Joining up the dots

# SYNTHESIS

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# “Synthesis”

the formation of something complex or coherent by combining simpler things

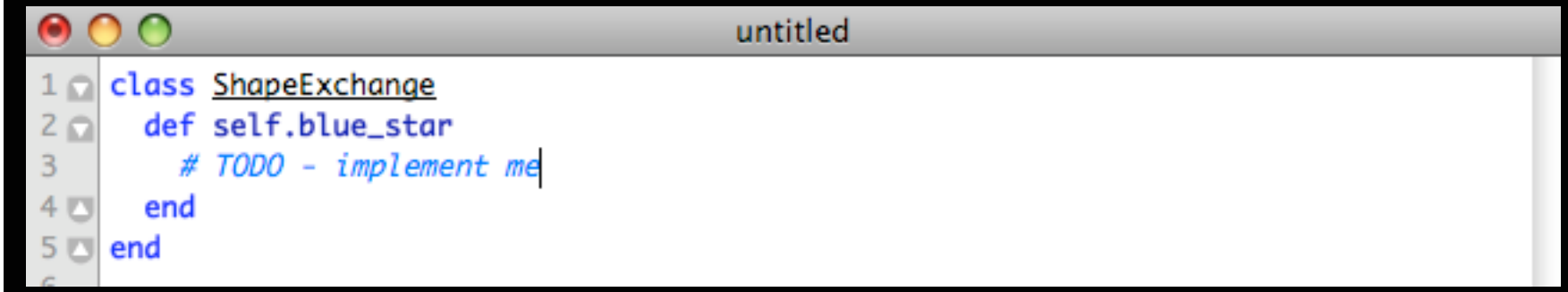
# Synthesized testing

Combine lightweight tests to build confidence that our system is complete and reduce the need for large, overarching tests

# Test code is code, too

# Technical debt

# A story of shapes




# Simple?

# Hang on…

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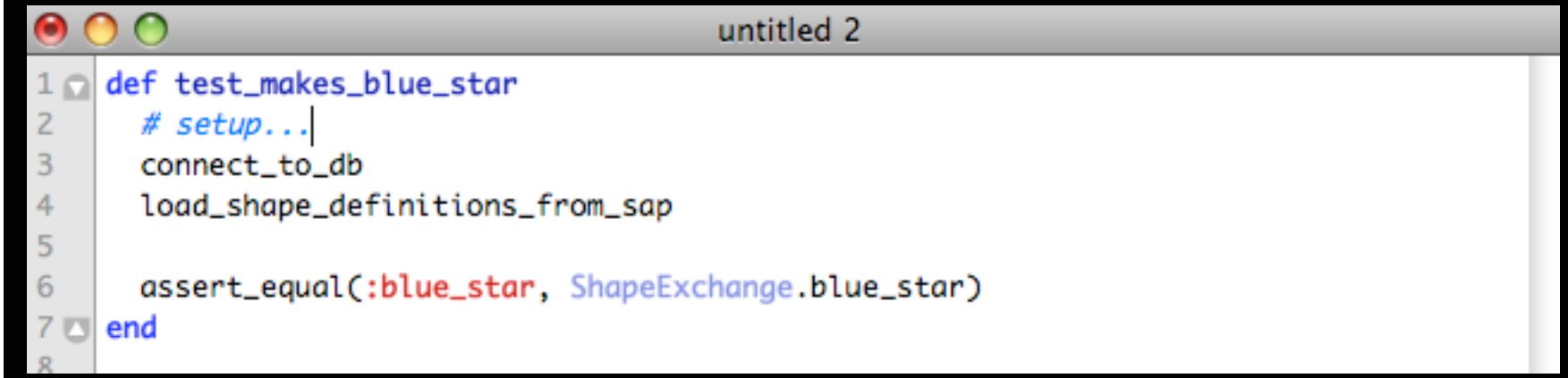
```
1 def test_makes_blue_star
2   # setup...
3   assert_equal(:blue_star, ShapeExchange.blue_star)
4 end
5
```

