

**Celine Park**  
**TP0**

- **Project Description:**

- My TP will be a recreation of Plants Vs. Zombies. The objective of this game is to plant certain plants on your lawn to prevent the zombies from reaching your house. If the zombies reach the house on the left of the screen, the player loses the game. The currency for the plants is in the form of sun/sunlight, which the player earns by random suns dropping from the sky, or from the Sunflower plant, which drops sun every X seconds. The player will click the plant they desire and click the empty plot they wish to place it on. The other plants either serve an offensive purpose, such as the Peashooter that shoots peas that damage the zombies. There are plants that serve a defensive purpose as well, such as the Wall-Nut that blocks zombies and can take a certain amount of damage before breaking. There will be a cooldown for each plant, so the player has to wait a certain amount of time before planting the same plant.

- **Similar projects** [2.5 pts]: A 1-2 paragraph analysis of similar projects you've seen online, and how your project will be similar or different to those.

- The projects online seem to be similar to the actual game, except some people chose to add different aspects like motion-sensing or a maze aspect. Unfortunately I don't know much about motion sensing or having an AI player, so I think mine will be fairly similar to the actual game. I will try to incorporate the lawnmowers in the original game that I haven't seen many people include in their games. In the original game, there are lawn mowers on each row that kill every zombie in the row, and they are triggered by a zombie that reached all the way to the end. I may also incorporate a Power Up that is a feature on the mobile game, which I haven't seen past people incorporate.
- I also saw people that have included different difficulty levels. I will incorporate something similar by having different waves, which are an aspect of the original game. The difficulty of each wave will be based on how many zombies there are and what kind of zombies there are. For my TP, I will likely have the waves be the same every time someone plays the game, meaning that wave 1 will be the same each time, and the same goes for every wave. After each wave, the player will unlock a new plant, which is a feature I have seen other people incorporate as well.

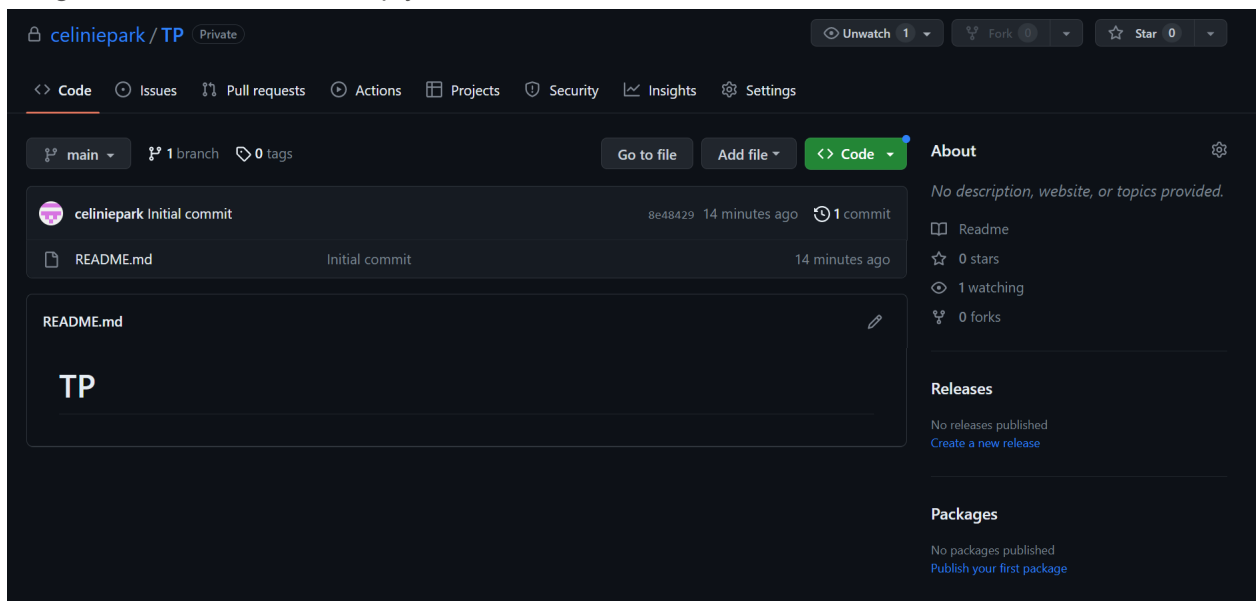
- **Structural Plan** [2.5 pts]: A structural plan for how the finalized project will be organized in different functions, files and/or classes.

- I will likely have either a class for each type of plant/zombie, or a Plant class and Zombie class with subclasses. The Zombies will continuously move left unless they come in contact with a Plant. If this occurs, they will start to eat the Plant, which will take a short period of time unless the Plant is a Wall-Nut, which can take more damage than regular plants. The Zombie will be damaged by the offensive Plants, and after taking a certain amount of damage, it will die. Some Zombies can be Cone Zombies, which can take more damage than other Zombies. If the Zombies reach the Lawnmowers at the end of each row, all Zombies in that row will be run over and killed, but the Plants will remain intact. The game is won if all the Zombies are killed, and the game is lost if a single Zombie reaches the house on the left of the screen.

The player can restart a round by pressing “R”, and the level number will be written in the top right.

- **Algorithmic Plan** [2.5 pts]: A plan for how you will approach the trickiest part of the project. Be sure to clearly highlight which part(s) of your project are algorithmically most difficult, and include some details of how you expect to implement these features.
  - Some tricky parts of the project include the board aspect, where the player can place plants on empty spaces. If a space is not empty, the player cannot place a plant there. Additionally, a player cannot place a plant if there is not enough Sunlight to afford the plant. Another tricky aspect could be the feature where a projectile from a plant that moves horizontally will only hit the first zombie it comes into contact with. The cooldowns on the plants and sunlight are also something that could be difficult, as I have to make the feature so that the player cannot choose a plant that is on cooldown, and the Sunflower can only drop sunlight every X seconds.
- **Timeline Plan** [2.5 pts]: A timeline for when you intend to complete the major features of the project.
  - I intend to have the basic features by the TP1 deadline, which includes having the “board” and the feature to place plants on the board. I will hopefully also be able to have incorporated the Sunflower/sun currency aspect and the moving zombies at this point. I will try to have started on everything by this Wednesday(4/12/23), and have figured out how to import the pictures of the plants and zombies.

● **Version Control Plan** [1.5 pts]: A short description **and image** demonstrating how you are using version control to back up your code.



- I will use Github to back up versions of my code. I have never used this platform before, so I will ask my TP mentor if she has experience using this, or I will consult other people about it.
- **Module List** [1 pts]: A list of all external modules/hardware/technologies you are planning to use in your project. Note that any such modules must be approved by a tech demo. If you are not planning to use any additional modules, that's okay, just say so!
  - I do not plan on using any additional modules.

TP1 Update:

- I will try to incorporate a cabbage plant that throws cabbages in an arc to hit the zombie