

# Report NDVW - When We All Fall Asleep

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## 1. Introduction

”When We All Fall Asleep” is a single-player horror game in first person view. The player wakes up in a dark cave, trapped and desperate to escape. The cave is populated by monsters, named Akumu, whose only goals are to kill everyone they encounter in their path. To find a way out, the player must collect five different items scattered throughout the cave. These items hold the key to unlocking the exit and surviving the terrifying ordeal.

### 1.1. The Story

”When We All Fall Asleep” is a horror game set in a dark cave, where the player, waking up with amnesia, must collect items to survive and escape. As the player retrieves the items, an intricate plot unfolds. The protagonist, a mafia member named Tom, murdered a debt-ridden family, later falling into a coma after a car accident.



Figure 1: Family’s photo + Representation of Tom

The story of unfolds through the letters and diaries scattered throughout the cave, each revealing a chapter of the tragic narrative:



Figure 2: Boss' photo

1. **Father's Room:** the opening letter reveals the father's debt to the mafia, leading the family to separate for protection. The father, committed to resolving the situation, expresses remorse for his actions, mentioning a "monster" that will be revealed to be Tom.
2. **Daughter's Room:** the diary of the little daughter reveals the absence of the father and happy memories when both parents used to read her stories before bedtime. It also hints at a "monster" that now appears to be present in the cave.
3. **Wife's Room:** the wife, feeling spied, wishes to return to her husband to feel safer. This underscores their lack of security and the desire to reunite. At this point the player should think that the monster everyone is referring to is Akumu.
4. **Boss's Room:** the boss's diary reveals that the family, monitored by Tom, was destined to die after the father repaid the debt. Tom becomes the killer tasked with this terrible mission. He is the monster everyone was referring to.
5. **Tom's Room:** Tom's letter reveals that after killing the family, he was hit by a car and fell into a coma. The cave represents his subconscious, where he must decide whether he deserves life after the atrocities committed. The story concludes with a reflection on justice and the value of life, leaving the player to decide Tom's fate.

The letters and diaries are not placed in their respective rooms and the order in which the diaries are shown is always the same. This decision was

made to maintain narrative consistency and build a climax towards the end with the last letter. Additionally, the labyrinthine structure of the cave would not allow the player to follow the story correctly if each object were placed in its corresponding room.

The full text of the diaries and letter can be found in Appendix.

### 1.2. The Ambient

The game is set in a labyrinthine and dark cave where the tunnels are very narrow.