# Just a little setup

# Just a little more setup



# You get the idea

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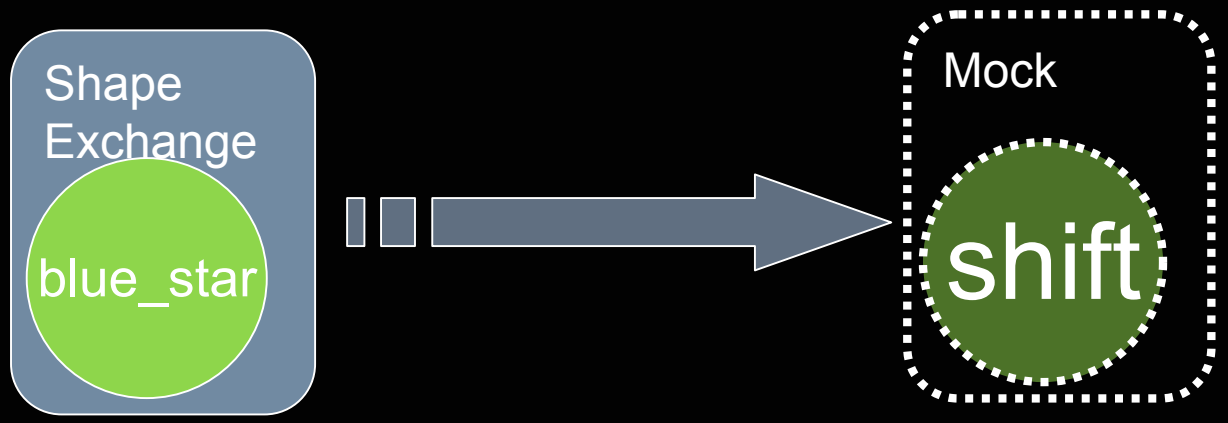
```
1  def test_makes_blue_star
2    # setup...
3    connect_to_db
4    load_shape_definitions_from_sap
5    create_shape_dependency_1
6    #....
7
8    assert_equal(:blue_star, ShapeExchange.blue_star)
9  end
10
```

# Mock the interaction?

# Red

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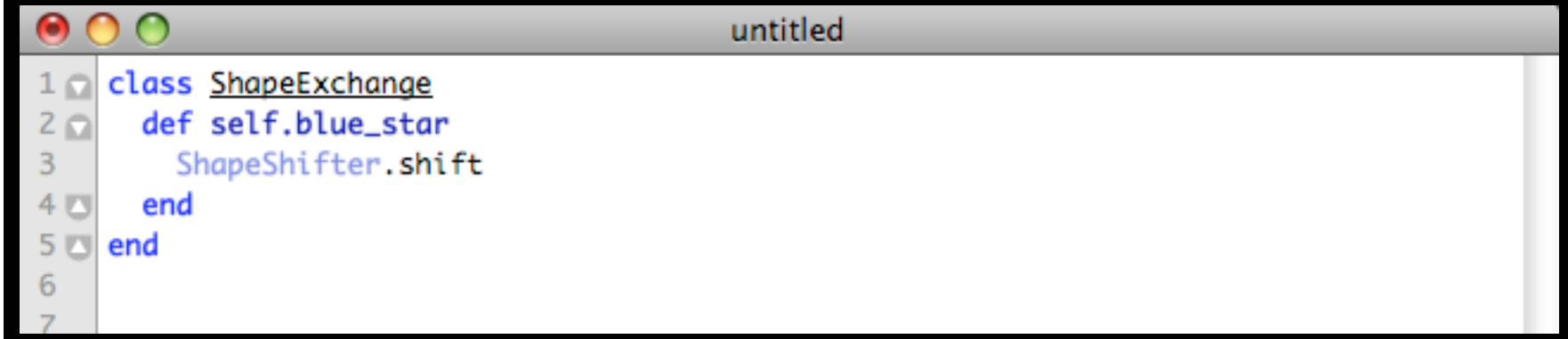
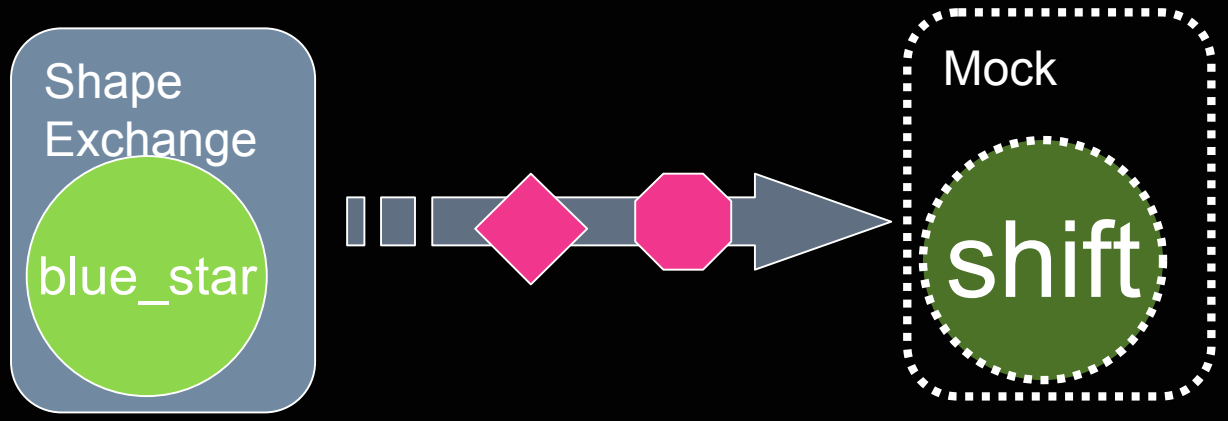
```
1 def test_makes_blue_star
2   ShapeShifter.expects(:shift)
3   ShapeExchange.blue_star
4 end
```

