

# Game Proposal: Escape from Celestria

- 2d puzzle platformer

CPSC 427 – Video Game Programming

## Team: Game Factory

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## Story:

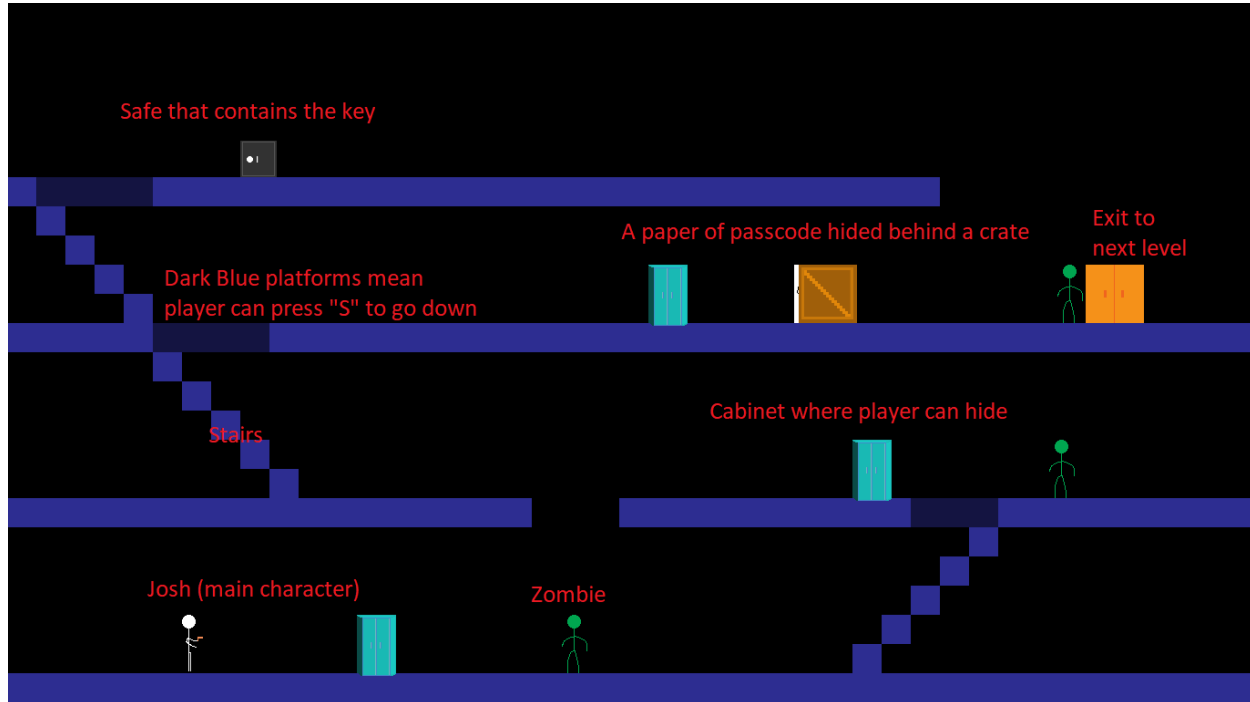
The setting takes place in a post-apocalyptic world, in a fictional city called Celestria. On day one of the apocalypse, our main character Josh was separated from his daughter Alice who was still at school. To rescue her, Josh first entered a market to avoid massive zombies on the street, and also gather supplies. Then, after a hard battle with zombies, he rejoined Alice at school. Together, they headed to the center hospital where a rescue helicopter from the military was waiting for them at the top of the roof. Eventually, they made it to the top level and escaped from Celestria to a safe survivor camp.

## Scenes:

**Title Screen:** The title screen will consist of three options: New game, Load game and quit set on a dark background with zombies.

