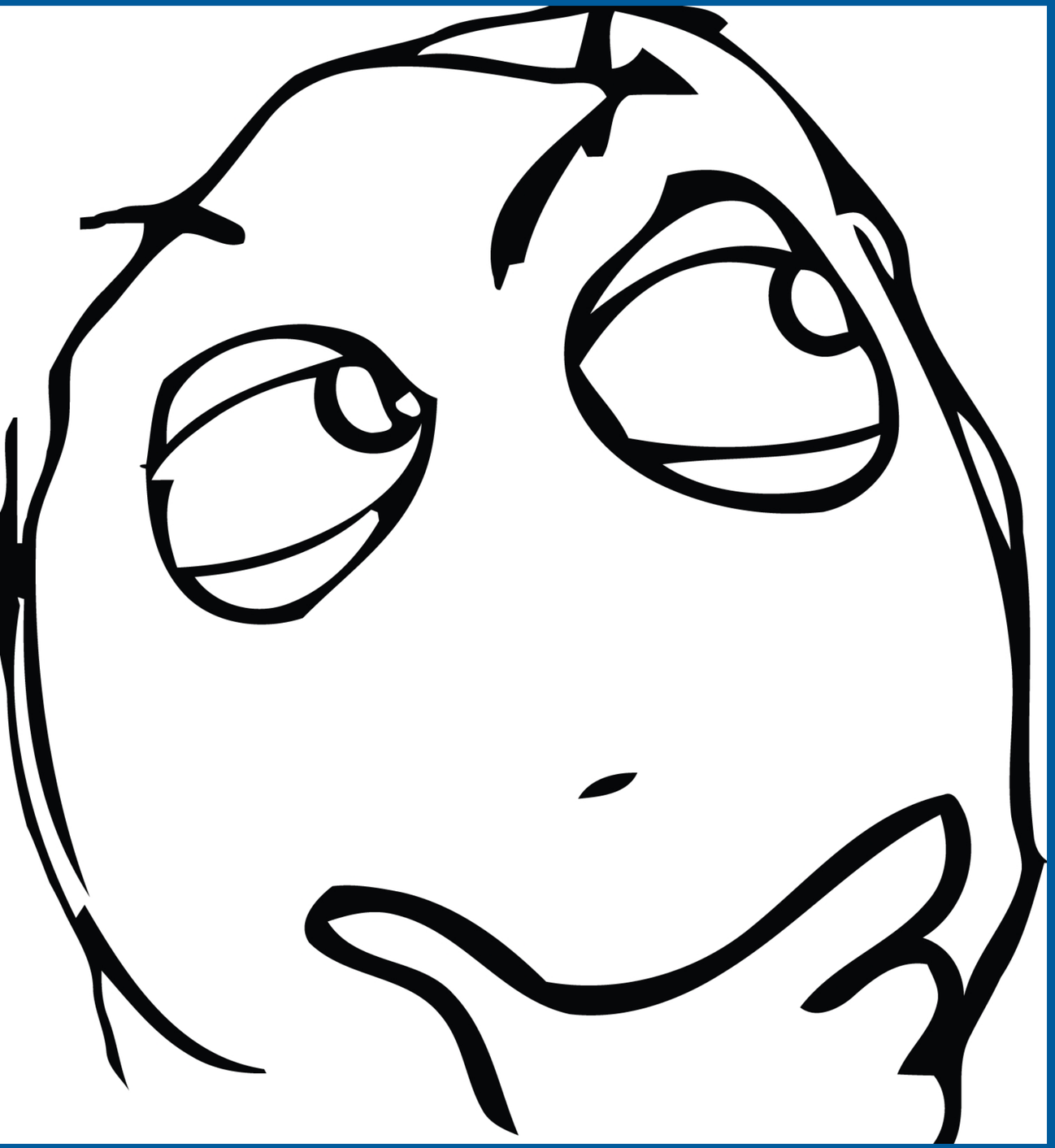
Zoom Out



THE NAME ACCEPTANCE TESTS WAS CHANGED FROM FUNCTIONAL TESTS. THIS BETTER REFLECTS THE INTENT, WHICH IS TO GUARANTEE THAT A CUSTOMERS REQUIREMENTS HAVE BEEN MET AND THE SYSTEM IS ACCEPTABLE.