# Green



# Crash

# Red

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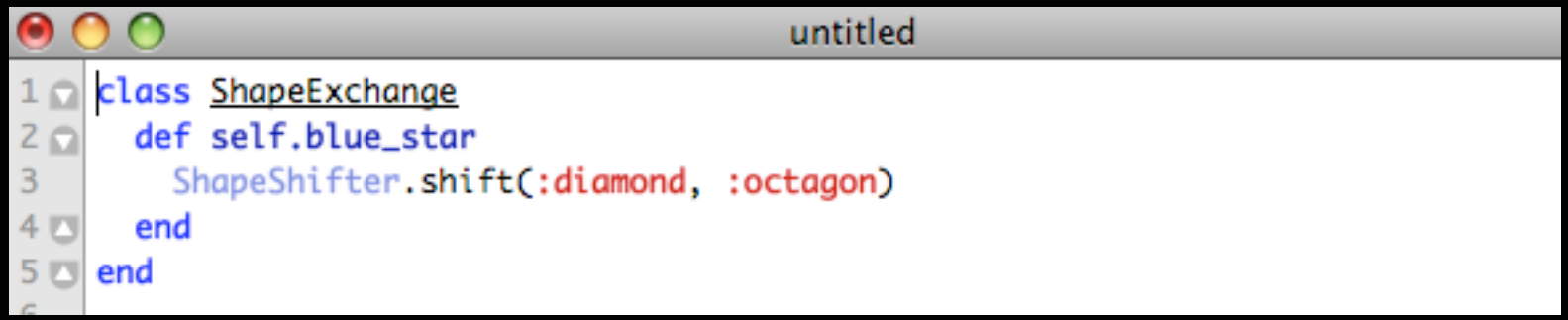
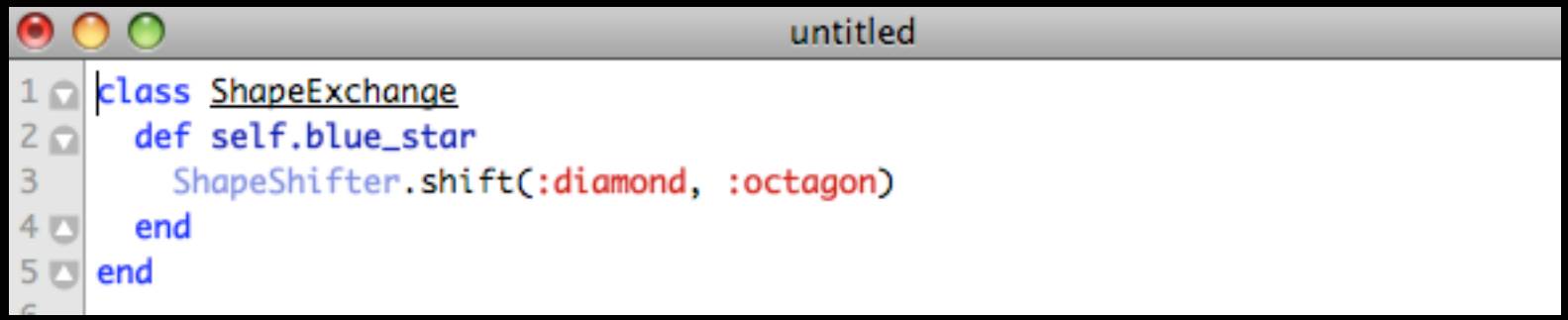
```
1 def test_makes_blue_star
2   ShapeShifter.expects(:shift).with(:diamond, :octagon)
3   ShapeExchange.blue_star
4 end
```

