Project – Part 3

Design Report due at 9:00 am on Jan 10th

In this assignment, you are asked to implement new features to your previously re-designed code of Plants Game. You can include any new features that bring complexity to the gameplay. Some examples are provided below:

> **Toxic Zombie:** Toxic zombies have less damage compared to regular zombies. However, they have the ability to incur damage over a specific period. When the plants are hit by a poisoned zombie, it is poisoned for 10 seconds. Every second it loses 2 HP. If a plant is hit when it is already poisoned, the counter for being poisoned will go back to 10.
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> **Cold Peashooter:** These peashooters throw cold peas at the zombies which reduce the attacked zombies' speeds by half. The zombies will remain slow for 5 seconds and the counter for being slow will go back to 5 when the zombies are hit again.
>
> **Torchwood Plant:** Torchwood is a specific type of plant. It has a large amount of HP thus it can be used as a blocking plant. Moreover, whenever a pea goes over a torchwood (including cold peas) it burns. Burning peas inflict double damage to the zombies.

You are free to implement your own features **or** use the examples provided. **However, your code should exemplify the use of polymorphism**. Moreover, you should update your previous diagrams considering the feedbacks from part 1 and 2. You should also explain your newly defined features in detail in your report.

Other ideas for new features might be; having a different type of attack for the zombies (ranged attack or self-destructing exploding attack), having different types of plants, and so on. However, keep in mind that implementing the concepts learned in the course such as inheritance, polymorphism, data encapsulation (in short implementing object-oriented programming principles) is your highest priority while adding new features.

For this part of the project, analysis and design steps are merged, hence you will only submit a design report at the group meeting. Code submission is not necessary at this part but having a working code from part 2 will benefit you greatly in your design for this part. Your design report should include:

- A Cover Page (with Group Number)
- A Contents Page
- Use case diagram
- At least one collaboration diagram for each use case. Note that you need multiple diagrams for polymorphic cases.
- An updated and expanded version of class diagram (including attributes) which is compatible with collaboration diagrams
- Explanation of the diagrams

Please be careful with indentations, captions, page numbers, etc. in your report. Please use good English and spell-check before you submit. You should include references if you have any. In short, use general rules of report writing.