- New game: enter a new game
- Load game: read and load the last saved game

- Quit: application will be closed



### Main characters:

- Josh: Playable character. The main character the player will control. Initially have health = 3. The player needs to keep this character alive to complete levels.
- Alice: Secondary playable character. Unlock in level 2 School. Players can switch characters by pressing "R". Alice can help to solve some unique puzzles. Such as entering a room from a small broken hole.
- Zombie: Non playable character. Main enemy in the game has health = 1. Initially, they will wander around in a specified range at a slow speed. If the player comes into their sense range, they will be alerted and chase the player at a higher speed. Touch with a zombie will deal damage = 1 to the player. Zombies will only disappear If health dropped below or equal to 0.

### Main resources:

All main resources can be picked up by pressing “E” while standing close enough to it. Upon picking up, the resource will disappear from the scene

- Food: Upon picking up, the player recovers health = 1. If the player is in full health, increase the maximum health of the player by 1 instead. The maximum health cannot exceed 6.
- Bullet: Upon picking up, add bullet = 1 to the inventory.
- Key: Players need to pick the key up before they can proceed to the next level.
- Passcode: Passcode to safes will be presented as a paper note hidden in the scene. Upon picking up, the player can open the safe.

## **Level Elements:**

### **Interactable elements:**

- Cabinets: Players can press “E” to enter the cabinet if he is standing close enough to one. Entering a cabinet will cause all zombies to lose their target and become unalerted (go back to wandering state). However, once inside a cabinet, the character cannot take any actions other than exiting the cabinet. Players can exit the cabinet by pressing “E” again.
- Wooden Crates: Players can press “E” to push the crate if standing close enough. While pushing, the player can only move left or right with the crate or press “E” again to stop pushing. Supplies may be hidden behind crates. Players can also stand on a crate to use it as an intermediate platform.
- Safes: Safes can be opened by pressing “E” if the player is close enough and has the passcode. Safes usually contain key resources such as the key to the next level. Upon opening, the safe will disappear and the resource inside it will be generated at the safe’s location for the player to pick up.
- Door: The door to the next level. Players can press “E” to complete the level if the player is close enough to the door and has the key.

### **Non-interactable Elements:**

- Platforms: Characters can stand on it. If not supported by a platform, the character will fall until it meets a platform.
- Walls: Characters cannot pass through it.
- Stairs: A special platform. The player can jump on to it to reach the next floor. By standing on it, the player can press “S” to go down one floor.

### **Projectile:**

- Pistol: Pistol can only be found in a specific scene. Once acquired and having at least 1 bullet in inventory, the player can press “C” to shoot a bullet in the facing direction. Doing so will deduct 1 bullet from inventory. The bullet will continue flying in the shooting

direction until it meets a wall or a zombie. Meeting a wall will not change anything. Meeting a zombie will cause the zombie to lose health = 1.

### **Levels(Continuous):**

- Level 1: [Market] Easy. Fewer zombies and more supplies, a level for player to get familiar with the game and gather supplies (player is awarded with a gun at the end)
- Level 2: [School] Medium. pass through a horde of zombies and reuniting with daughter
- Level 3: [Tunnel] Stealth. Players need to pass through the tunnel as fast as possible. There will be too many zombies and combat is impossible.
- Level 4: [Hospital] Hardest level, need to use everything to make to the top level, potentially meet a boss

## **Technical Elements:**

**Rendering:** parallaxing, AI generated background

**Assets:** 2D, hand-drawn sprites

**Geometry manipulation:** collision

**Gameplay logic:** The player can move and jump onto platforms using 'wasd' and shoot projectiles at the zombies. If a zombie is close to the player (within a certain distance) and sees the player, it will move towards the player. Player's initial hp is equal to 5. Picking up food and drinks will add 1 to player's hp and colliding with zombies will decrease hp by 1. The player's goal at each level is trying to find the key and open the door in order to advance to the next level.

**AI:** zombie will have two states: alerted or unalerted

- Unalerted:

All zombies will initially be in an unalerted state. In such a state, they will wander around within a specified range (wander\_range), which means each one of them will walk back and forth between [pos.x - wander\_range, pos.x + wander\_range]

- Change state:

All zombies will only be alerted if they sense the player. Zombies have a specified sensing range, and they will be alerted if the player is within such a range. We only consider x position in sensing, so zombie.alerted = true if  $\text{zombie.x} - \text{sensing\_range} \leq \text{player.x} \leq \text{zombie.x} + \text{sensing\_range}$  and  $\text{player.y} == \text{zombie.y}$

- **Alerted:**

Once a zombie is alerted, it will chase the player at a higher speed until the player hides in a cabinet.