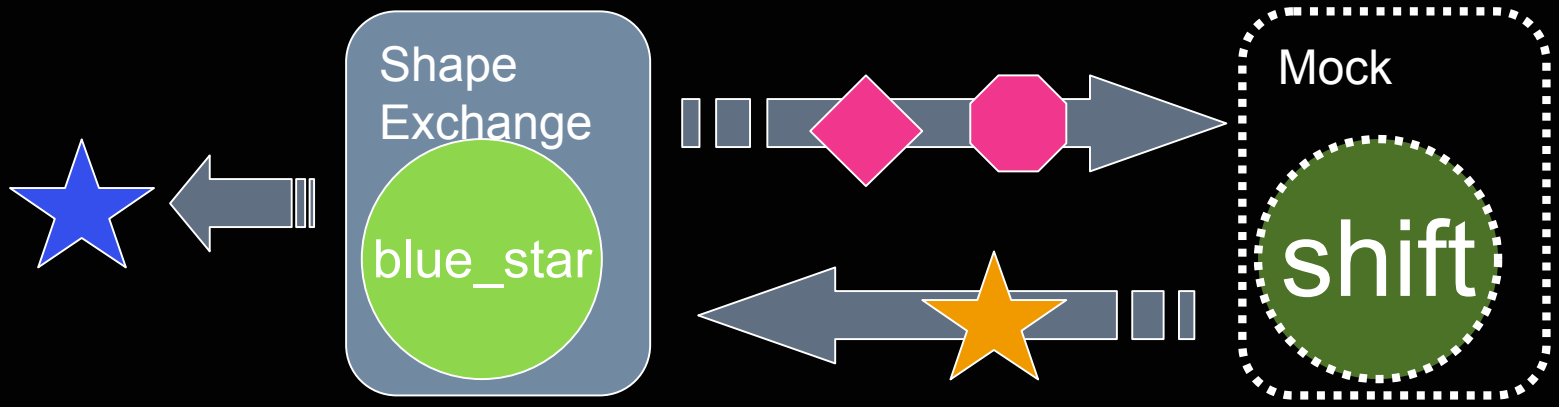
# Green



# Incomplete



# Red

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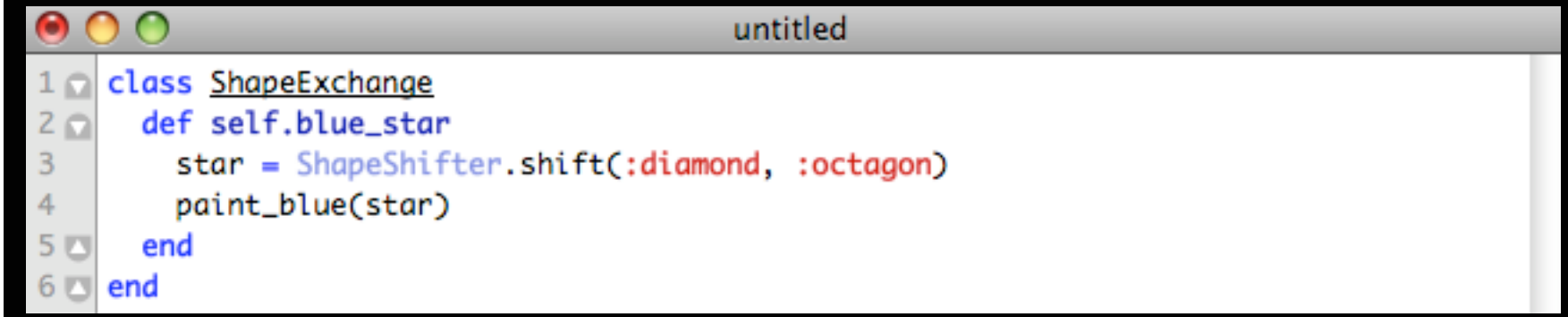
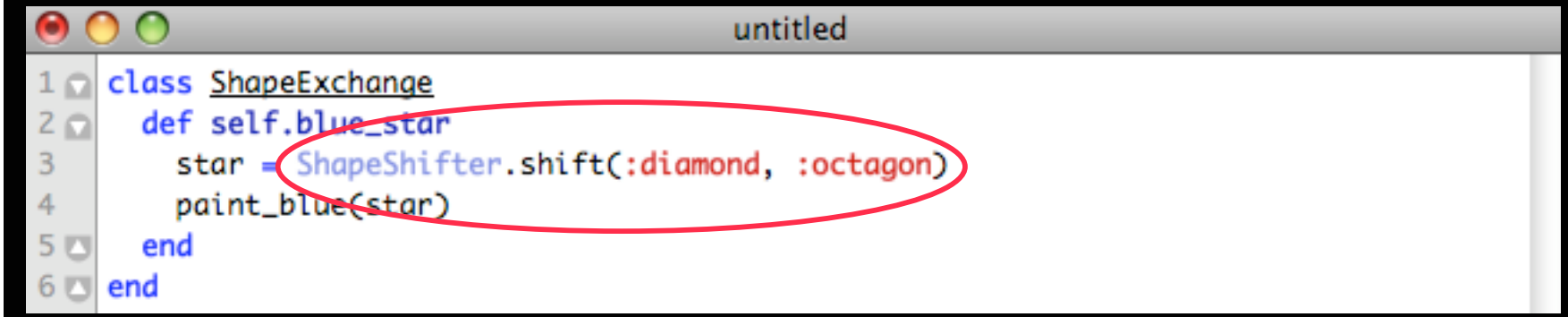
```
1 def test_makes_blue_star
2   ShapeShifter.expects(:shift).with(:diamond, :octagon).returns(:star)
3   assert_equal(:blue_star, ShapeExchange.blue_star)
4 end
```

