(Midterm preliminary report)

Dead Man's Maze

Team Number: cm3030-tg1-t9

Role	Name	ID
Project Manager	Isabela Louli	200400264
Programming	Raymond Woon	190126210
Art	Alwin Wong	200195717
Design	Ernesto Arakaki	210168615
Quality Assurance (QA)	Daniel Rodriguez	200103527

Contents

1. Game Description

1.1 Elevator Pitch

An atmospheric difficulty increasing horror first-person shooter in which the player must escape a maze by first finding the keys to the exit and then surviving the path to the exit.

1.2 Summary

It is a first-person shooter (FPS) game that places the player inside a randomly generated maze with very limited lightning to convey a moody experience. The atmosphere will express heavily on sound, where the player will constantly hear moans, steps, and scratching sounds coming from the monsters in proximity, and the player can choose to either avoid it or take it out.

The objective is to escape the maze by collecting keys to the exit. The player will start with limited ammunition for self-defense, where the player can get more ammo from randomly placed pickups within the maze. The game is highly replayable since the mazes are randomly generated with maze customization accessible for the player to change and explore.

1.3 Unique Selling Points (USPs)

- The mazes are randomly generated which means the players will theoretically obtain endless variations of the mazes to experience.
- The properties of the randomly generated mazes can be customized by the players which includes the enemy difficulty (health and speed), level difficulty, maze sizes and starting ammo, which allows the player to experience the game to their heart's content.
- The horror experience from the moody atmosphere and spooky monsters will be enhanced by the scary sound coming from the monster to ensure as much immersion to the players.

2. Design

2.1 Key Mechanics

The game is viewed from a first-person perspective of the main character where the player can control. The character can move forwards and backwards, strafe to the sides, rotate, look up and down. The player will also have a small set of weapons to fight against enemies. To achieve the game's goal of getting all the collectables and reaching the exit, the player will navigate the maze, avoiding or eliminating encountered threats that populates the maze. Eliminating the threats will require skill, as the player will have limited ammunition to kill enemies. In case the player runs out of ammo, the only option is to avoid combat entirely, thus increasing the difficulty traversing the maze.

The game mechanics of this game consists of navigating the maze, finding the keys to the exit and shooting enemies. The novelty of game's proposal is that the maze is generated randomly for each new game to make it more engaging for replayability. The game also features a "hot/cold" mechanic to help with relieving some frustration to the player to find the key, which may make the game more appealing to broader audience while still retaining an unsettling feeling. While FPS shooting games and survival horror games are very popular, Dead Man's Maze will combine elements of both genres, while also removing the certainty of maze's map to make it more challenging. The possibility to quickly start a new game and get a new maze to explore will be appealing to both amateur and experienced players that look for a different maze gameplay experience.

2.2 Characters and Settings

The game is set in the Modern day. Earth is close to being decimated by a virus that has caused the infected to turn into zombie-like creatures. Dr. Alex Fleming, an army medical doctor is tasked with coming up with a cure, and he thinks he just needs one more ingredient in order for it to be effective – the sweet-smelling herb Athelas. The only problem? Athelas is only known to grow in one place in the world: A remote farm in the south of France, whose owner had a twisted idea of growing the lifesaving plant in the middle of a maze that he had constructed himself to keep it out from the hands of his enemies. Dr. Fleming and his team travel to the farm, and cautiously begin to enter the maze to retrieve the Athelas, when they realize the farm has been overrun with

zombies! It's up to the player to help Dr. Fleming work his way through the maze using the few weapons in his arsenal to survive and retrieve the Athelas, while also making it out alive, hopefully in time to save humanity!

3. Gameplay

3.1 Beginning the Game

The player is greeted by a dark screen with eerie music, where they have the options to play, read the instructions or customize various aspects of the game. It would be similar to the illustration below.

Figure 1: *Start Screen*

Once the player clicked on "Play" and "Start" to start a new game, the game will start with the player placed in random spot in the maze followed by a popup screen explaining the lore and your objective. The player can click on "Continue" to begin the game.