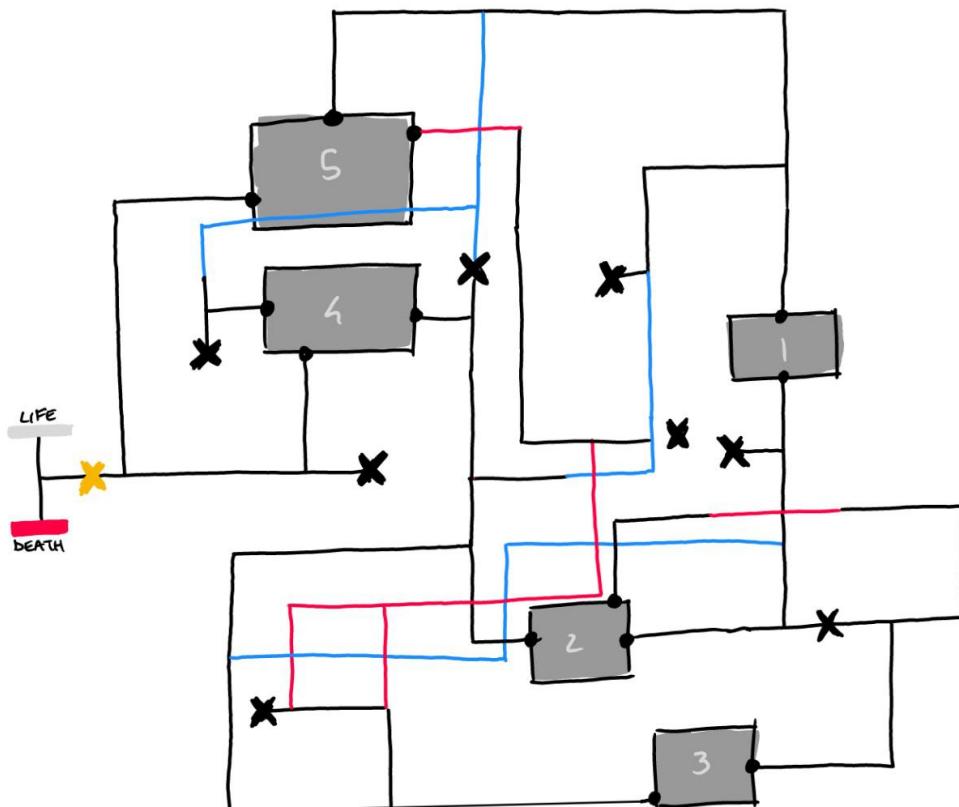


Figure 3: Map's drawing

The map was designed as in the figure 3: red indicates an upper ground, blue indicates an underground, numbers indicates the house's room, crosses represent a blocked passage and dots indicates an entrance in the room. The



Figure 4: The Ending place

golden cross indicates the place where the game ends and, to get there easily, we indicated the path to this place with some arrows on the walls that are showed up once the player collect all the 5 pieces. Once the player collects all the 5 items, the Ending place's rock disappears and the indicating arrow appear. From there, the player has to choose how to finish the game, between life and death and two arrow are present to indicate "Life" or "Death".

To create the map, we utilized different types of assets: the cave asset<sup>1</sup>, the house asset<sup>2</sup>, the diary asset<sup>3</sup>, the arrow asset<sup>4</sup> and the hospital bed asset<sup>5</sup>.

For the cave, we opted to construct a maze-like structure to deliberately disorient the player. Within some paths, there are boulders that obstruct movement but allow visibility beyond the blocked passage.

The strategically placed boulders ensure that the distance from each room

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<sup>1</sup><https://assetstore.unity.com/packages/3d/environments/dungeons/mine-92461>

<sup>2</sup><https://assetstore.unity.com/packages/3d/props/interior/free-house-interior-223416>

<sup>3</sup><https://sketchfab.com/3d-models/field-diary-lowpoly-c80e0e2312bf420883b82f8c121ca812>

<sup>4</sup><https://sketchfab.com/3d-models/direction-arrow-6ef46718c7b242e39fcad7f27ee858a5>

<sup>5</sup><https://sketchfab.com/3d-models/hospital-bed-250ffd1bace34e59a652d9de9796ce7d>



Figure 5: Father's room

is approximately the same. Additionally, dead ends are avoided to prevent the player from getting trapped between a rock and the pursuing monster. Throughout the cave, various lanterns are placed, allowing the player to approach and ignite their own lantern. These lanterns are positioned randomly but are often found in corners or long corridors. Beyond helping the player, these lanterns are designed to illuminate the cave. Passive lanterns, used solely to brighten the cave, have been introduced to lighten up the ambience.

During the map creation, we encountered challenges in connecting different parts of the cave. To address this, we plan to "fill the gaps" by adding rocks or placing boxes or beams in empty areas to conceal them. Another solution we implemented to mitigate this issue is the use of a dark skybox, reducing the visibility of fractures in the map.

To refine the ambience, we have included props like wooden supports, crates and planks in random places of the map.

The rooms in the middle of the cave are created to suggest a more oniric experience and to guide the player towards the place of the items. In the rooms there is always the glowing item and an active lantern. To create the rooms, we based them on elements of the story, and each one represents a character in it. In each room, there is a panel representing the "owner" of the room, and it's possible to find the item that provides more information about the story. The rooms works as a safe base for the player as the monsters cannot enter.

Each room is furnished in a meaningful way related to the narrative:

- Father's room: a workspace to indicate how much the father was immersed in work, neglecting the family, figure 5;
- Daughter's room: features a bed symbolizing unity with the parents

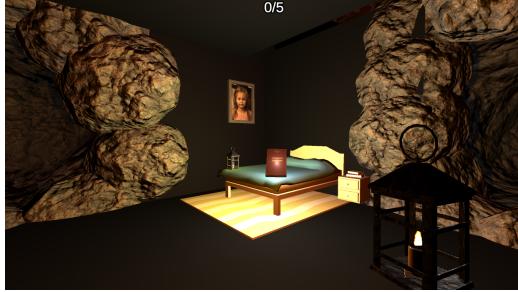


Figure 6: Daughter's room



Figure 7: Wife's room

when stories were told by both, figure 6;

- Wife's room: a living room to indicate a moment of gathering with the family, figure 7;
- Boss' room: a prison within the house, symbolizing the mafia's influence in the family's life, figure 8;
- Tom's room: includes a hospital bed where the game's protagonist is currently located, figure 9.

