

# Chapter 1

# Understanding Existing Code

## 1.1 Setup

Download Pharo with Pillar from the Pillar website on Smalltalkhub <http://www.smalltalkhub.com/#!/~Pier/Pillar>.

## 1.2 High-Level Structure

1. Draw a package diagram explaining which package depends on which one and the reason of this dependency
2. For the main packages, draw a class diagram with the main entities (classes, instance variables and methods)
3. How does test packages depend on other packages?

## 1.3 High-Level Behavior

1. Explain the different phases (and related classes) transforming a Pillar file into an HTML file.
2. Pillar has tests for abstractions (*i.e.*, abstract classes) such as `PRList` and `PRFormat`. These tests must hold for each implementation of these abstractions (*i.e.*, all subclasses). Explain how this works in practice.

3. What is responsible for parsing the command-line arguments (*e.g.*, `-baseDirectory` and `-to`) passed to the pillar command? How is the command-line interface implemented?

## 1.4 Studying Patterns

1. Find at least one instance of these design patterns:
  - (a) template method
  - (b) visitor
  - (c) composite
  - (d) interpreter

## 1.5 Visiting the Visitor

1. Draw a sequence diagram explaining how the super calls work in visiting methods (*e.g.*, `visitBoldFormat`: of `PRHTMLWriter`).
2. What is the role of the brush, canvas and writer classes in `Pillar-ExporterCore`?
3. What is the role of a transformer? What are the different types of transformers?

## 1.6 Technical Details

1. The methods in the `transformers` protocol of some subclasses of `PRPhase` are never called directly (*i.e.*, there are no *senders*). When are they executed? What does the `<pillarTransformer:*>` line at the beginning of each of these methods mean? Draw a sequence diagram.
2. How does Pillar maps a language name (*e.g.*, "smalltalk" and "bash") to a particular subclass of `PRAbstractScriptLanguage`?
3. Pillar supports multiple ways of writing heading numbers (*e.g.*, "See Section A.1.b"). Explain how the different numbering styles are implemented in Pillar and how they can be configured by the user.