CMPT 276 – Assignment 4 – Code review

Reviewers – Karanveer, Prabhjot

Karanveer's Reviewed files – MyersEnemy.java, Obj_Myers_Key.java, GamePanel.java

Prabhjot's Reviewed files- Enemy_Santa.java, obj_Snowball.java

Smell #1 – Unjustified use of primitives

File – MyersEnemy.java

Problem – several numeric values such as monster type, speed, max life and collision box dimensions were hard coded directly into the constructor.

Refactor – All numerical values were replaced with named static final constants to improve clarity.

Commit : "Identified 4 smells, refactored them"

Smell #2 – Code duplication

File – MyersEnemy.java

Problem – Sprite loading logic repeatedly called the same setup method with similar parameters, creating irrelevant duplicated code.

Refactor – created a helper method loadSprite() to centralize repeated sprite loading behaviour.

Commit : "Identified 4 smells, refactored them"

Smell #3 – Poor encapsulation / poorly structured

File – MyersEnemy.java

Problem – Sprite loading logic was publicly accessible even though it was only used inside the class so it did violate the encapsulation rules.

Refactor – The sprite loading method was made private to restrict access and improve class structure.

Commit : "Identified 4 smells, refactored them"

Smell #4 – High coupling

File – MyersEnemy.java

Problem – The enemy AI logic directly accessed multiple internal fields of GamePanel and Player so it was tight coupling movement logic to other components

Refactor – Created helper methods getPlayerCol() and getPlayerRow() to reduce direct access to gamepanel and improves modularity.

Commit : "Identified 4 smells, refactored them"

Smell #5 – Unsafe or Unsound Construct

File – MyersEnemy.java

Problem- String values were being compared using == which can sometimes lead to incorrect behaviour due to reference comparison instead of value comparison.

Refactor – Replaced unsafe string comparisions with .equals() to have correct and safe value comparison.

Commit : "

Smell #6 – Lack of documentation

File – Obj_Myers_Key.java

Problem – The gamepanel dependency field didn't have documentation which reduced clarity about the purpose and responsibilities of the object

Refactor – JavaDoc documentation was added to explicitly describe the role of gamepanel in this file

Commit : "Added more smells and refactored "

Smell #7 – Low Cohesion

File – Obj_Myers_Key.java

Problem – The constructor handled both object configuration and visual sprite setup, which was mixing a lot of responsibilities into a single method.

Refactor – Separated Initialization logic into initKey() for configuration and loadKeySprite() for image-visual setup to improve cohesion.

Commit : "Added more smells and refactored"

Smell #8 – Dead Code

File – GamePanel.java

Problem – Commented out code in setupGame() and paintComponent() which contributed to dead code and reduced readability.

Refactor – All unused commented out code was removed to improve clarity and maintainability.

Commit: Removed dead code

Smell #9 – Dead Code

File – Enemy_Santa.java

Problem – Unsafe Comparison

Commit – Unsafe comparison and code duplication

Smell #10 – Code Duplication

File – Enemy_Santa.java

Problem – Repetitive code

Commit – Unsafe comparison and code duplication

Smell #11 –

File – obj_Snowball.java

Problem – loading same image 12 times under different variable names

Commit – reduced number of repetitive image loads

Smell #12 –

File – obj_Snowball.java

Problem – High coupling

Commit – removed hardcoded image path

Smell #13 –Dead import statement

File – Enemy_Santa.java

Problem – Imported Fireball object when it is of no use in Santa level

Commit – Dead import and wrong image used in santa constructor

Smell #14 – Unsafe Comparison

File – Enemy_Santa.java

Problem – directly comparing to is equal to false better practice is to put a not operator(!).

Commit – unclear comparison

Smell #15 –

File – obj_Gift.java

Problem – Lack of Defensive Programming

Commit – Added Null checker

Smell #16 –

File – obj_Gift.java

Problem – Low cohesion in Constructor

Commit – added methods to increase cohesion in the constructor