[M4] Milestone 4 – Test Plan

CPSC 427: Team 10

# Overview

This document contains a test plan that outlines how to user-test your game. Whenever the “player” is mentioned in this test plan, it refers to the white spaceship. Our test plan is broken up into features and test cases are listed in each of them to cover the functionality of our game for Milestone 4.

# Test Cases

## Movement

### Player Movement – W

**GIVEN:** The player is on the screen.

**WHEN:** The user presses the ‘W’ key on the keyboard.

**THEN:** The player (ship) will move upwards.

### Player Movement – A

**GIVEN:** The player is on the screen.

**WHEN:** The user presses the ‘A’ key on the keyboard.

**THEN:** The player will move left.

### Player Movement – S

**GIVEN:** The player is on the screen.

**WHEN:** The user presses the ‘S’ key on the keyboard.

**THEN:** The player will move downwards.

### Player Movement – D

**GIVEN:** The player is on the screen.

**WHEN:** The user presses the ‘D’ key on the keyboard.

**THEN:** The player will move right.

### Player Movement – Mouse

**GIVEN:** The player is on the screen.

**WHEN:** The user moves the cursor via the mouse.

**THEN:** The player will face the direction of the cursor.

### Player Animation - Indirect

**GIVEN:** The player is on the screen.

**WHEN:** The player is moving within + or - 45 degrees perpendicular of the direction they are pointed

**THEN:** The player sprite will do a “barrel roll” animation

## Combat

### Switching Weapons

**GIVEN:** The player is on the screen.

**WHEN:** The user presses ‘Q’ or ‘E’ to cycle weapons OR uses the scroll wheel.

**THEN:** The player’s weapon will change. (if Q -> cycles to the left, if E -> cycles to the right)

### Reloading

**GIVEN:** The player is on the screen.

**WHEN:** The user presses ‘R’

**THEN:** The player will initiate reloading, and will not be able to fire until the reload period is finished.

### Shooting

**GIVEN:** The player is on the screen.

**WHEN:** The user presses or holds the left mouse button on the mouse.

**THEN:** The player will shoot a bullet originating from the player's current position and directed towards the player’s mouse position until the left mouse button is released. The bullet spread should increase with length of fire. As well as muzzle flash animation will be shown.

### Shooting Enemies with Bullets

**GIVEN:** The player fires a bullet toward an enemy.

**WHEN:** The bullet fired from the player collides with an enemy.

**THEN:** The enemy will interpolate colours (more red) temporarily and the health of the enemy will be reduced. As well, a bullet impact animation will play if applicable.

### Shooting with Rockets

**GIVEN:** The player fires a rocket.

**WHEN:** The rocket fired from the player collides with another entity (not the player).

**THEN:** The rocket will “explode” a.k.a an explosion animation will play. As well any enemy within the radius will take damage, as well as the player themselves.

### Shooting with Flame

**GIVEN:** The player fires a flame projectile.

**WHEN:** The flame fired from the player collides with another entity (not the player).

**THEN:** The flame will set fire to the affected victim and a fire animation will play attached to them. As well they will take damage over time.

### Killing Enemies

**GIVEN:** The player fires a bullet toward an enemy.

**WHEN:** The bullet fired by the player collides with an enemy AND the enemy loses all of its health.

**THEN:** The enemy will disappear and the player’s score will increase.

### Colliding With Enemies

**GIVEN:** The player is on the screen and an enemy is on the screen.

**WHEN:** The player collides with an enemy.

**THEN:** The player will “push back” and lose shield points if they have them, and if not then health points.

### Dying

**GIVEN:** The player is on the screen.

**WHEN:** The player runs out of health points.

**THEN:** The player with “die” and the screen will darken. The game will reset after a brief time.

## Score & Multiplier

### Earning Gold & Multiplier Value

**GIVEN:** The player is on the screen.

**WHEN:** The player kills an enemy

**THEN:** The player will earn gold multiplied by the current multiplier factor, as well the multiplier value will go up.

### Spending Gold

**GIVEN:** The player is the shop.

**WHEN:** The player buys an item, ammo or health

**THEN:** The player will lose the gold equal to the value of the transaction

### Losing Multiplier Value

**GIVEN:** The player is on the screen.

**WHEN:** The player doesn’t kill an enemy for a period

**THEN:** The player’s multiplier factor will slowly decrease

## Earning a High Score

**GIVEN:** The player is finished a “run” (has beat the game, or died)

**WHEN:** The player is on one of the end-screens

**THEN:** The fact that they earned a high score will be displayed, and the high-score value will be updated

## Boundaries

### Level Boundaries – Player

**GIVEN:** The player is on the screen.

**WHEN:** The player hits the edges/border of the play zone (denoted by the background image).

**THEN:** The player will be unable to move past the boundary.

### Level Boundaries – Obstacles

**GIVEN:** The player is on the screen.

**WHEN:** The player hits an obstacle/wall.

**THEN:** The player will be unable to move past the obstacle.

### Level Boundaries – Bullet

**GIVEN:** A bullet is on the screen.

**WHEN:** The bullet hits the edges/border of the play zone (denoted by the background image).

**THEN:** The bullet will be unable to move past the boundary.

## Level Generation

### Rooms - doors should be closed until room is cleared

**GIVEN:** A player entering a (top/left/right/bottom) an unvisited room.

**WHEN:** The player clears the room of enemies.

**THEN:** The player should be able to leave the doors of the room if they exist.

### Rooms - entering a visited room

**GIVEN:** A player entering a (top/left/right/bottom) door of a room that they have already been to.

**WHEN:** The player walks through it.

**THEN:** The player should be moved into the room facing the direction it came in from with the room’s state preserved.

## Tutorial

### Second Room should be a tutorial room

**GIVEN:** A player entering their second room (first room after they spawn)

**WHEN:** walks through a door.

**THEN:** The player should see the second tutorial room.

### Third Room should be an easy room

**GIVEN:** A player entering their third room.

**WHEN:** The player walks through a door.

**THEN:** The player should face 1 enemy.

## Shop

### Shop Room - Accessing shop

**GIVEN:** A player presses the “z” key.

**WHEN:** Player enters a shop room and goes to the center of the room when an indicator appears to the top right of the player.