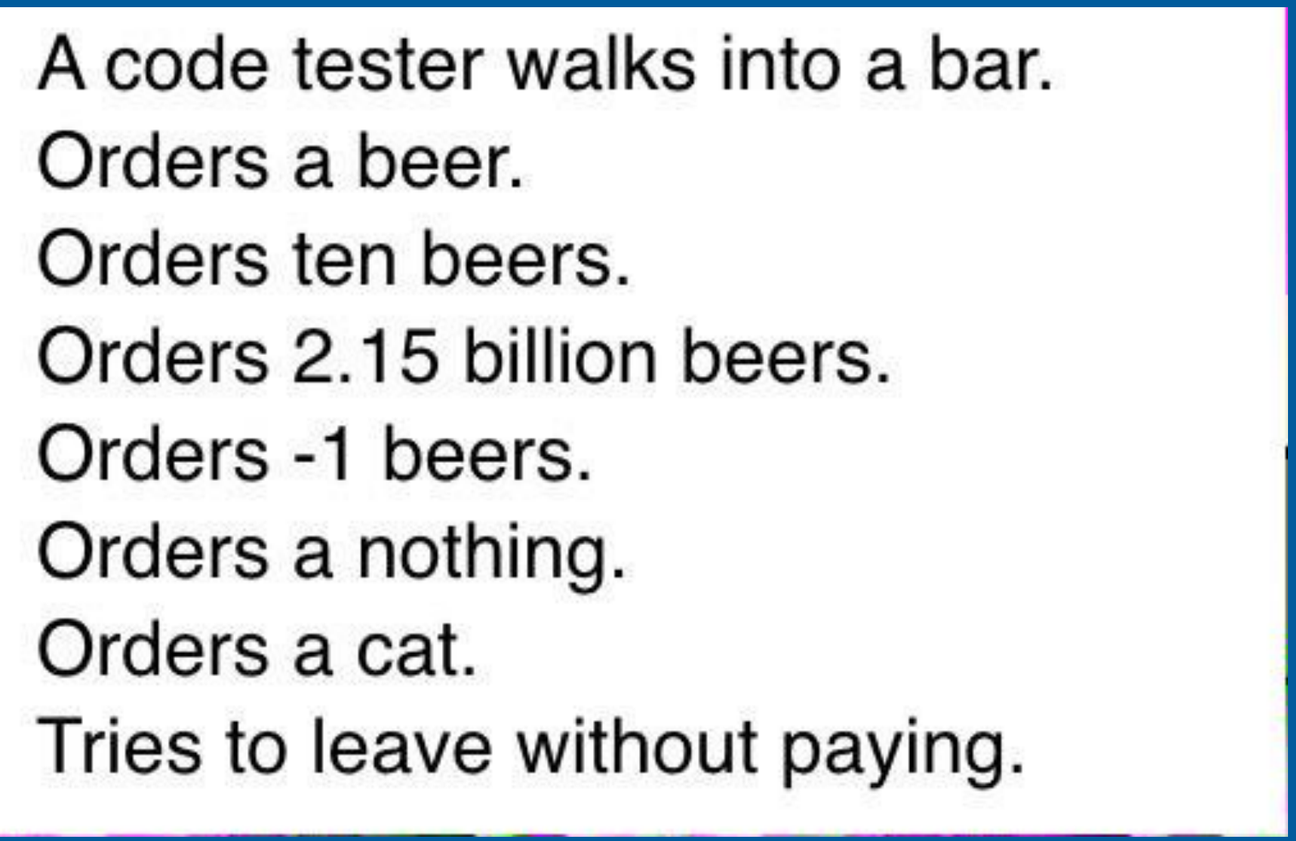
-- DON WELLS, EXTREMEPROGRAMMING.ORG

NOW YOU MAY BE THINKING...



ISN'T THAT WHAT QA IS FOR?