### 1.3. The Player

The player's visibility in the dark is provided, but it is extremely limited. The player has with him a lantern that provides a small amount of light, allowing the player to see a short distance ahead. This is created so that the player needs the lantern and to not let him rush through the map. If the player runs for more than 3 seconds, the candle will extinguish, and he has to find a way to relight it. Additionally, he may unintentionally make noise by



Figure 8: Boss' room

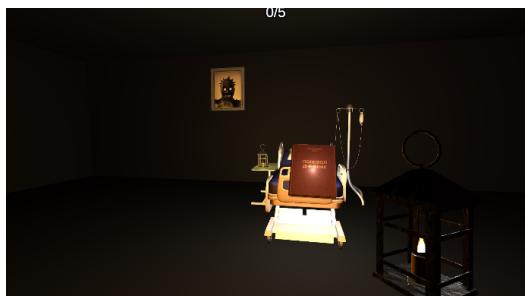


Figure 9: Tom's room

coughing or stumbling on rocks. The player's running speed is also slightly greater than that of the monster so that he can escape quickly. Inside the cave, there are several lanterns where the player can relight his candle. The location of these lanterns and the map are fixed and will never change. For the player to win, he must collect 5 items in the map that are present in the house sections of the map. Every object represents a part of the story, and once collected, a letter or a diary page about the protagonists of the story will be revealed.

For the player's creation, we are currently using a Capsule object with a script (*SC\_FPSController.cs*) enabling basic movement using the W, A, S, and D keys on the keyboard for forward, backward, right, and left movements. The player's perspective is first-person, allowing observation of the surrounding environment using the mouse.

The player's lantern is an asset from the cave, childed to the camera so that it always remains in the player's view. To achieve a greater light effect, the Point Light of the player's lantern is positioned slightly ahead of the player's location to simulate an arm holding the lantern (given that the Capsule lacks arms).



Figure 10: The player in 3rd person view

Currently, the script *HideLightWithShift.cs* associated with the player turns off the lantern if the Shift button (for running) is pressed for more than 3 seconds. The script *StepSound.cs* allows the player to make footstep noises so to make the gameplay a little bit more immersive.

To light up the lantern, the player needs to be in proximity to one of the active lanterns and press the E key. A prompt will appear to guide the player



Figure 11: What the player see



Figure 12: Player structure

in this action. This functionality is implemented in `ActivateLightOnPlayerNear.cs`: the message and action become available when the player enters the Sphere Collider range of the lantern, provided the lantern is currently off.

#### 1.4. The Monster

The monster, Akumu, is a ferocious beast, whose sole purpose is to kill and tear apart any living being it encounters on its path. One of its main characteristics, is the fact that he is blind, so, in order to perceive its prey, it relies on his senses. Because of that, it detects the player only when his distance is inside a certain "range", and when in close proximity, it will attack. His usual behaviour then, will be to wander around randomly in the cave, and after detecting the player, it will immediately point in his direction, chasing him. The player still has a possibility to escape, by running faster than the beast.

## 2. Related work

There are several horror games that uses a similar approach for the AI of the enemies (that we are going to explain in the following paragraphs).



Figure 13: Akumu, The Monster

Of course we are talking about more complex projects, that make use of sophisticated FSM and game mechanics. Here are two examples:

- Slenderman: it is a horror video game developed by Parsec Productions. In the game, players find themselves in a dark forest and must collect scattered items while being pursued by Slenderman, a tall, slender, faceless figure. Slenderman appears randomly, and his presence is accompanied by visual and audio disturbances. The goal of the game is to collect the items without getting caught by Slenderman, who becomes increasingly aggressive as the player progresses
- Outlast (2013): a first-person survival horror game where players navigate a psychiatric hospital filled with hostile entities. The enemy AI, particularly the pursuing enemies like Chris Walker, uses an FSM to transition between states such as patrolling, searching, and attacking based on the player's actions.
- Alien Isolation (2014): a survival horror game set in the Alien universe. The xenomorph enemy in the game uses a complex AI system with an FSM at its core. The alien can transition between states like patrolling, searching, and hunting the player based on their actions and the level of threat.