3.2 First 2-5 minutes

The player is placed at the entrance to the maze, a cut scene is displayed, explaining the lore and why the player is there. The player will have the option to continue the game with the default settings, or go to the 'Main Menu', where the game parameters can be changed to make the game more or less challenging.

From the initial scene, when the player selects 'Continue', the game begins. Initially the player has a flashlight that will flicker from time to time, giving the situation a sense of uncertainty and helplessness. Sound will be atmospheric, having muffled groans, scratching against walls, uneven footsteps and dragging across the floor, giving the player a sense that they are not alone in this maze.

The player will begin to move the character forwards, backwards and sideways, using the WASD or arrow keys on the keyboard and moving the camera using the mouse. Upon encountering the enemy or zombie, the player may choose to turn around, and find an alternate route or fight.

During the game, the player will have a certain amount of health which can be quantified like the 'Call of Duty', where the bloodier/redder the screen became as the health of the player declined.

The player will walk or run around, shooting or escaping from the enemies in tight corridors (help generate the common fear of claustrophobia) and will search for keys or items required to open the exit. The player may be able to find the exit but without the keys, they would not be able to win the game or complete the level.

The player will get a very dim sound prompt when they are within close proximity of a key and it would intensify or diminish, the closer they get. This 'hot/cold' mechanic can help relieve some of the frustrations a player may feel, thus making the game appealing to a broader audience while still retaining an unsettling feeling.

4.0 Visual Audio

4.1 Art Style

The art style will be a 3D polygon style which offers a timeless art style with colourful theme, making the game unique and conveys a playful feel. The game will use 3D polygon assets by Synty as much as possible to provide a consistent art style throughout the entire game, including characters, items, building and the environment. Where a specific asset is unavailable, a custom model with texture will be made to resemble the art style as much as possible, for consistency.

Figure 2: *Polygon Adventure Pack (Campfire). Preview by Synty*

The gameplay style will be similar to POLYGON and World War Polygon, both are tactical first person shooter. The game will feature responsive controls, coupled with fast and fluid animation. The player can control the character to move, sprint, jump, crouch and shoot with polygon weapons to match the game's aesthetics. The game will put heavy emphasis on gunplay with impactful shots at every bullet strike and shells ejecting from the gun, coupled with satisfying reload animations. Once a bullet hits an enemy, the crosshair will show a red indicator to confirm that the shot hit an enemy. Conversely, once an enemy has been hit by a bullet, the enemy will do a flinch

animation to show the enemy was hurt and if the enemy's health is empty, the enemy's ragdoll mode will be enabled as it lifelessly falls to the ground with collider physics.

Figure 3: *POLYGON*

Figure 4: *World War Polygon*

4.2 Audio

On the start menu, the game will play orchestral music to set the mood of the player to get ready to play, similar to polyfield. Once in the game, the music will change between two states depending on the player's activity. If the player has encountered an enemy, the music will get louder with a fast tempo, otherwise the music will be almost quiet with a mellow tone.

As for the environment, the sound will portray a feeling of an isolated scene. The game will rely heavily on atmospheric sound, giving the player a sense of dread and 'stress' that there may be something right round the corner. Most of the sounds will play at random intervals so that the player may not find the audio cues predictable, but with random intervals to make them organic and not part of a predictable algorithm.