THEY HAVE BETTER
THINGS TO DO



THEY'RE GREAT AT FINDING EDGE CASES

THEY'RE GREAT AT IDENTIFYING WONKY BEHAVIOR

THEY SHOULD BE YOUR
LAST LINE OF DEFENSE.
NOT YOUR FIRST


A DEVELOPER SAYS TO A QA PERSON
"WORKS ON MY MACHINE"

THE ACCEPTANCE TEST TELLS YOU WHEN YOU'RE DONE... IMMEDIATELY

PATTERN BECOMES:

- WRITE THE ACCEPTANCE TEST TO KNOW WHEN THE FEATURE IS DONE
- TEST DRIVE THE IMPLEMENTATION WITH UNIT AND INTEGRATION SPECS
- REFACTOR SAFELY KNOWING THAT THE FEATURE STILL WORKS THE WAY IT SHOULD

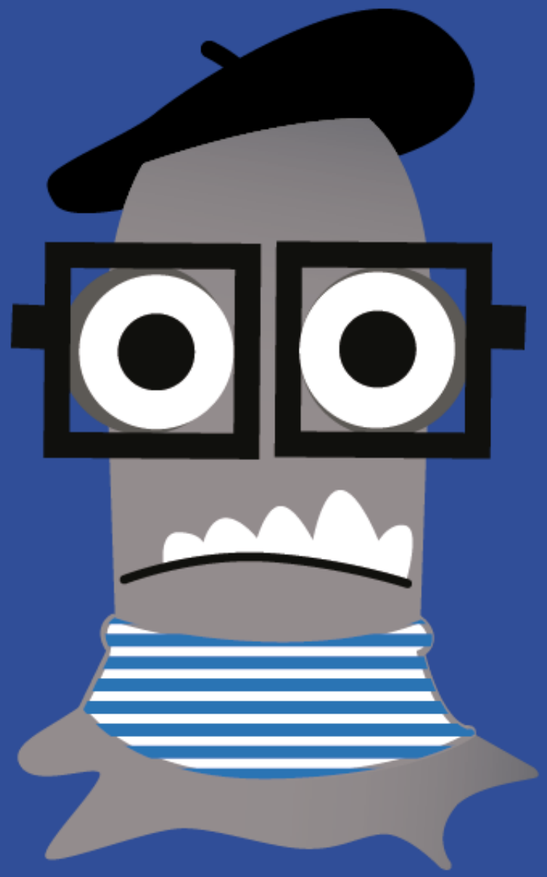
SO HOW DO WE ACCOMPLISH THIS IN A RAILS APP?

SELENIUM

USUALLY PEOPLE HAVE STRONG OPINIONS ON SELENIUM...

SHOULD BE USED AS A LAST RESORT

THAT'S QAS JOB!



A tester walks into a bar and asks for -1 pint of beer.

by Jokin Aspiazu

www.ministryoftesting.com

IT FAILS FOR NO REASON!


ME
FFFFFFF
FFFFFFF
FFFFFF
FFFUU
UUUU
UUUU
UUUU
UUUU
UUUU-

SO WE SET OUT TO MAKE IT PALATABLE TO ME...

...AND TO PRODUCT AND QA.

TOPICS

- GENERAL PRINCIPLES
- AVOIDING "INTERMITTENT FAILURES"
- VANILLA
- SETUP, ACTIONS, AND ASSERTIONS
- PAGE OBJECT PATTERN
- RANDOM MUSINGS

PRINCIPLES

AN ACCEPTANCE TEST SHOULD...

EXERCISE YOUR APP TO ITS FULLEST

AVOID MOCKING AS MUCH AS POSSIBLE

ONLY SIMULATE WHAT A USER COULD DO

GIVE YOU CONFIDENCE
THAT YOUR APP IS
WORKING AS IT SHOULD

BE THE FIRST TEST YOU WRITE IN THE CASE OF A REGRESSION

AVOIDING "INTERMITTENT ~~FAILURES~~ SUCCESSES"

