Assignment 3

CMPT 276

Luan Nguyen
Zihao Xie

Refactor Report:

1. Lack of documentation for variables and some methods
   - The game has many packages thus many variables. The naming of the fields was clear enough for internal people to understand as a group, possibly for future maintainers, but adding documentation helped enforce that.
2. Unused or useless variables/methods.
   - Deleted unused musicStart method and playStop method in GamePanel class during playing states.
   - Deleted unused string variables in UserInterface class, reused single String message variable because, in one screen, there are many different messages, we can just update a single message string variable because there is no benefit in creating another variable, less variable and optimized memory because the game refresh rate 60 frames/sec.
   - The same logic as above, deleted unused position int variables in many methods in UserInterface class, and reused single position variables for different messages, besides helping optimize memory, it also help to balance the message position better since we can just add more value to the Y position
3. Code duplication
   - Code duplication in centring X position for objects. Make a method for centring X, named "XCentreText" in the UserInterface class in the Game package
4. Methods that are too long could benefit from being refactored.
   - Drawing the user interface was too long because we drew each state of the game in one method. Made a new method taking parameters like

position, content, and colour. We can reuse the method in different states of the game.

5. Bad/Confusing variable names
   - Naming in Object Package is not cohesive or logical, changing the name and showing the connection between variable and class logically. Easier to understand the variable role.
6. Unnecessary switch or if/else statement
   - Not delete but change the if/else statements into a switch for keypress code, making the code look cleaner and less clumped