4.3 Front End

Upon starting the game, the player will be greeted with the start menu and a beautiful artwork in the background to invite the player to play the game. The menu UI will consist of a 'Start', 'How to Play' and "Customize Experience" buttons and leads to another menu page as shown in the wireframe below:
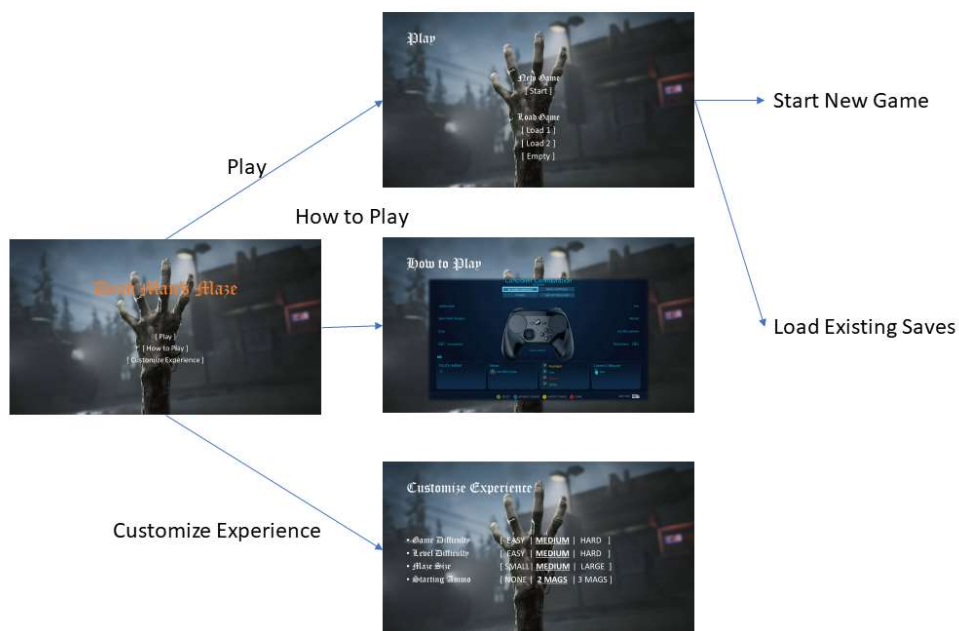

Figure 5: *Start Menu Wireframe*

The game will feature a simple HUD system with slight transparency to allow the players to immerse themselves in the gameplay without being distracted by a complicated HUD. It consists of the health bar, ammo bar and weapon selection slots as shown in the illustration below:

Figure 6: *Gameplay with HUD illustration*

5. Production
5.1 SWOT Analysis

The following SWOT analysis will offer a snapshot of our game's potential, highlighting areas for optimization and the challenges that lie ahead.

Strengths

1. **Unpredictability**: This is our big win! The randomly generated maze layout ensures that players will experience a unique challenge each time they play – they cannot just memorize and breeze through. Thereby, enhancing playability.

2. **Tense Atmosphere**: Limited lighting and a focus on sound provide an intense, suspenseful atmosphere that is likely to engage fans of the horror genre.

3. **Resource Management**. By limiting the ammunition available to players and distributing it randomly throughout the maze, strategic thinking and maze exploration is encouraged, increasing the possibility of the player encountering more enemies.

Weaknesses

1. **Potential for Repetitiveness**: Despite the random maze generation, if gameplay mechanics and enemy encounters don't provide adequate variety, players may find the experience monotonous over time. We are considering some ideas that help on this point, for example, multiple kinds of zombies, power-ups, multiple weapons and multiple skins. Bear in mind, these are future ideas and not currently planned features.

2. **Niche Market**: Not everyone is a fan of horror, and not everyone loves first-person shooters, so the combination of the horror genre with a first-person shooter may limit the game's appeal.

3. **Accessibility Concerns**: Relying heavily on limited visual cues and auditory information could make the game less accessible to players with visual or auditory impairments. Incorporating accessibility options would be a possible future improvement.

Opportunities

1. **Continuous Improvement**: The nature of random generation allows for an evolving gameplay experience. The maze-generating algorithm can be constantly improved which means the game can grow and get more complex over time.
2. **Community Engagement**: If the game is well-received, there is potential for the formation of a dedicated player community. This community would share experiences, tips and strategies, promoting the game.

