**Test Plan**

| # | Tasks | Player/Game Actions | Expected Outcomes |
| --- | --- | --- | --- |
| [1] | Game AI | Enemy pathfinding | Enemies use A\* algorithm to chase player when player is in their line of sight; otherwise stay still. |
| [2] | Animation | Loop through player states  - idle (no input)  - moving (using any movement keys)  - attacking (clicking in any direction)  - death (get HP bar down to 0) | Player has different animation loops for idling, attacking, and moving.  Player also has a still sprite in its death state. |
| HP bar increase and decrease | HP bar decreases when player is damaged |
| [4] | Assets | Objects are rendered as the player moves around the map | Map (listed as a constant in world\_system.hpp) can be corresponded to walls (0) and enemy spawn points (3, 4, 5).  Any point on the map out of bounds should be rendered with wall sprite.  Player and enemies also have corresponding sprites. |
| [5] | Mesh-based collision | Walk over sticky ground object. Toggle “P’ to see the bounding boxes. | Mesh-based object on the ground slows the player down when walking over it. Player should only be slowed down when the player’s bounding box collides with the ground object’s mesh (not bounding box). |
| [6] | Help | Press “T” for tutorial | A list of instructions is displayed on screen and can be turned off by pressing “T” again. |
| [7] | FPS counter | Toggle “F” key to turn FPS counter on/off | Text appears next to player showing current frames per second |
| [8] | Creative Component | Local illumination model - always on screen when game is unpaused | Entire screen space is lit using a Phong lighting model with the light source in the same position as the camera (center of the screen). |
| Light flickering effect plays every 2000ms | Lights flicker softly for ~400ms |
| [9] | Game Logic | Use up/down/left/right or WASD keys to move player | Pressing the up key moves the player up on the screen. Player stops moving when the up/’W’ key is released. Etc. |
| Press escape key | Pauses Game |
| Press ‘R’ key | Resets game to original state |
| Press space key | Player does dash move in the direction of the player’s current movement. Cooldown works properly where the player cannot do another dash movement for a short time afterwards. |
| Left mouse click | Player attacks in the direction of the mouse pointer. If the enemy is in that direction and close enough to the player, the enemy will take damage. After losing all of its health, the enemy will be destroyed. |

**Updates for M3**

| Tasks | Player/Game Actions | Expected Outcomes |
| --- | --- | --- |
| Rendering | Enemy Health Bars | Enemies have health bars displayed above their heads showing how much hp they have left |
| Furniture | Furniture items successfully render around map. Player cannot move through these items and enemies path find around them. |
| Game AI | Knocking back enemy on player attack   1. Left click in direction of enemy when enemy is close to the player 2. Enemy gets knocked back | Enemy pathfinding resumes as normal after the knock back |
| New Features | Red shaded enemy projectile | Homing projectiles shot by red enemies will follow the player. |
| New Features/Collision | Blue shaded slime enemy | When theplayer comes in contact with blue slime the player will slow down. |
| New Feature/Boss Enemy | 1. Defeat 20 enemies to reach the final boss level. 2. Move up to the center of the stage | Player will encounter final boss. Boss will be indicated by a red health bar. If the player moves close to the boss, the boss will attack. |
| 1. Attack the boss enemy enough times until it loses all 2000 hp | 1. Boss enemy dies 2. Game ends with a victory screen |
| Game Logic | Press ‘E’ when near cats   1. Use WASD to position player on cat 2. Press ‘E’ | Restores 25 hp on each press until the player is at full health again. WIll not work if the player is already at full health. |
| New Feature | Experience points   1. WASD and left click to damage an enemy until it dies 2. Enemy drops coin 3. Player uses WASD to run onto coin to collect it | Player’s experience increases when collecting the coin. |
| 1. Repeat 5 times 2. Use mouse and left-click to select a level up buff | After 5 repeats, the player will be offered a stat upgrade (knock back, damage, or collecting range increase) |
| New Feature - Powerups | 1. WASD and left click to find and kill enemies until one of them drops a gift 2. Move onto gift. | Player will receive a powerup. An audio queue will play and text will appear indicating what buff was applied. |
| Creative Component 1: Particle System | 1. Use WASD to find an enemy 2. Use Left click to kill an enemy | A smoke effect created using the instanced rendering particle system should play. |
| Creative Component 2:  BOIDs | 1. Defeat 20 enemies in the second stage to reach the first stage. 2. Use WASD to move to the top right corner of the map. | Player will encounter a swarm of enemies with flocking behaviour simulated using the BOIDs algorithm. |