RACE CONDITIONS

EXPLICIT VS IMPLICIT WAIT

NOT SCOPING YOUR FINDERS

ASYNCHRONOUS CODE

MIXING SETUP AND ACTIONS

VANILLA

```ruby
describe 'when deleting an existing Review', js: true, type: :request do
  # A bunch of lets
  context 'When the user is a review creator' do
    it 'can be deleted' do
      find('.workspace-proof-title', text: proof.title).click
      within '.workspace-proofs-table' do
        within 'tr', text: 'some proof' do
          expect(page).to have_text('In Review ( 1/2 )')
        end
      end
      within '#side-panel' do
        find('span', text: 'Delete Review').click
      end
      within '.show-mavenlink-alert' do
        expect(page).to have_selector('h2', text: 'Delete')
        expect(page).to have_selector('button', text: 'Delete')
        expect(page).to have_selector('button', text: 'Cancel')
        click_button('Delete')
      end
      within '#side-panel' do
        expect(page).to have_button('Create Review')
      end
      find('.js-panel-close-link').click
      find('.workspace-proof-title', text: 'Some Proof').click
      within '#side-panel' do
        expect(page).to have_button('Create Review')
      end
      within '.workspace-proofs-table' do
        within 'tr', text: proof.title do
          expect(page).to have_no_text('In Review ( 1/2 )')
        end
      end
    end
    end
  end
end
```

PROS

AT THE VERY LEAST
WE'RE AVOIDING
INTERMITTENT FAILURES

CONS

ONLY A DEV CAN READ THIS. AND PROBABLY ONLY ONE WITH CONTEXT

MIXES ASSERTIONS AND ACTIONS

TOUGH TO CREATE A NEW TEST IMMEDIATELY

IT OFFENDS MY DRY SENSIBILITIES

IF I CHANGE THE DOM. I HAVE TO UPDATE A BUNCH OF STUFF...

… AND I MIGHT NOT KNOW WHAT THE BEHAVIOR WAS IN THE FIRST PLACE?

BUT WHAT ABOUT COMMENTS, JASON?

COMMENTS ARE JUST ANOTHER THING TO KEEP UP TO DATE

SURE COMMENTS ARE SOMETIMES NECESSARY

A GOOD METHOD NAME IS GENERALLY A FINE COMMENT

AND IF YOU NEED COMMENTS, CHANCES ARE YOUR METHOD IS DOING TOO MUCH*

* JASON OPINION

SO IF WE DON'T LIKE COMMENTS, HOW DO WE MAKE THIS MORE UNDERSTANDABLE?

SETUP, ACTIONS, AND ASSERTIONS

```ruby
describe 'when deleting an existing Review', js: true, type: :request do
  # a bunch of lets
  it 'can be deleted' do
    navigate_to_proof_tab(proof_employee, workspace)
    click_proof_title(proof)
    it_should_have_proof_with_status(proof, 'In Review ( 1/2 )')
    click_delete_review
    confirm_action 'Delete'
    it_has_create_review_option
    it_persists_the_delete(proof)
    it_should_not_have_proof_with_status(proof, 'In Review ( 1/2 )')
  end
end
```

PROS

DEFINITELY EASIER TO READ

REUSABLE METHODS!

ABSTRACTED AWAY THE DOM

CONS

NOT ALWAYS EASY TO TELL WHAT PAGE WE'RE ON

NOT A GREAT WAY TO SHOW THAT AN ACTION LEADS TO AN ASSERTION

NOT PICTURED IS OUR GIANT FUNCTION LIBRARY

PAGE OBJECT PATTERN

```
describe 'inviting people to a workspace', js: true, type: :request do
  describe 'the invitation flow' do
    context 'when adding to consultants' do
      context 'when the account is not free or trialing' do
        let(:project_invitation_form) { Pages::ProjectInvitations::Form.new('maven') }
        let(:inviting_user) { users(:jane) }
        let(:invited_user) { users(:alice) }
        let(:workspace) { workspaces(:jane_car_wash) }

        it 'will invite a maven to a workspace' do
          login(inviting_user)
          visit workspace_path(workspace)
          invite_a(team, invited_user)

          expect(project_invitation_form).to have_save_message_as_default_checkbox
          expect(project_invitation_form).to have_no_subject_and_message_tipsy
          expect(project_invitation_form).to have_no_upgrade_call_to_action
          expect(project_invitation_form.send_invitation).to have_sent_an_invitation
        end
      end
    end
  end
end
```

```ruby
module Pages
  module ProjectInvitations
    class Form
      include Capybara::DSL

      def initialize(team)
        @team = team
      end

      def has_save_message_as_default_checkbox?
        page.has_css?('#save_message_as_default')
      end

      def send_invitation
        click_button 'Send invitation'
        self
      end

      def has_sent_an_invitation?
        within('.flash-container') do
          page.has_css?('.notice', text: '1 invitation was sent for this project')
        end
      end

      def has_not_sent_an_invitation?
        within('.flash-container') do
          page.has_css?('.notice', text: 'The invited user must be a member of your account.')
        end
      end
    end
  end
end
```

