**[Escape from Celestria] Test Plan**

Keyboard Control:

* key\_A -> move character left
* key\_D -> move character right
* SPACE: jump
* J: shoot zombies
* H: hide/unhide yourself
* R: restart game
* B: save game
* N: load game
* ESC: quit game

M1 Basic tests:

**Character:** Josh(playable character), Zombie(Non-playable character)

**Assets:** Josh, food (hotdog), garbage bin, zombie, platforms

* **Gravity:** Walk the character out of the upper platform, then the character should fall off the platform and land on the lower platform.
* **Save and load game**: Press ‘B’ to save the game, press ‘N’ to load the game. Josh and Zombie will be restored to the previous saved positions.
* **Simple collision detection & resolution:** When Josh encounters a zombie, he will gradually turn red and the game will restart. There is food on the ground, and Josh can eat it by touching it.
* **Key-frame/state interpolation:** Josh gradually turns red when he dies. Implemented using linear interpolation.
* **Random/coded action:** The zombie moves back and forth within a certain range.
* **Well-defined game-space boundaries:** Josh and Zombies won’t walk out of boundaries
* **Textured geometry test:** Sprites overlapping do not cause issues
* Test by using arrow keys to move player character towards hotdog or zombie

M2 tests:

* **Game AI**:
  + Move closer to a zombie from behind, the zombie should not chase you.
  + Move closer to a zombie from front, the zombie starts to chase you.
  + When a zombie is chasing you, keep away from it for a short period of time, then it should stop chasing and wandering at a slower speed.
  + Hide in a garbage bin when a zombie is chasing you, wait for a short period of time, then it should start wandering.
* **Advanced AI (Pathfinding using A\*):**
  + When the zombie is alerted, it should follow you.
  + When the zombie is chasing you, it can go up/down platforms with you
* **Animation**: Implemented animation for player Josh and the door.
  + Player Josh has animation for walking and shooting bullets.
  + When the player is ready to advance to the next level, the door will open.
  + When Josh is hurt, he will turn red for a short period of time.
* **Assets**: Added new assets in the scene.
  + Bullets: enable shooting.
  + Hotdogs: add one heart to a player's health.
  + Garbage bin: player can hide inside to dodge zombies.
  + Door: after obtaining the key, player can advance to the next level through the door.
  + Key: the key to the door.
  + Exit sign: a sign indicating where the door is.
* **Help**: Press ‘i’ to show the help window. Press ‘i’ again to close the window.
* **FPS counter**: Shown on the game window’s title, displaying the current frames per second.
* **Mesh Based Collision:** the player josh is implement with mesh based collision
  + If you go to the second floor of platforms, you can see how the mesh collision hitbox interacts with the platforms sticking out of the side.

**M3 Tests:**

**Playability:**

* added 2 new levels - levels 3 & 4, which are a bit harder than previous levels. The game supports non-repetitive gameplay for 5mins.

**Stability:**

* We tried the game on different machines and the game resolution and aspect ratio are consistent. No crashes were found.

**Robustness:** unexpected user inputs do not crash the game. There’s minimal input lag and it does not affect game performance.

**New features & New user input added:**

* Press Esc to open pause menu
* When pause menu is up, use directional keys to navigate through options
* Help window is relocated in pause menu now
* Press Enter to select current option
* Press Esc again or select “RESUME” to close the menu

**Animation:** Added Zombie’s animation and fixed Josh’s animation speed

* Zombie now has running and death animations
* Now Josh’s (also the zombie’s) animation speed is controlled by time instead of framerate, ensuring stability across all machines

**Reloadability:**

- press ESC menu

- use directional keys to navigate through buttons

- select “SAVE”

- quit or restart game

- open the menu again and select “LOAD”, the game should be restored.

**Dialogue:**

* When Josh encounters an NPC, their dialogue will appear above the character.
* When Josh enters some new levels, he will talk to himself to explain the story sometimes.

**Audio feedback:**

* Background music
* Audio when enter trash cans
* Audio when eat a hotdog
* Audio when door opens
* Audio when shooting

**Complex Prescribed Motion (please grade this in M4):**

* Implemented non-linear motion of dynamite using the cubic Bezier curve: B(t) = (1-t)^3\*P0+3(1-t)^2\*t\*P1+3(1-t)t^2\*P2+t^3\*P3. The motion is controlled using 4 points.
* The dynamite appears in level 3 and 4
* The player will immediately die when touching it.

**Debug only:**

* Press shift + > to directly load the next level
* Press shift + < to directly load the next level