Comment soup with a pinch of types, served in a leaky bowl

Pooja Rani
Manuel Leuenberger
Software Composition Group
Bern, Switzerland
The Comment Soup
How do developers write comments?
How do comments evolve?

A Pinch of Types
How gradual types can be useful for migration

The Leaky Bowl
A startling encounter in the VM world
How do developers write comments?

- How do class comments evolve over time?
- What is the impact of template on the comments?
- What information is present in class comments?
- What is the writing style of developers?
Playground to play with code

Developers express their code
Playground to play with words

Developers express themselves
Note that to encode a String as Base64, you first have to encode the characters as bytes using a character encoder.

See also [http://en.wikipedia.org/wiki/Base64](http://en.wikipedia.org/wiki/Base64)

Part of Zinc HTTP Components.
Wow! I am the bezier shape 4 4 control points.

Maybe we need roassal3 now with a better system for bezier lines

Excitement, Future discussion
/**
 * Options for connecting through a proxy
 *
 * Note that not all types may be supported, depending on
 * the platform and compilation options.
 */
15% comments
85% code
How do developers write comments?

- How do class comments evolve over time?
- What is the impact of template on the comments?
- What information is present in class comments?
- What is the writing style of developers?
Evolution of Class Comments

#Classes

Without comments
With comments

Pharo versions

1 2 3 4 5 6 7
Evolution of Class Comments

Pharo versions

Without comments
With comments

#Classes

Pharo versions
1 2 3 4 5 6 7
How do developers write comments?

- How do class comments evolve over time?
- What is the impact of template on the comments?
- What information is present in class comments?
- What is the writing style of developers?
Developers are guided by a default template

Please comment me using the following template inspired by Class Responsibility Collaborator (CRC) design:

For the Class part: State a one line summary. For example, "I represent a paragraph of text".

For the Responsibility part: Three sentences about my main responsibilities - what I do, what I know.

For the Collaborators Part: State my main collaborators and one line about how I interact with them.

Public API and Key Messages

- message one
- message two
- (for bonus points) how to create instances.

One simple example is simply gorgeous.

Internal Representation and Key Implementation Points.
Comment markup?

Please comment me using the following template inspired by Class Responsibility Collaborator (CRC) design:

For the **Class** part: State a one line summary. For example, "**I represent** a paragraph of text".

For the **Responsibility** part: Three sentences about my main responsibilities – what **I do**, what **I know**.

For the **Collaborators** Part: State my main collaborators and one line about how I interact with them.

**Public API and Key Messages**

- message one
- message two
- (for bonus points) how to create instances.

   One simple **example** is simply gorgeous.

**Internal Representation and Key Implementation Points.**

   Implementation Points
I am an abstract class to define an Item use by a tree data source of FastTable.

**Description**

I define the basics methods needed by a FTTreeDataSource. I use FTTreeItem to manage my elements and I am use by a FTFastTable.

**Public API and Key Messages**

- `#data. anObject from: aFTTreeDataSource`
  
  This is my constructor that is use by FTTreeDataSource and...

**Example**

Should not be instanciate.

**Internal Representation and Key Implementation Points.**

**Instance Variables**

- `dataSource`: I am the dataSource that holds this Item.
- `children`: I am a collection of Items calculate by the item. I contains the children of the Item.
Template sections found in classes

- Intent: 2,250
- Responsibility: 750
- Collaborators: 0
- Public API: 1,500
- Example: 3,000
- Internal Details: 0
- Instance Variable: 0

6000 classes
Pharo 7
Template sections found- Manual analysis

138 random classes
Pharo 7

Template sections

Number of classes

Intent: 104
Responsibility: 75
Collaborators: 35
Public API: 69
Example: 14
Internal Details: 13
Instance Variable: 0
Extra Information - Manual analysis

100 random classes
Pharo 7

Extra categories
How do developers write comments?

- How do class comments evolve over time?
- What is the impact of template on the comments?
- **What information is present in class comments?**
- What is the writing style of developers?
What information is present in class comments?

<table>
<thead>
<tr>
<th>Responsibility</th>
<th>Collaborators</th>
<th>Public API</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>Internal Details</td>
<td>Instance Variable</td>
</tr>
<tr>
<td>Class References</td>
<td>Observations</td>
<td></td>
</tr>
<tr>
<td>Warnings</td>
<td>Links</td>
<td>License</td>
</tr>
<tr>
<td>Coding guideline</td>
<td>Dependency</td>
<td>Reference to external docs</td>
</tr>
<tr>
<td>Extension</td>
<td>Discourse</td>
<td>Clarification</td>
</tr>
</tbody>
</table>
What information is present in class comments?

<table>
<thead>
<tr>
<th>Template Inspired</th>
<th>Responsibility</th>
<th>Collaborators</th>
<th>Public API</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td></td>
<td>Internal Details</td>
<td>Instance Variable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Extra but frequent</th>
<th>Class References</th>
<th>Observations</th>
<th>Precondition</th>
<th>License</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warnings</td>
<td></td>
<td>Steps</td>
<td>Links</td>
<td>Suggestions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Extra but rare</th>
<th>Coding guideline</th>
<th>Dependency</th>
<th>Reference to external docs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension</td>
<td>Discourse</td>
<td>Clarification</td>
<td></td>
</tr>
</tbody>
</table>
How do developers write comments?

- How do class comments evolve over time?
- What is the impact of template on the comments?
- What information is present in class comments?
- What is the writing style of developers?
Writing style

- Comments of length 2-5 lines, have lengthy sentences
- Different warning words
- Use first person pronouns
- Inconsistent parentheses
- No formatting standards followed
“All people are living histories – which is why History matters”

– Penelope J. Corfield
And now for something completely different
Gardening the Ecosystem
The EMF is dead, long live the EMF!
And now for something completely different
I am lazy
I am lazy

very, very lazy
Swapping dependencies

b := RTMondrian new.

b shape circle
size: 15;
color: (Color veryLightGray alpha: 0.4);
if: [ :value | toBeRed includes: value ] fillColor: Color red.
b nodes: (1 to: 100).

view := GtMondrian new.

view nodes
shape: [ :anInteger :anElement |
  anElement|
  geometry: B1Ellipse new;
  size: (anInteger max: 5) asPoint;
  constraintsDo: [ :constraints | constraints padding: (B1 Insets all: 10) ] ];
with: (1 to: 20).
A Pinch of Types

How gradual types can be useful for migration
And now for something completely different
The Leaky Bowl

A startling encounter in the VM world
How to write two lines of code in two months

![Pharo IDE screenshot]
How to write two lines of code in two months

- (void) pumpRunLoopEventSendAndSignal:(BOOL)signal {
  @autoreleasepool {
    . . .
  }
}

The Bern Experience

- People put effort in commenting classes, not only for new, but also old classes
- Comment template impacts developers, structure helps
- The ecosystem needs love
- Dynamically typed does not mean no types
- Deeper integration of code transformation tools