

Activity 6-4: The Single Responsibility Principle

Interjecting segments of the SRP video¹ (only available in class or by purchase).

Overview

01:00-03:55 overview

Responsibility

10:05-16:18 responsibility

1. What is a responsibility?
2. What would be a sign that a class or function has too many responsibilities?
3. How is an *actor* different from a *user*?
4. How are actors related to change in the software?
5. (Group discussion) Thinking back to our grading example, what are some of the different responsibilities we might have? Who are the corresponding actors?

The two values of software

16:18-20:00 the two values of software

1. What is the secondary value of software? When is it achieved?
2. What is the primary value of software? When is it achieved?
3. What is the primary responsibility of programmers?

20:00-27:50 Friction

1. What discipline would make software easier to maintain and enhance?
2. What is the problem with a module that has too many responsibilities?
3. What is the *fan out* of a class? What is the *fan in*?
4. Why is it important to reduce the fan-out of a class?
5. What is one way to achieve reduce the fan-out of a class?
6. What is **collocation of responsibilities**? How does it affect the various actors?
7. What code smell is the likely result of this collocation of responsibilities?

¹../videos/10-srp.html

The Single Responsibility Principle

27:50-30:21 single responsibility principle (SRP)

1. What does the SRP say? What are some examples of this?
 - **30:21-32:10 Example 1** Discussion
 - **32:10-33:27 Example 2** Discussion
 - **33:27-35:52 Example 3** Discussion
 - **35:52-41:15 Example 4** Discussion
2. (Group discussion) Does our grading application have any violations of the SRP?
3. What is the overall solution to resolving SRP violations?

Break?

Resolving SRP violations

41:15-48:05 solutions

1. In problems related to SRP, there are a number of competing interests:
 - Separating responsibilities into different classes
 - Separating actors from the concrete implementations of their responsibilities
 - Avoiding transitive dependencies between actors
 - Making functions easy to find

How do the following techniques balance these interests out: **dependency inversion**, **extracting classes**, the **facade** pattern, **interface segregation**

Mastermind: A case study

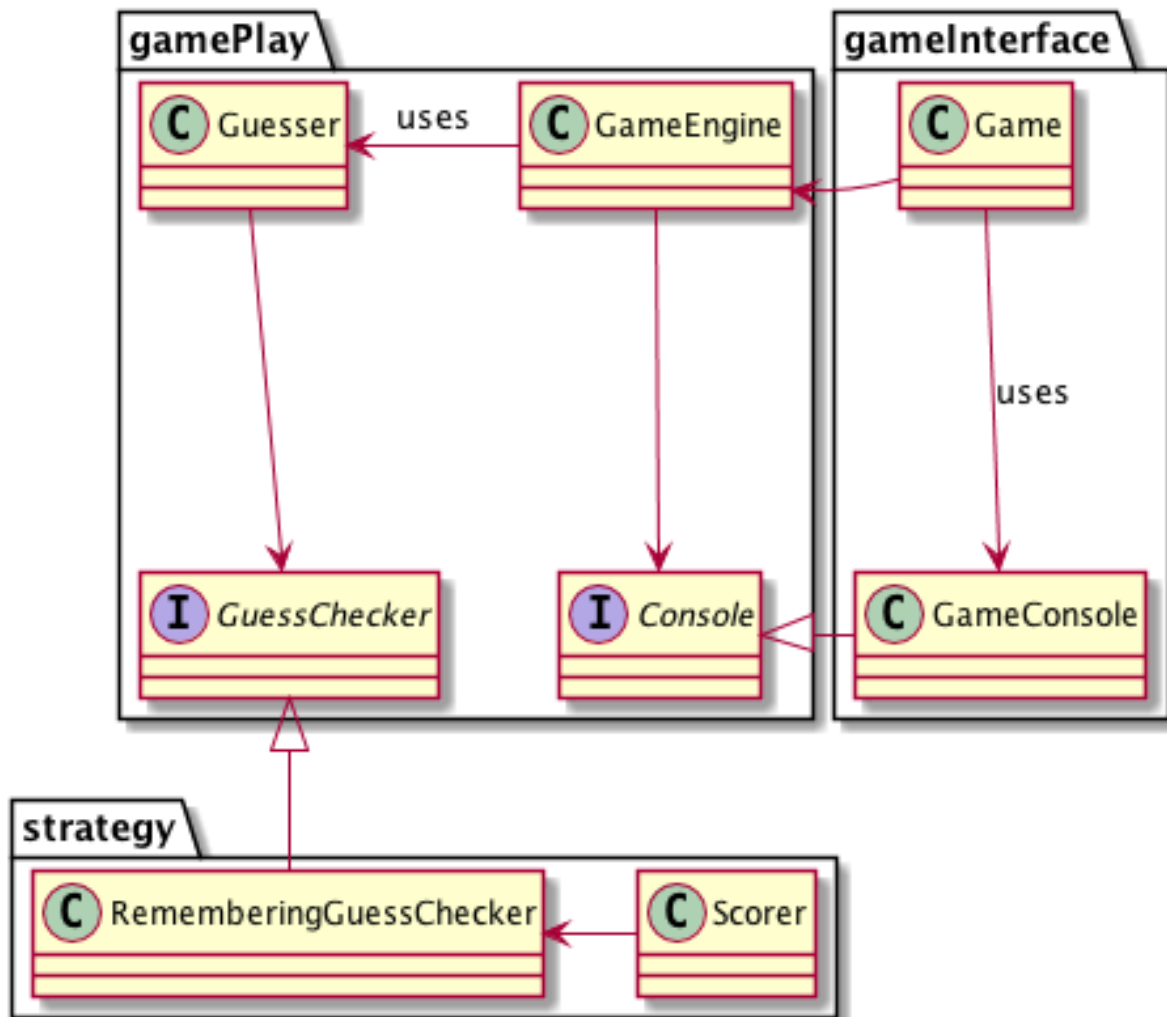
48:05-51:50 The game of mastermind

1. What are the actors and responsibilities in this game?

51:50-53:45 Discussing the three actors

1. List the actors presented in the video and describe the corresponding responsibilities.

53:45-57:00 Details on Mastermind game implementation



57:00-1:00:15 Faking a rational design process

1. How did Uncle Bob come about his design for the Mastermind Game?
2. Why do unit tests tend to align with actors? What is the advantage of this?
3. When should we draw design diagrams?

- **1:00:15-1:02:50 summary**