

Project 2 Design Document

Along with the main project, the following extra credit problems were done:

1. **Human's Fighting and Running** - If they see a zombie in front of them more than 1 square away, they turn and run. If they see a zombie directly in front of them, they make a "fight or flight" decision. The fight or flight odds are 25% to fight. If they fight, there's a 50/50 shot of them killing the zombie, otherwise they do not harm the zombie (and the zombie will most likely infect them next turn). Dead zombies are shown as Black.
2. **Human Counter-Attacks** - Zombie will normally kill human directly in front of them or occupying the same grid, unless the human population is low. In that case, there is a chance the human will expect the zombie, and have a chance to attack first!
 - a. As long as there are more humans than zombies then there is a 100% chance of the zombie killing the human.
 - b. If zombies outnumber the living humans, then there 20% chance the human will turn and try and kill them.
 - c. It goes up to 40% when the zombie population is twice as big as the living human population.
 - d. It goes up to 80% when the zombie population is 5 times as big as the living human population.
 - e. Humans can turn and kill a zombie only once a turn.

Classes:

ZombieApocalypseSimulator Class

- Creates the gui that contains the simframe and everything inside of it
- Contains a the main, which create an instance of the class and runs it

SimFrame Class

- Contains all buttons, CityPanel, and ArrayLists of GameTokens
- Contains the following methods:
 - TokenLoader - Can load GameTokens from a City.Map file into the CityPanel
 - KillZombie – replaces a zombie with a dead zombie
 - KillHuman – replaces a human with a dead human
 - FightOrFlight – Decides whether human will run or attack zombie
 - If the human attacks, there is a 50/50 chance of the human killing the zombie
 - buildingInTheWay – Checks if there is a building between the two GameTokens
 - zombieInView – Check if there is a zombie more than one step away without a building in the way
 - zombieInFront – Check to see if there is a zombie directly in front of the human
 - buildingInFront – Checks if there is a building blocking the GameToken by being 1 step in front of the GameToken
 - counterAttack - Gives humans a chance for counter attack depending on how much zombies outnumber them
 - checkForHumans – Checks to see if there are any close enough humans to attack and then attacks
- Contains specialized actionlisteners for the buttons and timer
 - Each Round goes DeadHumans -> (X2)Humans -> Zombies

CityPanel Class

- Contains the grid and all of the GameTokens

GameToken Abstract Class

- Contains characteristics that all GameTokens have
- Contains methods for getters, setters, turning, and moving

Human Class

- Paints as a Pink Triangle
- Has a field to check and set whether it has killed a zombie in the round

Dead Human class

- Paints a Red Triangle
- Contains a Death Timer for changing to a Zombie

Zombie Class

- Paints a Green Triangle

DeadZombie Class

- Paints a Black Triangle

Building Class

- Paints a Black Box