### 3. Proposal

#### 3.1. AI Design

The AI of the monster is modeled using a **finite state machine** approach, a design that allows the enemy to switch between different states (Idle, wandering and Chase) based on specific conditions. It also makes use of the NavMeshAgent package, in order to permit the navigation of the agent in the scene.

The overall architecture is event-driven, where the behavior of the monster's AI is determined by various conditions and transitions between states. This type of architecture is common in game development, especially for simple AI systems.

The FSM is based on three states:

- **Idle state:** the enemy is in a passive (or resting) behaviour
- **Wandering state:** The enemy engages in controlled, random movements within a defined area. This state mimics exploratory behavior, creating a more lifelike and unpredictable presence.
- **Chasing state:** when the enemy detects a target, in this case the player, it enters the Chasing state. This state activates pursuit behavior, where the enemy intelligently tracks and moves toward the detected target.

The monster general behaviour then (as we can see also in the graphical representation of the FSM, in figure 6), is the following:

- The monster starts in the walking state, randomly selecting destinations from the list and walking towards them.
- When the monster reach its destination, it enters the idle state, which last for a few seconds, in which he will randomly select another random destination. Then enters the walking state.
- While wandering, if the player is detected, the monster enter the chase state. It stops walking, triggers a chase animation, and runs towards the player using the NavMeshAgent.

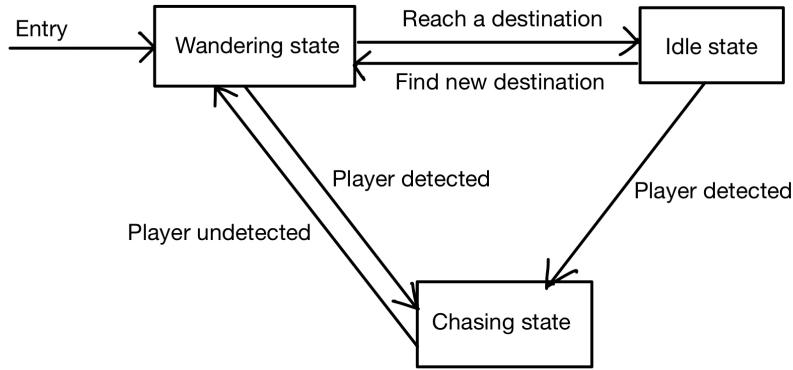


Figure 14: The Monster's FSM

- If the monster gets close enough to the player (within the catch distance), a jumpscare animation is triggered, and the player is considered caught: game over.

### 3.2. Monster's Animator

All the animation of the monster are handled by the "Unity Animator". The transitions between one animation and another, are triggered when the monster change its state (passing from idle to walking for example). In the following figure, we can see a screenshot of the monster's animator in Unity, in which we can also see the integration of the jumpscare, accessible from all the state independently.

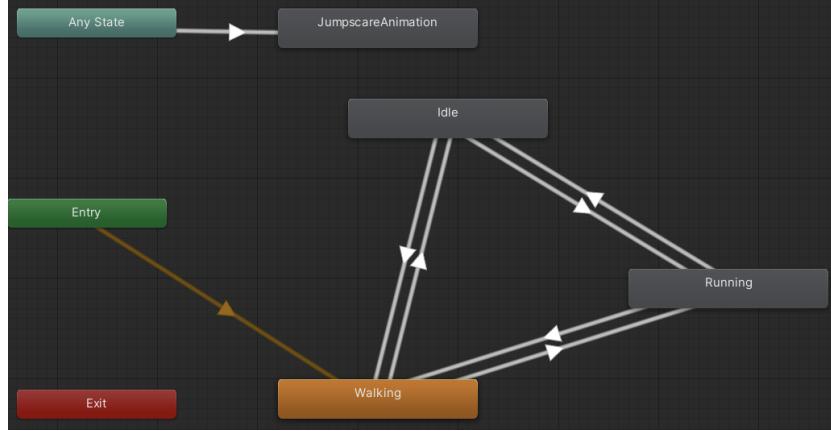


Figure 15: The Monster's animator

### 3.3. Multiple Monsters inclusion and Wandering Path

A crucial decision in the game design, involved the inclusion of multiple monsters in order to give a more challenging experience to the player. We realized indeed, that with a really big map as the one we designed, a solitary "Akumu" presence felt inadequate given the vast terrain, and the likelihood of encountering the monster was excessively low. Because of that, we experimented with different quantities.

