1)Project Description:

Name: Guacodile vs Zombie

Description: This project aims to recreate a special game in Plant vs Zombie with additional features. The original game follows the mechanism of the classic “Snake” game, whereas here is a “Guacodile” (guacamole mixed with crocodile) instead of snake. The user controls the guacodile to attack the incoming zombie, killing them by biting them. The ultimate goal is to stop the zombies from reaching the guacodile’s home. The guacodile gains friends (that line up to increase total length) when biting zombies. When the zombies stop coming in, and no zombies have ever reached the house, the user wins. This project adds features like coin collection, super canons (some zombies carry bullets, and killing them can win the bullets for using the canon), and guacodile hunter.

2)Similar Projects:

This project is based on a special game in Plant vs Zombie (Map “Big Wave Beach”, Day 8). The main frame of the game will be similar, including the mechanism of guacodile biting the zombies, and that some strong zombies require more bites to kill.

Features that are planned to be added in this project are the following: coin collection, super canons and guacodile hunter. The coin collection system records the number of coins that guacodile ate and is one way to measure achievement in a single round. The super canon needs bullets to fire. Some zombies carry bullets, and killing them can win bullets for the canon. The canon can kill a mass of zombies in a shoot. No aiming can be done since the direction of the canon is pre-determined. As for the guacodile hunter, after some random interval of time, a guacodile hunter (a bird with a slower speed than the guacodile) may appear and go after the guacodile. The guacodile has to run, or it will lose its friends in the line starting from the point where the hunter meets the guacodile line.

3) Structural Plan:

In terms of functions:

1. Guacodile

* Animation: opens and closes mouth when moving
* Increase line length (add more guacodile) every time when number of zombies eaten reaches a threshold
* When bitten itself, or bitten by the guacodile hunter, decrease line length to the point where the mouth (of the first guacodile or of the hunter) meets the line
* Death: 1)when hit wall 2)when hit rocks 3) when the head guacodile is bitten by the hunter

1. Zombie

* Normal period: random time interval of generation, random number of zombies generated within the given range (range based on difficulty level)
* Huge wave of zombie: larger number of zombies, displays a message in the middle of the screen
* Animation: 1) walking; 2)injured(for higher level zombies); 3) zombie head falls when dies; 4)zombies that carry canon bullets should be slightly greener than others; 5)shows the level of zombie when first appearing
* OOP for each zombie: 1)levels; 2)number of bites left needed to kill 3)location
* User death message: if any zombie reaches the house, use loses the game
* Zombie death: number of bites left == 0 or hit by canon

1. Board

* Guacodile dies if hit border
* Randomly placed rocks (number varies with difficulty level); guacodile dies if hit

1. Coins

* Randomly generated
* OOP
* Fixed staying time; disappears if earned or the time passes
* Earned🡪 user coin number += 1

1. Canon

* Number of bullets in stock
* Fires at fixed direction (towards certain columns)

1. Guacodile Hunter

* Animation: seagull
* Slower speed than guacodile
* Goes towards the head of first guacodile, changes direction every x seconds (x determined by difficulty level)
* If hit guacodile🡪 decrease guacodile length or kills guacodile
* Appears every random time interval, disappears after fixed time
* Can be killed by canon

1. User Interface

* Front page: select difficulty level
* Record number of coins earned in a single round
* Zombie progress bar
* Death animation: “zombie eaten your brain”
* Win animation with coin record

4)Algorithmic Plan:

The trickiest part may be to randomly generate the zombies and keep record of the statuses of each zombie. During the “normal period” I plan to set the range of time interval between the generation of zombies between 15 to 30 seconds using a time counter in onStep, and the number of zombies in total and on each row are randomly chosen within a given range. I plan to build a zombie class which records the level, number of bites left, and the location of the zombie. The class would also contain methods that allow zombies to walk, to change type of animation (healthy or injured), to check if zombie is in the range of canon when the canon fires, and to check if zombie collides with guacodile.

5)Timeline Plan:

Nov 24: Board

Nov 27: Guacodile and Zombie

Dec 1: User Interface, Coins, Canon

Dec 3: Guacodile Hunter

6)Version Control Plan

7)Module List: None