**THEN:** The player should see the shop window.

### Shop Room - Buying weapons

**GIVEN:** A player presses the buy button.

**WHEN:** Shop window is opened and player is on the “Weapon” tab.

**THEN:** The displayed weapon is unlocked in the player’s inventory.

### Shop Room - Buying ammo

**GIVEN:** A player sets a quantity of ammunition to buy and presses the buy button.

**WHEN:** The player is on the “Ammo” tab of the shop window and the player selects an ammo type and a quantity.

**THEN:** The purchased quantity of the selected ammo gets added into the player’s inventory.

### Shop Room - Buying health

**GIVEN:** A player sets a quantity of health to buy and presses the buy button.

**WHEN:** Shop window is opened and the player is on the “Health” tab.

**THEN:** The player gains the amount of health bought.

## Upgrades / Power-ups

### Max Health Boost

**GIVEN:** A player is on the screen

**WHEN:** A power-up pickup is spawned and collected by the player

**THEN:** There is a chance it is the “Blood Sacks” skill which then doubles the player’s health points

### Health Regeneration Skill

**GIVEN:** A player is on the screen

**WHEN:** A power-up pickup is spawned and collected by the player

**THEN:** There is a chance that it is the “Extra Heart” skill which then enables the player to slowly regenerate health points

### Instant Ammo Reload Skill

**GIVEN:** A player is on the screen

**WHEN:** A power-up pickup is spawned and collected by the player

**THEN:** There is a chance that it is the “Extra Arm” skill which allows the player to instantly reload any weapon

### Max Shield Boost

**GIVEN:** A player is on the screen

**WHEN:** A power-up pickup is spawned and collected by the player

**THEN:** There is a chance that it is the “Big Battery” power-up which doubles the player’s shield points

### Damage Boost

**GIVEN:** A player is on the screen

**WHEN:** A power-up pickup is spawned and collected by the player

**THEN:** There is a chance that it is the “Hard Hitter” power-up which doubles the player’s damage output

### Defense Boost

**GIVEN:** A player is on the screen

**WHEN:** A power-up pickup is spawned and collected by the player

**THEN:** There is a chance that it is the “Iron Skin” power-up which halves the player’s incoming damage

### Speed Boost

**GIVEN:** A player is on the screen

**WHEN:** A power-up pickup is spawned and collected by the player

**THEN:** There is a chance that it is the “Nitrous” power-up which 1.5x the player’s speed (acceleration factor, deceleration factor and max speed)

### Multiplier Boost

**GIVEN:** A player is on the screen

**WHEN:** A power-up pickup is spawned and collected by the player

**THEN:** There is a chance that it is the “Broken Math” power-up which then every second the multiplier irregardless of the players actions will go up or down.

### Accuracy Boost

**GIVEN:** A player is on the screen

**WHEN:** A power-up pickup is spawned and collected by the player

**THEN:** There is a chance that it is the “New Eye” power-up which doubles their accuracy (which halves their bullet spread).

### Full on Powerups

**GIVEN:** A player is on the screen

**WHEN:** A power-up pickup is spawned and collected by the player

**THEN:** If every powerup has been collected, than no powerup will be earned.

## User Interface

### Pausing

**GIVEN:** A player is on the screen

**WHEN:** A user hits escape during gameplay

**THEN:** The game will be paused, and the user may click to resume, return to menu, or exit the game completely.

### Player Status

**GIVEN:** A player is on the screen

**WHEN:** A player takes damage or heals

**THEN:** The corresponding UI (bottom left) will display the current/new health/shield values (percentage if it is the shield).

### Player Score

**GIVEN:** A player is on the screen

**WHEN:** A player has a maintains, earns or loses points to their score

**THEN:** The corresponding UI (bottom right) will display the current/new score and multiplier values.

### Player Weapon

**GIVEN:** A player is on the screen

**WHEN:** A player has equipped a weapon, and is either firing or not

**THEN:** The corresponding UI (top right) will display the currently equipped weapon, and the max and current ammo counts.

### Map

**GIVEN:** A player is on the screen

**WHEN:** A player is traversing through the level

**THEN:** The corresponding UI (top left) will display the current position in the level (coloured in green), the visited normal rooms (coloured in green), the unvisited unknown rooms (green circles), and the visited shop rooms (coloured in yellow). All accurate to the relative position of the player in the world.

## Debugging

### Restarting Game

**GIVEN:** The user is in the main game

**WHEN:** User presses “g”

**THEN:** The game will reload back to the tutorial room.

### FPS

**GIVEN:** The game is launched

**WHEN:** User presses “f”

**THEN:** An FPS counter will appear in the top-right. This counter will live-update with the number of frames per second that the game is running at.