Threats

1. **Technical Challenges**: Random generation can lead to some bugs or imbalances in gameplay, needing constant testing and debugging.
2. **Market Competition**: There are a lot of horror games out there, and a lot of shooters too, so standing out in that crowd can be a challenge.
3. **Team Inexperience**: As our team does not have any prior experience in game development, there could potentially be unforeseen difficulties.

5.2 Production Schedule

For the development of our game we created a high level production schedule covering project management, programming, art, design and quality assurance. We will virtually meet every Wednesday to discuss progress and adjust tasks as needed. Also, we would continue to communicate via Slack. The following timeline provides a roadmap, but we are prepared to adapt as needed in case of unexpected issues or necessary changes after feedback.

Week Starting	Isabela Louli	Raymond Woon	Alwin Wong	Ernesto Arakaki	Daniel Rodriguez
Week 1 (July 24)	Project planning	Project planning	Concept art/design	Concept art/design	Project planning
Week 2 (July 31)	Player	Maze generation programming	Enemies generation	Maze components	Weapons

Week 3 (August 7)	Player interactions	Level design	Texture and assets	Menu	Bullets
Week 4 (August 14)	Game sounds	Gameplay programming	Lights and atmosphere	Inventory	Weapons and bullets interactions
Week 5 (August 21)	Buffer/Rest week	Buffer/Rest week	Buffer/Rest week	Buffer/Rest week	Buffer/Rest week
Week 6 (August 28)	Feedback and iteration	Feedback and iteration	Feedback and iteration	Feedback and iteration	Feedback and iteration
Week 7 (Sept 4)	Finalize game mechanics	Finalize game mechanics	Finalize game mechanics	Finalize game mechanics	Finalize game mechanics
Week 8 (Sept 11)	Final polish and testing	Final polish and testing	Final polish and testing	Final polish and testing	Final polish and testing

6. Prototyping

During this process, we researched and developed the following phases:

1) Generate the basic maze container based on variable width and depth via the Inspector. This is achieved using primitive cube elements.
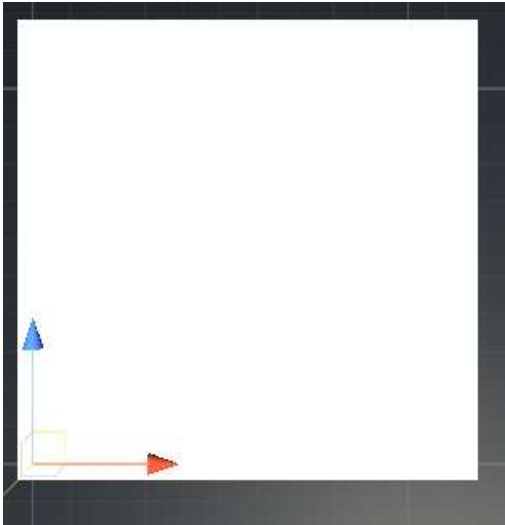

Figure 7: *Basic maze container*

2) Create a basic menu system where the user can configure the dimensions of the maze.