After careful consideration, we determined that three monsters provided the optimal balance. Following this decision, our focus shifted to strategically defining the paths of these monsters. Our goal was to ensure that each monster would oversee a distinct part of the map. This process resembled an optimization problem, culminating in the solution depicted in the following image. The paths of each monster are clearly delineated, along with the specific map points serving as their destinations. To enhance clarity, we assigned different colors to each of the three monsters.

### 3.4. Monster's model and animations

The monster's model, has been imported from "Sketchfab". Since in Sketchfab only the model was present, all the animations have been created and downloaded using "Mixamo", an online animation platform offering automated character rigging and a vast library of motion-capture animations.

A different case regarded the "Jumpscare" animation. Indeed, we made it by ourselves with the unity animator tool, using a specific camera that pointed to the face of the monster, synchronized with a loud and scary sound.

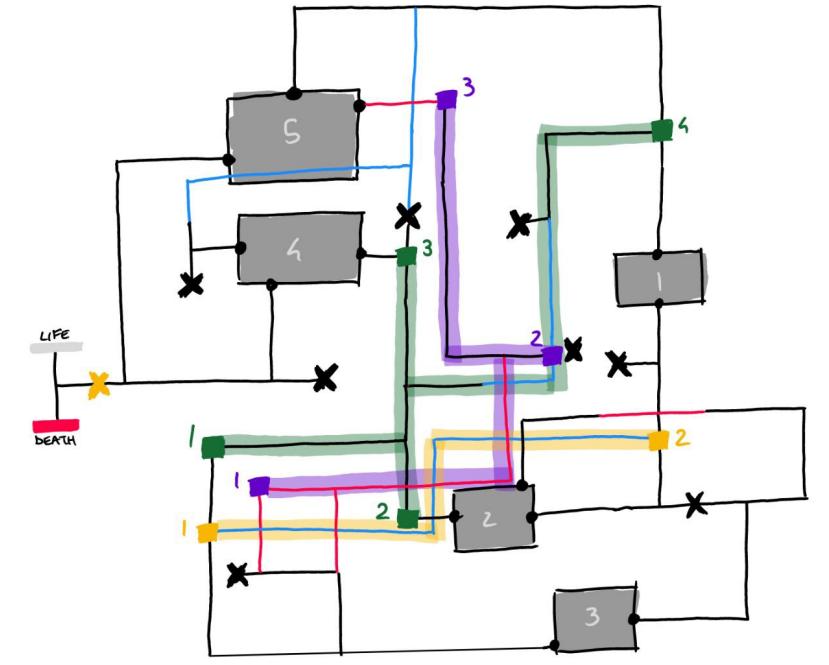


Figure 16: Monsters' path

### 3.5. Sound Design

In the game we used a discrete amount of different sound, used to give the player a more immersive experience.

- Background music: We decided to put a scary and suspensful music in the background of the game, aiming to intensify the overall sense of thrill and suspense within the environment. The music, which was imported from the Unity Asset Store is based on a "The Conjuring" theme.
- Player's sound: The player produces a walking sound when he moves. The audio source was included directly into the player capsule, and it's managed by the "stepSound" script.
- Monster's sound: The monster produces a walking sound when he moves, and a growling sound. Both of them are of two types. For the walking sound we have a wandering sound and a chasing sound (the chasing sound emulates the running), while for the growling sound we



Figure 17: Jumpscare Animation

have a generic growling for when he wanders around the map, and a specific sound for when he is chasing the player. In this case, the sound are managed directly inside the enemy AI script, since the switch between the two types depends on the state in which is the monster.

- jumpscare sound: A scary and lowd ”roar”, coordinated with the jumpscare animation. It’s managed as well into the enemy AI script.

### 3.6. Scene organization

In general our project is made by a total of 4 scenes: the main GameScene, the MenuScene, the TutorialScene, the GameOverScene.

For the menuScene (18) we recreated a little ambience of the game with the monster in the background a lantern to slight light up the environment. Two buttons are present: Start, leads to the TutorialScene, and Quit that closes the game.

