Learning by Inspecting Troubled Code

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Slides uploaded at www.danofer.com/presentations/bad_ruby

Design Patterns

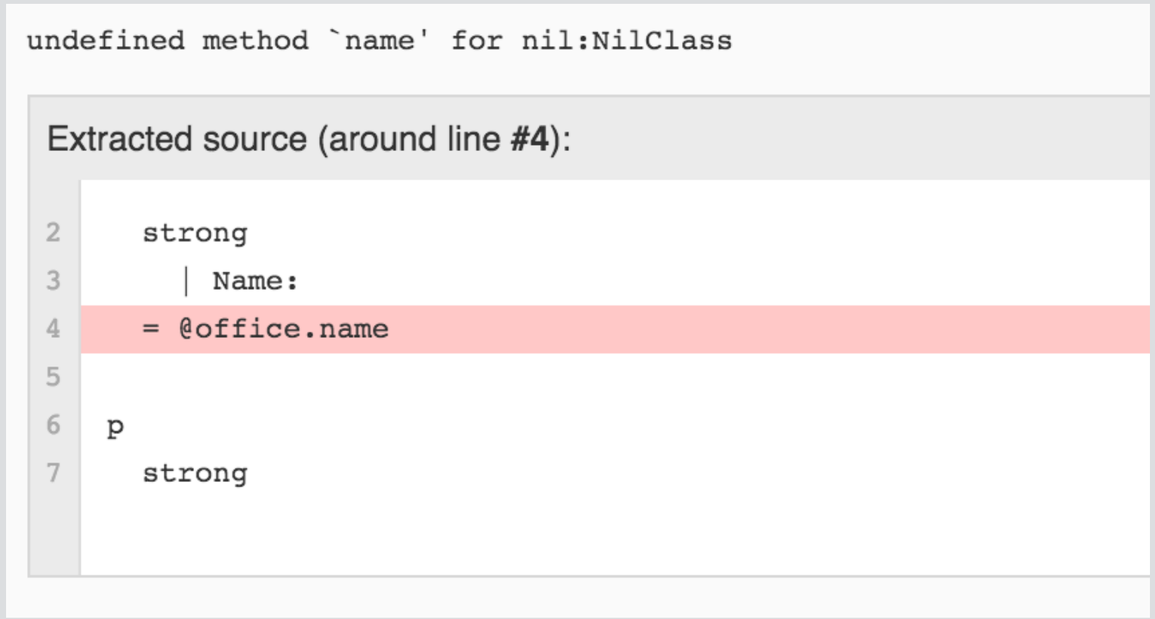
- Discuss six bad ideas
- Description of problem
- Solution with bad design pattern
- Alternatives with good design pattern

One: Implement Methods on NilClass

- A @doctor **has_one** @office
- office might be nil

Error: @office is Nil

- Imagine we have a @doctor that **has_one** @office
- @office is nil

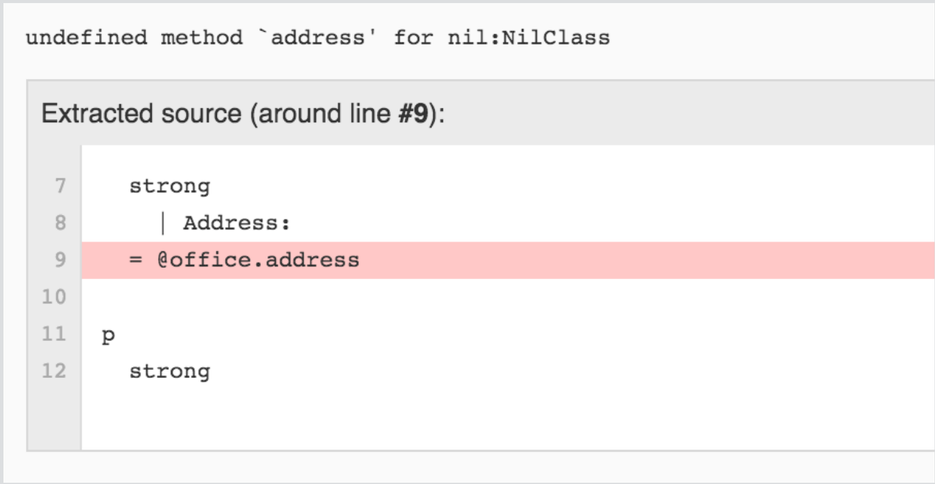


Bad Ruby

```
class NilClass
  def name
    'Dr Crusher\'s Medical Office'
  end
end
```

Two: Implement All Methods on NilClass

- Cannot access remaining methods on @office
- Too lazy to implement these remaining methods



Bad Ruby

```ruby
class NilClass
  def method_missing(symbol, *args)
    "Sick Bay"
  end
end
```

Good solution

1. Unstable state if @doctor does not have @office
2. **Nil Object** design pattern

```
class NilOffice
  def name
    'Empty Office'
  end

  def address
    'The City of Atlantis'
  end
end
```

Three: Guards Against nil

Reduce:

```
if @doctor != nill
   && @doctor.office != nill
   && @doctor.office.admin && != nil
   && @doctor.office.admin == 'Wesley Crusher'

   @doctor.nepotistic? = :very_much_true
end
```

To

```
if @doctor.office.admin == 'Wesley Crusher'
  @doctor.nepotistic? = :very_much_true
end
```

Bad Ruby

```
class NilClass
  def method_missing(symbol, *args)
    nil
  end
end
```

Good Solution

- andand by Reg Braithwaite (Old from 2013):

```
@doctor.andand.office.andand.admin == 'Wesley Crusher'
```

- #try, from ActiveSupport (Recent from Rails):

```
@doctor.try(:office).try(:admin) == 'Wesley Crusher'
```

- **Law of Demeter** design pattern: Define method admin on **office_admin** on doctor

```
class Doctor
  def office_admin
    office != nil && office.admin
  end
end
```

Four: Symbols Use Memory

Convert user input into symbols

```
symbols = []
while ((user_input = gets.strip) != 'exit') do
  symbols << user_input.to_sym
end
```

Good Solution:

Never convert user input into symbols!

Five: Reduce Non-StandardError Exceptions

```
begin
  raise
rescue Exception => exc
  logger.log('I am logging all exceptions')
end
```

Ruby Core

Ruby Core Exceptions

- NoMemoryError
- ScriptError
  - LoadError
  - NotImplementedError
  - SyntaxError
- SecurityError
- SignalException
  - Interrupt
- StandardError -- default for `rescue`
  - ArgumentError
    - UncaughtThrowError
  - EncodingError
  - FiberError
  - IOError
    - EOFError
  - IndexError
    - KeyError
    - StopIteration

Good Solution

```
begin
  raise
rescue StandardError => exc
  logger.log("Error:\n#{exc.message}\n#{exc.backtrace}")
end
```

Six: Exception Hiding

Bad Ruby

```ruby
begin
  begin
    raise 'Explanation of critical problem and how it occuered'
  rescue StandardError => exc
    # We hide the original message
    raise ''
  end
rescue StandardError => re_raised_exception
  # The message is blank :(
  puts re_raised_exception.message
end
```

Good Solution

1. Exceptions help understand problem and why.
2. Exceptions allow developers to fix bugs.
3. Use bugsnag to log exceptions
   - or just log to a plain file
4. In production mode:
   - Never display details of exception to user
   - E.g., 5xx error page rather than detailed exception page