CPSC 427 (Fall 2025) - Test Plans

Debug

“G” can be pressed to regenerate the world.

“=” can be pressed to reset the game.

“C” can be pressed to view the player’s hitbox.

Start Screen

The first screen that appears when the game is launched. This screen also functions as a pause menu. When the player presses "Esc" during gameplay, the game should return to this screen, and selecting "Continue Game" should resume the game.

- The title “ECLIPSE” should be prominently displayed near the top center of the screen.
- On the right side, an interactive player character should be visible.
    - The player character should always face the direction of the mouse cursor.
    - Aside from rotating to face the mouse, the character should not perform any other actions. (Such as moving, shooting etc.)
- On the left side, a list of selectable menu options should be shown. When the cursor hovers over an option, it should turn yellow, and when clicked, each option should perform its corresponding action.
    - Continue Game: Zooms into the player character on the right side, and resumes the game.
        - When the game is started for the very first time (= if the save file does not exist), it should be disabled and displayed in gray.
    - Start New Game: Zooms into the player character on the right side, and starts a new game
    - Tutorial: Opens the tutorial.
    - Setting: Opens the setting menu (Yet to implement, prints out “[StartMenu] Settings menu not implemented yet.” to the terminal for now)
    - Exit: Closes the game.

Tutorial

The tutorial should appear as a short instructional text box. There are 9 steps in total, and it only appears when starting the game for the first time. In other words, even if you press “=” to restart, it will not appear again from the beginning.

Common behavior:

- When the tutorial appears, time is paused.
- Pressing the “Skip” button or the “Next” button should close the tutorial.
    - If the Skip button is pressed, no tutorial steps should not appear afterward.
    - If the Next button is pressed, the next tutorial step should appear again at the next trigger.

Tutorial Triggers:

- Step 1: Should appear immediately when the game starts.
- Step 2: Should appear a few seconds after the game starts.
- Step 3: Should appear when all ammo is used up.
- Step 4: Should appear a few seconds after reloading.
- Step 5: Should appear immediately after Step 4.
- Step 6: Should appear immediately after Step 5.
- Step 7: Should appear immediately after Step 6.
- Step 8: Should appear immediately after Step 7.
- Step 9: Should appear a few seconds after opening the inventory.

Player Movement (Keyboard)

The player should move up when “W” is pressed, left when “A” is pressed, down when “S” is pressed, and right when “D” is pressed.

The player should be able to hold multiple keys at once, and move in the appropriate directions based on which keys were pressed most recently.

- Press “W” and “A”: move up and left
- Press “W” and “D”: move up and right
- Press “S” and “A”: move down and left
- Press “S” and “D”: move down and right

If the player holds down a key, and then presses and releases the key that moves them in the opposite direction, they should briefly change direction.

- Hold “W”, then press and release “S”: move up, then down, then up again
- Hold “A”, then press and release “D”: move left, then right, then left again
- Hold “S”, then press and release “W”: move down, then up, then down again
- Hold “D”, then press and release “A”: move right, then left, then right again

- When the “Left Shift” key is pressed, the player should quickly dash forward in their current movement direction for a short duration.
    - A blue flame-like sprite is shown, and it fires in the direction the player is moving.

Player Movement (Mouse)

The player should be able to use the mouse to aim the flashlight and shoot bullets from a gun.

- The player and flashlight should always be facing towards the mouse’s current position
- Left-clicking should shoot a bullet from the player’s gun in the direction that they are currently facing
- Bullets should continue moving in the direction they are shot until they hit an enemy or obstacle, or go off-screen

The mouse click control and the way bullets are fired change depending on the weapon that is equipped.

- Laser Pistol: When clicked, a bullet is fired in the direction the player is facing.
- Plasma Shotgun: Five bullets are fired in a radial spread in the direction the player is facing, and the player is knocked back.
- Assault Rifle: While the mouse button is held down, bullets are continuously fired.

Gameplay

In the actual gameplay, several UI elements are displayed on the screen.

- A health bar and an ammo UI, shown in the top-left corner.
    - When the player takes damage, the player should briefly turn red, get knocked back, and lose health.
    - When the player's health is fully depleted, the game should return to the main screen, and Continue Game should be disabled.
    - Each time a bullet is fired, the ammo count should decrease.
    - If the player runs out of ammo, they should no longer be able to fire their gun.
    - When the player reloads, the ammo should fully refill.

- The objective UI is displayed in the bottom-left corner.
    - The survival timer should increment every second.
    - The Kill count should increment every time the player kills an enemy.
    - When the survival objective is completed, the ❌ should change to a ✅.
    - When the Kill objective is completed, the ❌ should change to a ✅.
    - When the player exits the spawn radius shown on the map, the ❌ should change to a ✅.
    - When the player interacts with the bonfire, all objectives should reset, and the circle count should increment.

- The minimap UI is displayed in the bottom-right corner.
    - As the player moves, the red dot representing the player should move accordingly on the minimap.
    - When all objectives are completed, the minimap should display the location of the bonfire that appears.
    - When the player interacts with the bonfire, the center of the map should reset to the player's current position, and a new spawn radius, which is larger than the previous one, should be displayed on the map.

