

# CMPT 276 Assignment 3 - Code Review

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## What We Refactored

The two of us worked on refactoring classes in our game's app package. Particularly, the classes we refactored are App.java, ChooseAvatar.java, Game.java, GameOverScreen.java, HowToPlay.java, Settings.java, and TitleScreen.java.

Additionally (unrelated to refactoring; commit **11aeab7d**), we modified the audio files slightly so they are not as loud as they originally were.

## Code Smells and Solutions

1. Code duplication
  - a. ActionListener was implemented and unused in the TitleScreen and HowToPlay classes. Everything needed in regards to ActionListener and different buttons in each of the classes mentioned is already within the App class itself, so the code was unnecessarily duplicated.
    - i. We removed the ActionListener implementation code and its methods (addActionListener, actionPerformed) from each class with commits **5c3f21ce** and **70bca364** (TitleScreen and HowToPlay classes, respectively).
  - b. Additionally, in the Settings class ActionListener is required for the audio toggle button, but unnecessarily duplicated the ActionListener for the help button, which was already set up in the App class.
    - i. This duplication is removed in commit **0c8cd681**
2. Unused/useless variables
  - a. Within many of our classes there were unused import statements in the TitleScreen, GameOverScreen, Settings, and HowToPlay classes.
  - b. We removed them with commits **5c3f21ce**, **5bf3ec34**, **0c8cd681**, and **7eadb665** (TitleScreen, GameOverScreen, Settings, and HowToPlay classes, respectively).
3. Bad/confusing variable names
  - a. The variable name for the text colour was unclear in the TitleScreen, Settings, GameOverScreen, ChooseAvatar, and HowToPlay classes. The variable was previously called "menuOptions," which implies it is a menu of sorts and confused even ourselves when we began refactoring for this

assignment. We changed the variable name to “menuTextColour” in each of the previously mentioned classes for clarity.

- b. Changes were made in commits **5c3f21ce** (TitleScreen class), **0c8cd681** (Settings class), **29c005bd** (GameOverScreen class), and **4a572c73** (ChooseAvatar and HowToPlay classes)

#### 4. Lack of/improper documentation

- a. In each of the classes mentioned at the start of the report, there was a lot of incorrect and missing documentation. We added relevant descriptions and modified existing documentation that was too vague in each class.
- b. We fixed inaccurate documentation and added more precise comments to methods and objects in the TitleScreen, GameOverScreen, and Settings classes
  - i. This was done in commits **5c3f21ce** (TitleScreen class), **5bf3ec34**, **f6df9bbe**, and **29c005bd** (GameOverScreen class), and **0c8cd681** (Settings class), respectively
- c. We added missing documentation and comments to code and methods that had no descriptions for clarity in the App, HowToPlay, and ChooseAvatar classes.
  - i. This was done in commits **90be0f3a** (App class), **3ccef795** (App, HowToPlay, and ChooseAvatar classes), **0246761c** (ChooseAvatar class), and **7eadb665** and **29aa0fb3** (HowToPlay class).

#### 5. Poorly structured code

- a. Originally, the format of the throw exception in the HowToPlay class checked for two exceptions in separate lines which is unnecessary and can be unclear.
- b. We changed the exception handling code to be cleaner and check for both exception types in one line rather than multiple
- c. This change is reflected in commit **7eadb665**

#### 6. Data clumps

- a. Previously, each new line that explains the game in the HowToPlay screen class was a separate JLabel, thus making the code cluttered and repetitive. It has been modified to use a JTextArea, which requires only one variable and removes all unnecessary code
- b. This change was made in commit **32764832**