

# DESIGN REPORT

## COS20007

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## I. Abstract

This report is designed to provide a brief introduction and summary of the implementation design pattern of Plants vs Zombies. This game is based on a real game named Plants vs Zombies, where players have to place plants in order to prevent zombies not to reach the house.

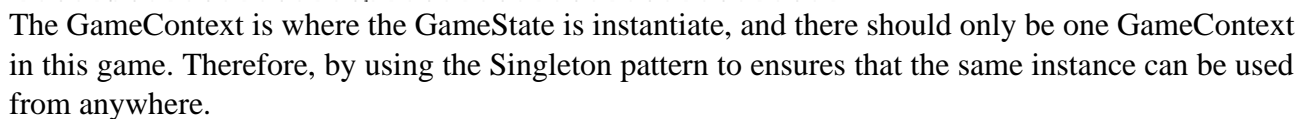


*Figure 1. In game background*

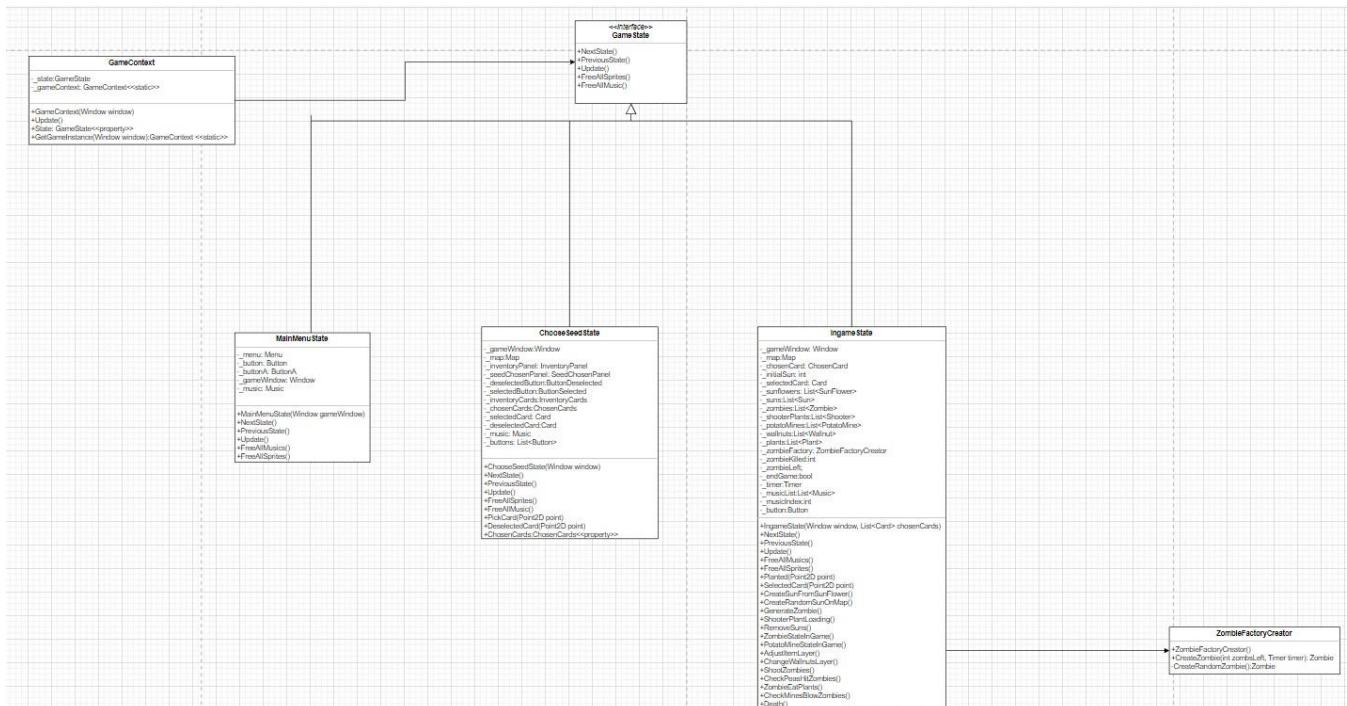
## II. UML Diagram Class:



## 1. Singleton – GameContext

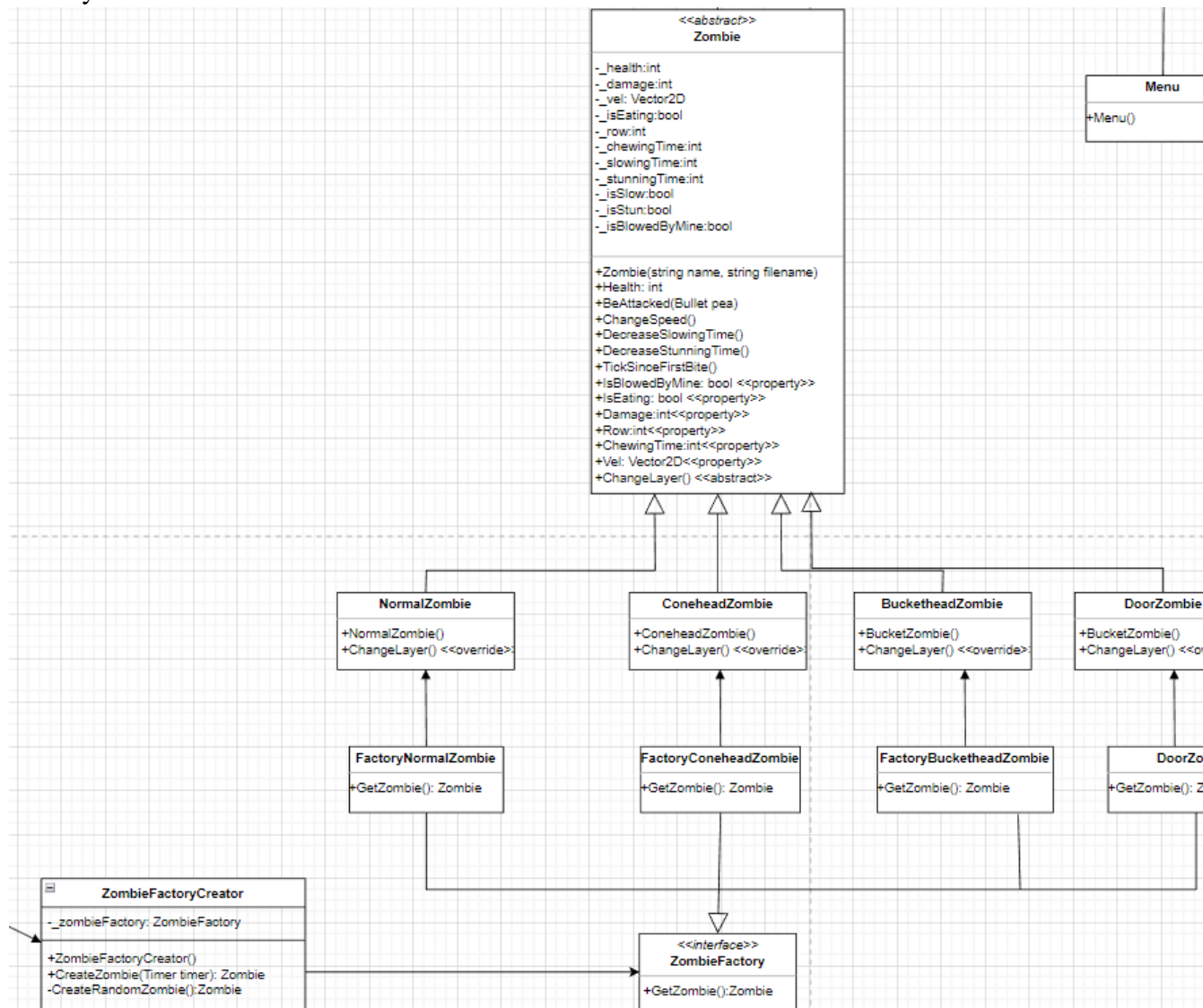


## 2. State Pattern – GameState



In order to transitive between each state of the game, I have implemented State Pattern. There will be 3 main states of the game, which are: MainMenu, ChooseSeed, and Ingame. This state pattern is used with the aim to reduce the usage of the if else statement as well as the duplication of code.

