

Kam Tung Wan

SER 316

Assignment 5b

I have made the FarmGame into (3) Design Patterns with Singleton, Decorator and Factory pattern. Farm Game requirement on each Design Patterns below:

SingletonGame:

1. The simulation should run on cycles.
2. Passive currency is earned with each new day
3. Animals and crops cost currency to purchase.

DecoratorGame:

1. animals have affinities
2. Animals reside on farms
3. New animals are added in each cycle

FactoryGame:

1. Farms are automatically upgraded once the farm has acquired enough currency.
2. A new world must start with at least 1 farm.
3. Farms can be of different types, such as an animal farm, a crop farm, a hybrid farm and so on. You can choose to make something up too.

Checkstyle and Spotbugs results:

Checkstyle Results

Summary		
Total files checked	Total violations	Files with violations
16	45	16

File	Total violations
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\SingletonGame\Farm.java	7
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\SingletonGame\GameManager.java	7
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\FactoryGame\Farm.java	5
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\FactoryGame\GameManager.java	5
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\DecoratorGame\GameManager.java	3
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\FactoryGame\FarmFactory.java	3
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\FactoryGame\FarmingGameApp.java	3
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\DecoratorGame\FarmComponent.java	2
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\DecoratorGame\FarmingGameApp.java	2
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\SingletonGame\FarmingGameApp.java	2
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\DecoratorGame\BasicFarm.java	1
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\DecoratorGame\FarmDecorator.java	1
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\DecoratorGame\FarmType.java	1
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\SingletonGame\AnimalType.java	1
C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\SingletonGame\FarmType.java	1

C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\DecoratorGame\BasicFarm.java		
Severity	Description	Line Number
warning	Package name 'com.example.farmgamebackup.DecoratorGame' must match pattern '[a-z]^\.[a-z][a-z0-9]*\$'.	1

[back to top](#)

C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\DecoratorGame\FarmComponent.java		
Severity	Description	Line Number
warning	Package name 'com.example.farmgamebackup.DecoratorGame' must match pattern '[a-z]^\.[a-z][a-z0-9]*\$'.	1
warning	METHOD_DEF should be separated from previous statement.	5

[back to top](#)

C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\src\main\java\com\example\farmgamebackup\DecoratorGame\FarmDecorator.java		
Severity	Description	Line Number

SpotBugs Report

Project Information

Project: FarmGameBackup (spotbugs:Main)

SpotBugs version: 4.4.1

Code analyzed:

- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\DecoratorGame\BasicFarm.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\DecoratorGame\FarmComponent.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\DecoratorGame\FarmDecorator.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\DecoratorGame\FarmingGameApp.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\DecoratorGame\FarmType.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\DecoratorGame\GameManager.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\FactoryGame\Farm.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\FactoryGame\FarmFactory\$1.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\FactoryGame\FarmFactory.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\FactoryGame\FarmingGameApp.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\FactoryGame\FarmType.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\SingletonGame\GameManager.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\SingletonGame\AnimalType.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\SingletonGame\FarmingGameApp.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\SingletonGame\FarmType.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\com\example\farmgamebackup\SingletonGame\GameManager.class
- C:\Users\kwan\OneDrive - Tesla\Desktop\Personal\Git\ser316-fall23B-ktwan\FarmGameBackup\build\classes\java\main\module-info.class

Metrics

348 lines of code analyzed, in 17 classes, in 3 packages.

Metric	Total	Density*
High Priority Warnings	5	14.37
Medium Priority Warnings	5	14.37
Total Warnings	10	28.74

(* Defects per Thousand lines of non-commenting source statements)

I tried to get rid of most of the checkstyle and spotbugs issues, but some still persists. One of them is the issue of spotbugs is "Random object created and used only once". This is intentional for the assignment requirements, which it is prompted to run on automation for 20 days to show gradle run. All my game managers are flagged with this but it is acknowledged and left on purpose. In the real game (non-testing) the random elements will be gone since it would require user interactions.

In checkstyle, one of the issues I had was Package name.com.example.farmgamebackup.DecoratorGame' must match pattern '^([a-z]+(\.[a-z][a-z0-9]*)*\$)\$. I had tried to adjust my module-info.java numerous times to shorten the name without the dots, but unfortunately when package name is unified with standards it will not work with gradle properly. I have also added JavaDoc Comments on most of my methods but looks like checkstyle still did not get it. Lastly, checkstyle was catching some of my unused methods that I had in the program (I marked it all as comments). I wanted to keep these functions for future developments so I ignored checkstyle some of my comments. I would like to do the static analysis again when the program is complete. Right now it is catching some of the half-baked functions as expected.

I was unable to get my Junit and Jacoco running in IntelliJ. Test cases directories are pulling at my main files, causing it to cripple. It may have something to do with my gradle build and JUNIT version match, but unfortunately I have to delete them to make the code compile. My last Jacoco run was successful in Eclipse but I am running out of time due to gradle issue.

Also, github action fails mostly because of the version mismatch I have with my gradle and the wrappers in github. My system was running fine locally but github was unable to find the build for some reason. My build can be shown in my local machine during screencast.

Screencast Link Below:

<https://www.youtube.com/watch?v=kHwIUcGpPT8>

Github:

<https://github.com/ktwanasu/ser316-fall23B-ktwan>