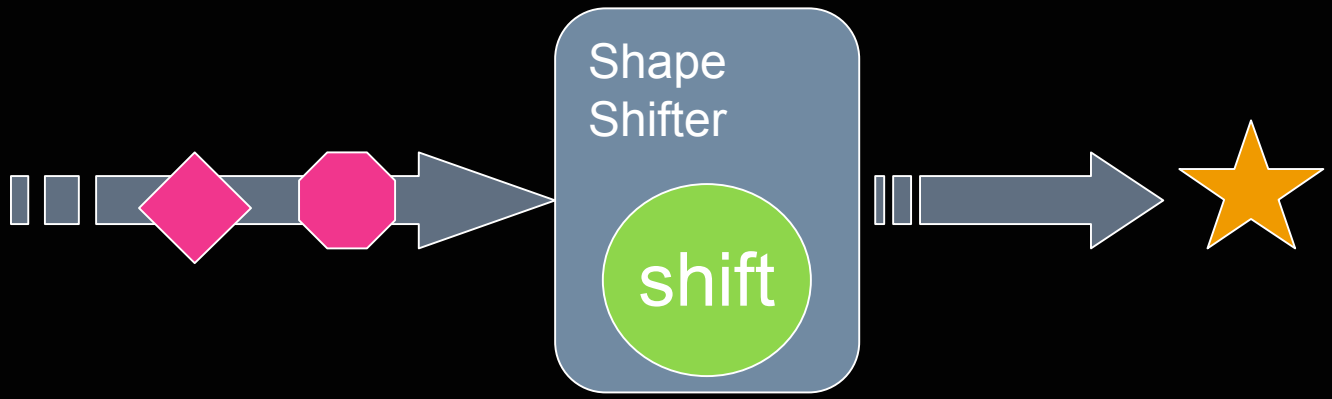
# Green



# Where?

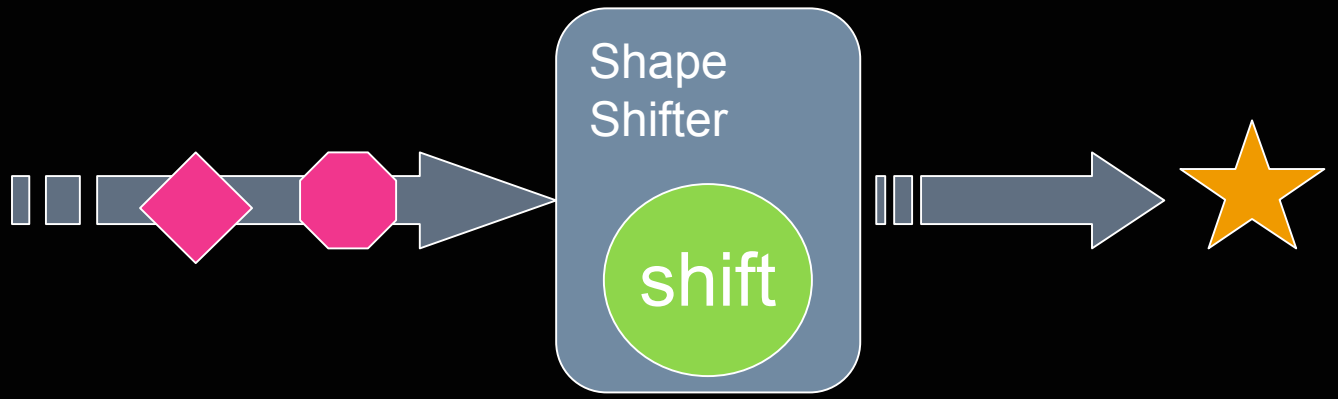


# Can we prove this happens?




?

# Red

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