Figure 8: *Start menu*

Figure 9: *Options menu*
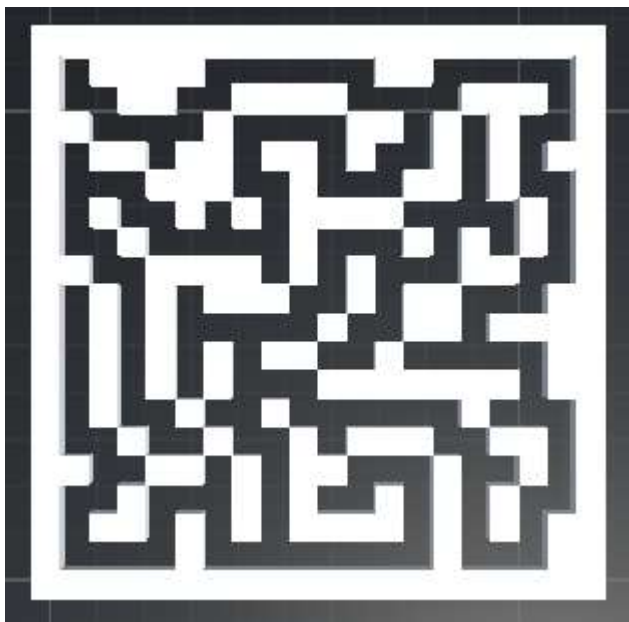
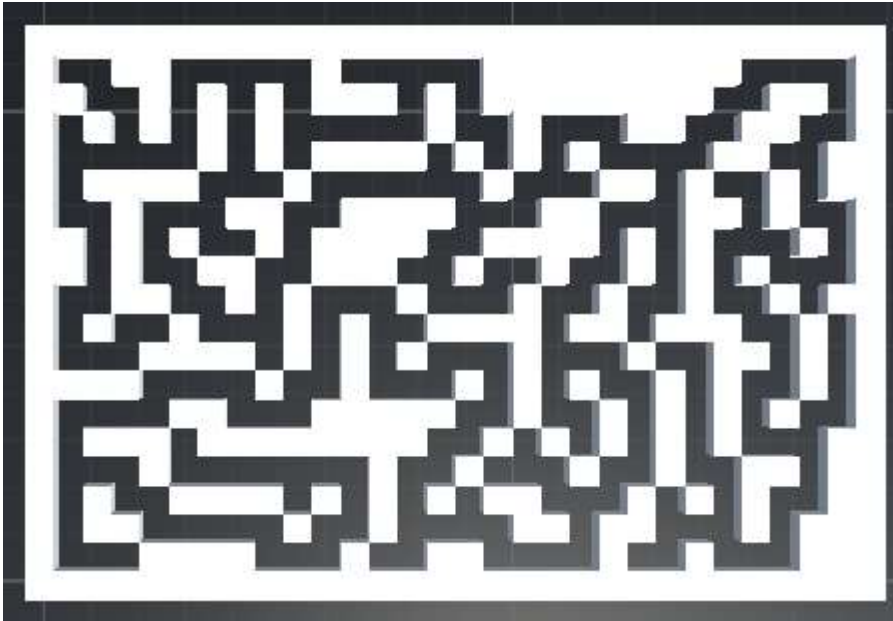3) Use various maze dimensions, generate random mazes

Figure 10: *20 x 20 maze*

Figure 11: *30 x 20 maze*

7. List of All Assets
Below is a list of potential assets that are been considered:

Type	Name	Description
Prefab	Maze components	Components and skin(s) of the maze
Prefab	Weapons	Bundle of weapon's appearance, animation, sound
Prefab	Key	Key's appearance and behaviour
Prefab	Enemy	Enemy's appearance and behaviour
Script	Player controller	Handles user input and controls in-game actions
Script	Maze generator	Generates the layout of the maze
Script	Sound controller	Controls the sounds.
Script	Game controller	Keeps state of the game.
Script	Inventory	Keeps state of the player's items.
Script	Lights controller	Generates lights and lighting effects.

Script	Menu	Options on starting the game
Script	UIManager	Manages the game state
Script	Bullet controller	Handles interactions between bullets and game objects.
Script	Enemy spawner	Creates new enemies.
Script	Enemy controller	Handles enemy behaviour.
Art	Sounds	Environment, enemies' and weapons' sounds.
Art	Textures	Materials to add texture to ground, ceiling and walls.
Art	Music	Music for the main menu.

Source of audio/visual assets:

1. Unity store – freely available assets such as Synty
2. Mixamo – free 3D animated characters
3. Sound – www.freesound.org

8. The Team

Role	Name	ID
Project Manager	Isabela de Oliveira	200400264
Programming	Raymond Woon	190126210
Art	Alwin Wong	200195717
Design	Ernesto Arakaki	210168615
Quality Assurance (QA)	Daniel Rodriguez	200103527

Appendices:

1) Github Repository:

   https://github.com/RaymondWoon/Dead-Mans-Maze

2)