## 3. Factory Method Pattern – Zombie



In the game, we need to generate a number of zombies, but instead of creating it directly using a new operator, we will use a factory method that returns an object of type Product that is each type of Zombie. The Zombie Factory will instantiate a new zombie and return it to the game. Using this pattern in this situation helps reduce the duplication code. Instead of creating three new operators which are three types of zombies, I just need a factory to create them.

## VI. Button

In this game, buttons are used to transitive between game states. There are different types of buttons for different purposes.

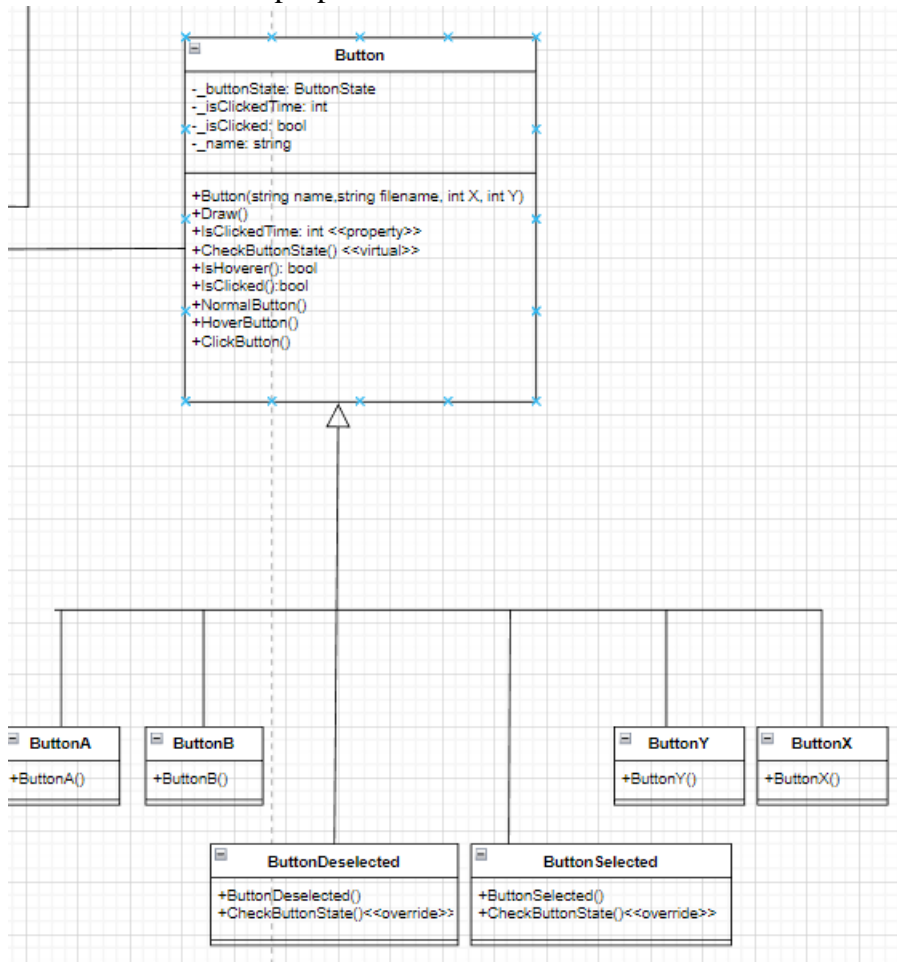


Figure 4.1. Button Classes



Figure 4.2. Button Sprites

## IV. GAME DESCRIPTION

Main Menu of the game:





Choose Seed:



Button B is used to choose seed. Button A is used to deselected the seed card. Button Y is used to return to the Main Menu. Button X is to go to the Ingame State. In order to change to the Ingame State, the selected card must be more than 6.



Ingame:



In order to win the game, players will have to defeat 100 zombies. After that players will receive a wining message:



If players lose, it will display a losing message:

