Code Review — Clock, start, Pages

We found a number of code smells upon inspecting the following classes: Clock, start, IntroductionText, and EndPage. Here we will document these code smells and provide the commit hashes for our remedies to each one.

The "Clock" Class 🦊 (716df5ca)

In Clock, we found a number of smells:

Abstract Names/Short Names
- The integer "tmp", which was used for storing temporary counting values
- The integer "tmp2", which was also used for counting.
- The String "M" which was being used to store a String version of the number of minutes.
- The String "S" which was being used in a similar fashion for seconds.
- All of the above variables have been removed (see *Remedies* below for more detail).

Dead Code
- There was a constructor "Clock(double)" in which the double value was being used to determine the font size of the label for the timer display.
- Another constructor "Clock(Font)" was used in a similar fashion to display a timer with a specific JavaFX Font object.
- Both of the above constructors have been removed (see *Remedies* below)

Indecent Exposure
- The method originally named "timeLabel()" (now named "tick()") is responsible for advancing the number of seconds one time per method call. This happens on a one second interval via a JavaFX Timeline object. In our case, these methods were previously public, but upon review we determined it would be best to make them private.

Remedies: The remedy to most of the abstract name & dead code smells was to essentially rewrite the entire Clock class. This wasn't too difficult as it is conceptually rather simple. Instead of keeping track of both minutes and seconds separately in both integer and String objects, we instead opted to only store a single integer seconds counter. Given this, we then wrote a method to take the number of seconds elapsed and return a formatted String with both minutes and seconds. In the end we managed to drastically simplify the Clock class.

All display-related (i.e. text font, size) functions are now operated in Game, and Clock is only used to count seconds. This also meant that we needed to add a new Timeline in our Game class

to update a Text field displaying Clock information every one second, which was relatively straightforward.

The Pages

Our game has a number of pages related to different Maze events. These include: the start page, the introduction page, the win page, and the lose page. We identified some smells related to these pages and refactored our code as needed.

Bloaters (655cad23)
- Originally, we were storing these pages inside our Game package. Initially it seemed to make sense but as the number of pages grew, the Game package looked increasingly bloated and it became obvious that the pages would need their own package. As such, we have refactored the aforementioned four pages into a new package called "Pages".

Duplicate Code
- The title of the game "Eagle Hunting" was referenced four different times across four different packages. We consolidated these references into our Assets class as a public static String. (05c9e45f)
- Similar to the previous point, we had scattered references to our game window dimensions (1280x720) across a number of classes. These were also consolidated into our Assets class as "GAME_WIDTH" and "GAME_HEIGHT". (bdaea21d)

Dead Code (334d8db0)
- String "GAME_TITLE" in IntroductionText referenced an outdated game title (removed)
- Color "BG_COLOR" in IntroductionText was no longer being used since we replaced a solid-coloured background with a custom image related to our storyline (also removed).

Abstract Names/Short Names/Naming Convention
- Our start class was literally named "start". We found this to be both too nonspecific and not up to proper Java class naming conventions (PascalCase). This class has been renamed to StartPage. (4e28fbec)
- The page that the player is sent to if their character dies was called EndPage. This we also found to be too inspecific considering "End" does not necessarily imply a loss. We refactored this class to be called "LosePage". (4e28fbec)
- Our introduction page was originally named IntroductionText. This was too abstract and not necessarily accurate considering the function of the page. We refactored this class to be called "IntroductionPage". (334d8db0)