**World interaction:** player and resources

**Character interaction:** player and zombies

**Audio:** background music, sounds effects when hp is added/decreased

## **Advanced Technical Elements:**

### **1. Jump onto a wooden crate:**

Players can press "W " to jump, and when they fall, if they meet the top of the crate, we will set its speed to 0, i.e. the player will no longer be falling.

Players can then walk off the crate by pressing "A" or "D" or

Get off the crate like how they Get off stairs by pressing "S" or

Press "W" again to jump to a higher platform

#### **If not included:**

The complexity of our puzzles will be reduced.

#### **Alternative solution:**

There won't be a scenario where the player needs to jump onto a wooden crate first to jump onto a higher platform.

### **2. Pause Menu:**

Players can press "Esc" to open a pause menu which contains options "Resume", "Save", "Load From Last Savepoint", and "Quit to Main Menu".

#### **If not included:**

Players cannot control the game freely.

#### **Alternative solution:**

Players can press “Esc” to pause the game, and press “Esc” again to resume. They have to either complete or fail the level in order to quit the main menu.

### **3. Opening and Ending Scene:**

We will have a series of pictures at the beginning and end of the game to illustrate the background story and what happened after they get onto the helicopter.

#### **If not included:**

The storyline may be a little unclear to players

#### **Alternative Solution:**

We will have a few lines of words to explain the story.

### **4. Boss in Level 3**

Boss will have abilities and higher health. Players need to kill the boss in order to complete the level.





#### **If not included:**

The combat part may be too monotonous and simple.

#### **Alternative Solution:**

Boss will have higher health, no abilities.

## **Devices:**

- W, A, S, D for movement, W for jump (or    )
- E for interactions w/ objects and characters
- C for attack
- R for switch character
- Esc to open pause menu

## **Tools:**

- AI - for drawing images illustrate the background story
- Pixel art tools - for drawing sprites

## **Team management:**

We will have a bi weekly check-in to discuss and make sure everything is on track.

## **Development Plan:**

### **Milestone 1: Skeletal Game**

Plan A:

- (Week 1) Develop the minimal set of assets
  - Character: main characters and zombie pathfinding
- (Week 2) Implement basic physics
  - Platforms
  - Collision & Boundaries
  - Add test cases for physics

Plan B: (if Plan A cannot be followed due to some reason)

- (Week 1) Develop the minimal set of assets
  - Character: main characters
- (Week 2) Implement basic physics
  - Platforms
  - Collision & Boundaries

### **Milestone 2: Minimal Playability**

Plan A:

- (Week 1) Complete attack function of main character
  - Implement more elements: pistol, bullet
  - Develop save and load functions
- (Week 2)
  - Finish the first level
  - Complete hiding function of main character
  - Cabinet, food, key, passcode, and safe
  - Implement interactions with wooden crate, pushing and climbing

Plan B:

- (Week 1) Complete attack function of main character
  - Implement more elements: pistol and bullet
- (Week 2)
  - Complete hiding function of main character
  - Key

### **Milestone 3: Playability**

#### **Plan A:**

- (Week 1) Design and develop puzzle solving components
  - Enhance game UI:
  - Character and zombie animations
- (Week 2) Design and implement boss
  - Design abilities for boss
  - Implement abilities
  - Finish the remaining three levels

#### **Plan B:**

- (Week 1) Design and develop puzzle solving components
  - Character and zombie animations
- (Week 2) Design and implement boss
  - Only design basic boss animations

### **Milestone 4: Final Game**

#### **Plan A:**

- (Week 1) Add dialogue and sound
- Add main menu and pause menu
- (Week 2) Add beginning and ending story images
- Add story images between levels
- Enhance UI and make the game more robust

#### **Plan B:**

- (Week 1) Add dialogue and sound
- (Week 2) Add main menu and pause menu