A COUPLE THINGS TO NOTE

```ruby
def has_sent_an_invitation?
  within('.flash-container') do
    page.has_css?('.notice', text: '1 invitation was sent for this project')
  end
end

# Selenium does some magic for us
# has_sent_invitation? -> have_sent_an_invitation
```

RETURNING `self` LETS US CHAIN THINGS TOGETHER, AND USE THE `to` SYNTAX

```
def send_invitation
  click_button 'Send invitation'
  self
end
```

```ruby
describe 'inviting people to a workspace', js: true, type: :request do
  describe 'the invitation flow' do
    context 'when adding to consultants' do
      context 'when the account is not free or trialing' do
          # ...
          expect(project_invitation_form.send_invitation).to have_sent_an_invitation
        end
      end
    end
  end
end
```

PROS

MUCH EASIER TO TELL WHAT PAGE WE'RE ON!

WE CAN SCOPE ACTIONS AND ASSERTIONS TO PAGES (OR SUBPAGES!)

STILL PRETTY READABLE!
IN FACT, LETS US SEE
CAUSE AND EFFECT MUCH
EASIER

MARTIN FOWLER SAID ITS AWESOME!

CONS

I HAVEN'T FOUND ANY YET...

OTHER MUSINGS

```
expect(project_invitation_form.send_invitation).to [
    have_sent_an_invitation,
    have_notified_some_service,
    have_done_something_else
]
```

WHAT IF I WANT TO MAKE THE SAME ASSERTIONS ON MULTIPLE PAGES?

SHARED ASSERTIONS BETWEEN PAGE OBJECTS

WHAT ABOUT COMMON TASKS LIKE LOGGING IN?

SHARED ACTIONS BETWEEN PAGE OBJECTS OR DONE BEFORE SETTING UP THE PAGE OBJECT.

3RD PARTY INTEGRATIONS?

WE INTEGRATE WITH A 3RD PARTY VIA DELAYED JOB

WE CAN ASSERT THAT DELAYED JOB IS CALLED, BUT WHAT ABOUT THAT IT DOES THE RIGHT THING?

```ruby
def run_conceptshare_jobs_immediately
  stub(Delayed::Job).enqueue do |job|
    job.perform if job.respond_to?(:queue_name) && job.queue_name == 'conceptshare'
    true
  end
end
```

```ruby
context 'when adding to a workspace mapped to conceptshare' do
  it 'will create a conceptshare mapping for the participation' do
    run_conceptshare_jobs_immediately
    mock.any_instance_of(Conceptshare::AccountClient).create_user_if_necessary(invited_user)
    mock.any_instance_of(Conceptshare::AccountClient).add_user_to_account(invited_user)
    mock.any_instance_of(Conceptshare::AccountClient).add_user_to_project(invited_user, workspace, "Commentator")

    login(inviting_user)
    visit workspace_path(workspace)
    invite_a(team, invited_user)
    project_invitation_form.send_invitation
  end
end
```

THIS GETS US PARTWAY THERE

HOW DO I MAKE SURE THE 3RD PARTY DOES WHAT I WANT?

VCR?

WHAT IF YOU STILL GOT THE BEHAVIOR WRONG?

CLARIFY WITH QA AND PRODUCT UP FRONT

HAVE THEM LOOK AT YOUR NOW READABLE ACCEPTANCE TESTS

BUT JASON, THIS ALL SOUNDS WELL AND GOOD...

HOW DO I START?

IN SUMMARY

WE'RE AVOIDING COMMON PITFALLS...

WE'RE AVOIDING "BUILDING THE WRONG THING"...

IT SERVES AS
DOCUMENTATION THATS
READABLE BY ALL
STAKEHOLDERS...

IT MAKES IT EASIER TO DO SWEEPING REFACTORS AND MAINTAIN BEHAVIOR...

... AND


ME NOW

QUESTIONS?