Inventory

An UI for the inventory should open up when the “I” key is pressed. Weapons and suits can be purchased and equipped within this UI. $1000 is initially given for testing the purchase feature.

1. Closing the inventory UI
    - The “I” key can be pressed again to close the UI
    - “X” on on the right-bottom of the UI can be clicked to close the UI
2. Switching between **Weapons** and **Suits** tab
    - When the inventory is opened for the first time, the **Weapons** tab is displayed by default.
    - When the inventory is closed and reopened, it opens to the **last tab** that was previously viewed.
    - You can switch between the **Weapons** and **Suits** tabs by clicking the buttons at the top center. The currently active tab is highlighted in **yellow**.
3. Purchasing **Weapons** or **Suits**.
    - For **Weapons** or **Suits** that can be purchased, a yellow “Buy <price>” button appears to the right of the item.
        - Clicking the yellow button purchases the item and deducts its price from the user's balance.
        - If the user doesn’t have enough money, the purchase cannot be made. Clicking the button will have no effect.
    - **Weapons** or **Suits** that cannot be purchased are shown with a gray “Lock” label.
    - Purchased **Weapons** or **Suits** will have a green “Equipped” button or a blue “Equip”
4. Equipping **Weapons** or **Suits**.
    - When the blue “Equip” button is clicked, the item is equipped and the button changes to a green “Equipped” button.
        - This means that the previously equipped item of the same type is unequipped, and its green “Equipped” button reverts to a blue “Equip” button.
    - The equipped items should remain the same when the inventory is reopened, regardless of closing, reopening, or switching tabs.
    - When an item is equipped, the player’s appearance changes depending on the equipped item. (Only implemented for some of the items for now)

Enemy

There are three types of enemies in M3:

1. A Placeholder enemy, which represents all enemies in general. This enemy is a green triangle with a red tip.
2. A Slime, which represents how sprites for enemies should act like. This enemy is a blue pixel slime.
3. An Evil Plant, which is a stationary enemy that cannot move but attacks the player by shooting projectiles.

Enemy test plans:

1. Placeholder and Slime enemies should move towards the player.
2. Enemies with sprite sheets, such as the Slime and Evil Plant should cycle through their frames to display animation.
3. Enemies should face the player:
    - Placeholder enemies should always face its red tip to the player.
    - Slime enemies will face either left or right, depending on where the player is positioned with respect to the Slime enemy.
    - Evil Plant enemies should face up, down, left, or right depending on the player's position relative to them.
        - This only applies when the player is within Evil Plant's detect range.
4. Enemies should play their hurt animation when they get hit by a player's bullet. :
    - All enemies: Should briefly turn red.
    - Placeholder and Slime enemies: Should get slightly knocked back.
    - Evil Plant enemies: Knockback should not happen
5. Enemies should play their death animation when their health is fully depleted. The entity should then be removed from the registry:
    - Placeholder enemies: Spins clockwise, while shrinking until it disappears
    - Slime and Evil Plant enemies: Plays the death animation from the sprite sheet once before disappearing

Enemy AI test plans:

- The enemy should be able to navigate around obstacles and reach the player even when the player is hiding behind them.
- Evil Plant enemies should face the player when the player enters their detection range. If the player moves into their attack range, they should shoot projectiles toward the player.
    - Projectiles should continue moving in the direction they are shot until they hit an enemy or obstacle, or go off-screen

World Generation

The game world is generated in “chunks”, which are generated as needed as the player moves through the world. Chunks are converted to a more space-efficient format as they move out of the player’s view.
The game world can be re-generated by pressing the “G” key.

There are two types of obstacles in M3: **Trees** and isoline-based **Rocks**.

- **Trees** should not overlap with each other, or with the player’s starting position
- **Rocks** should not overlap with the player’s starting position
- **Rocks** should be closed shapes, i.e. they should not have any incomplete sides
- To enable the player to more freely around the world, obstacles should be placed such that there are large regions of the world without them

Additionally, world chunks should behave as follows:

- Chunks (and their obstacles) should not suddenly appear or vanish while within the bounds of the game window
- Once generated, the layout of obstacles within a chunk should not change, even if the chunk is unloaded and later reloaded
- As more chunks are generated, i.e. as the player explores more of the world, the game should maintain a consistent framerate

Bonfire

When the player excites their spawn radius, a bonfire is generated at a distance away from the direction that they are currently facing.
The player can interact with the bonfire by pressing “E”.

- The bonfire should be generated out of the player’s sight when the player moves outside of their spawn radius (indicated on the minimap)
- The bonfire should eventually be reachable if the player continues in the same direction they were facing when they exited the spawn radius

Interacting with the bonfire should do the following:

- Center the camera on the bonfire
- Prevent the player from firing their gun or moving
- Allow the player to access their inventory
- Despawn all enemies in the world

Interacting with the bonfire again should revert the camera to its default position and allow the player to continue moving around the world.