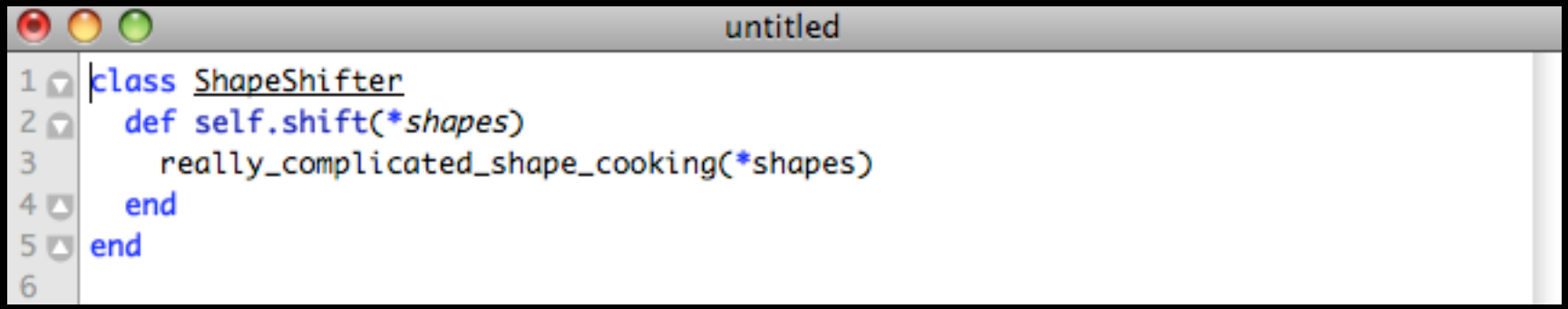
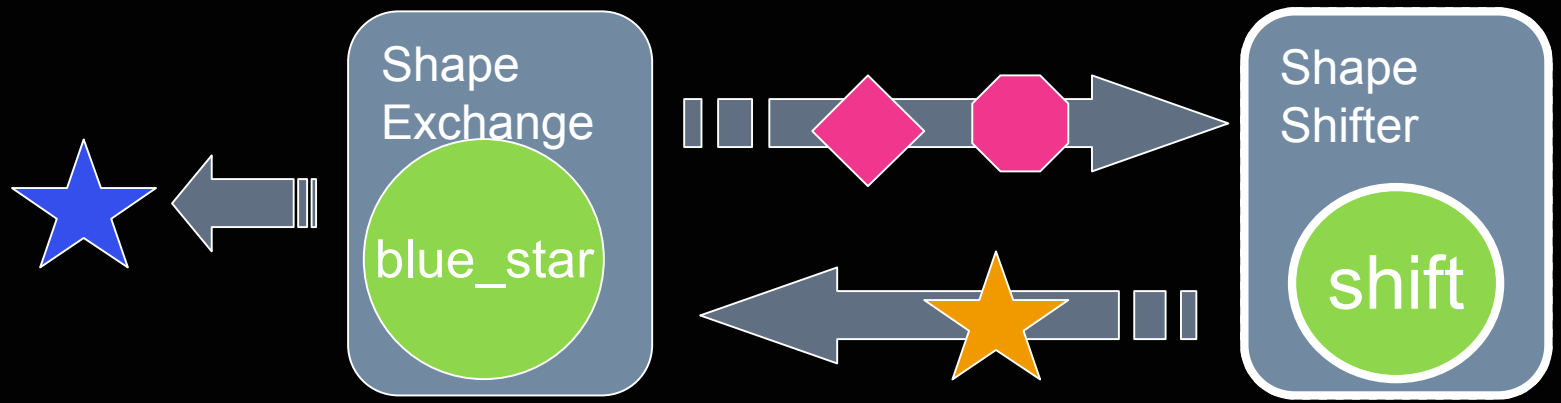
```
1  def test_shifts_start_from_diamond_and_octagon
2    assert_equal(:star, ShapeShifter.shift(:diamond, :octagon))
3  end
4
```

