Activity 7-1: The Open-Closed Principle

Interjecting segments of the OCP video[1] (only available in class or by purchase).

Overview

01:00-04:10 overview

Open and Closed

11:40-18:20 open and closed

A module or component conforms to the **Open-Closed Principle** if its both *open to extension* and *closed to modification*. These two things seem contradictory, until you dig deeper into what these phrases mean.

1. What does it mean for a module to be *open to extension*?
2. What does it mean for a module to be *closed to modification*?
3. What does it mean to *separate out extensible behavior using an abstraction*?
4. What is a *software dependency*, and what does it mean to *invert* that dependency*?
5. How does the combination of *abstraction* and *inversion* allow for the behavior of a module to be extended without modifying its source code?
6. What is the main implication of conforming to the open-closed principle?

Feasibility of Open-Closed Principle

**18:20-20:40 feasibility of open-closed principle 1. Is is *possible* to always write your code so that it conforms to the open-closed principle? 2. Is it *practical* to always write your code to conform to the open-closed principle? 3. What is the "crystal ball" problem? 4. Is a single class easier to make conform to the open-closed principle than a large system component composed of many different classes? Why or why not?

Example: Accounting System

20:40-42:45 accounting system example

1. Stop at 24:40
    - Go over code handout and what is being accomplished by each part of the printReport and the Expense class.

[1] ../videos/11-ocp.html

2. Skip forward to 27:30
3. Pause at “business rules”:
    - What does he mean by *business rules*?
    - Where are the business rules in the code?
4. Pause after “new meal type: lunch or snack”:
    - What is the first line of code that we would have to change?
    - How places just in printReport would we need to change?
5. Pause at 34:30
    - We could extract out methods for each bit of functionality, but it won’t help. Why?
6. Stop at 35:23
    - Rewind to show printReport diagram.
    - Go over handout with new system design.
        a. What does the “<I>” on the ExpenseName box mean?
        b. What does the “<A>” on the Expense box mean?
        c. What is the difference between the dotted line and the solid line?
        d. Where are the abstractions in the diagram?
7. Skip forward to 38:40
8. Pause at 40:55
    - Where does he mean by *derivitive*?

The Lie

42:45-46:55 the lie

Two Solutions

46:55-52:12 two solutions

- Pause at 48:20
    - What is the problem with “big design upfront”?

Agile Design in Practice

52:10-56:15 agile design in practice

- Pause at 52:12
  - What does a development team do during “iteration 0”?
  - What is the goal of iteration 0?

Reprise

56:15-57:25 reprise

Summary and Closing Credits

57:25-1:02:17 summary/credits SKIP