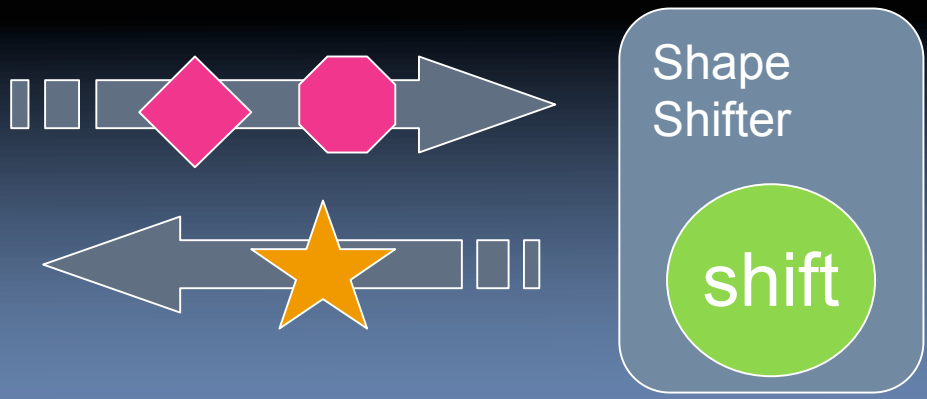
# Green



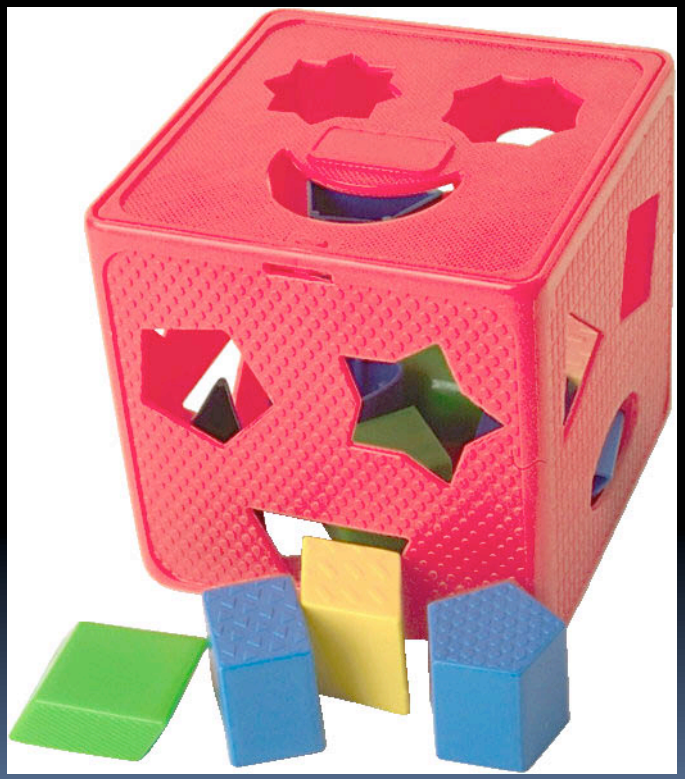
# Reduced technical debt

# Synthesizing a bigger test



# Synthesis



# Works well with

Existing tools

- RSpec
- Mocha
- zentest
- autotest

Testing Practices

- TDD
- BDD

# Synthesis overview

Used through the Rake task Synthesis::Task

```
33 Synthesis::Task.new('synthesis:test:rspec') do |t|
34   t.adapter = :rspec
35   t.pattern = 'test_project/rspec/*_spec.rb'
36 end
```

# Synthesis overview

First pass

- Collect mocked expectations

Second Pass

- Correlate mocked expectations with REAL calls to REAL objects.

# Synthesis

- http://synthesis.rubyforge.org/

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