For the TutorialScene (19, 20) there’s a Canvas with two panels: by pressing the button at the bottom it is possible to alternate the two panels. By pressing ”Wake Up”, the GameScene (21) is launched.

If the player is caught up by the monster, the GameOverScene (22) is launched. By pressing ”Retry”, the player is lead to the MenuScene. The MenuScene is launched whatever ending the player chooses.



Figure 18: Menu Screen

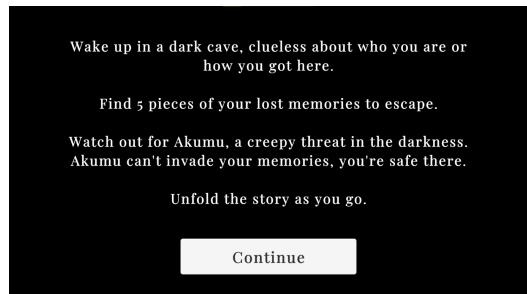


Figure 19: Intro 1st Screen

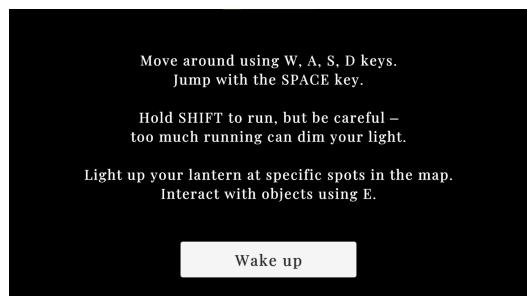


Figure 20: Intro 2nd Screen

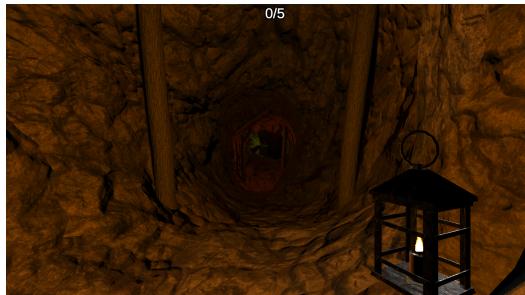


Figure 21: Game Screen

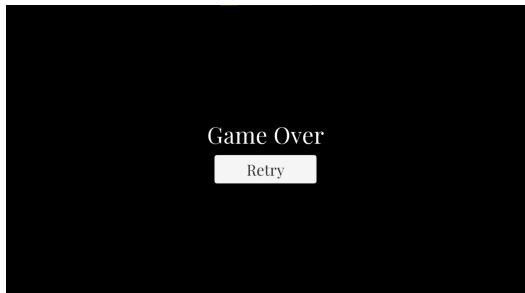


Figure 22: Game Over Screen

## 4. Simulations and Results

We had our friends try out our game, and most of them really liked it. They said the game was fun, but some of them had a few issues. Some said the footsteps were too loud, and others mentioned that the candle in the game didn't last long enough. Nobody complained about there being too many monsters or that they were too hard. We also saw that players got better the more they played.

## 5. Conclusions and Future work

In conclusion, the development of "When We All Fall Asleep" has been a challenging but rewarding experience. The integration of a compelling storyline with immersive gameplay elements, such as the finite state machine-based AI for the monsters and the carefully designed ambient, aimed to provide players with a thrilling and engaging experience.

For future work, we plan to address the feedback received from playtesting, making adjustments to the game mechanics to enhance player experience. This includes refining the balance between the ambient sounds, adjusting the duration of the candle, and tweaking the footstep noise levels. Additionally, we aim to expand the narrative by introducing more diverse elements and possibly incorporating alternative storylines or endings based on player choices.

## Appendix A. Links

Link repository on Github: <https://github.com/giacomoschiavo/WWAFA>

## Appendix B. Full Story

### *Appendix B.1. A Dark Pact - Father's Letter*

Dear family,

I'm writing with a heavy heart. The family is apart right now, each one looking out for themselves. I made some not-so-good deals with some bad people, thinking it would help us in the long run. The quiet house reminds me of the mistakes I've made. I'm trying my best to protect you from the consequences of the choices I've made. I want to reach out to my dear wife and daughter. These words I'm writing hold a promise to bring us back

together and fix what's broken. But be cautious, because there's a problem caused not by demons, but by the desperate decisions I've made. I hope these words can be a guide through the confusing paths of our lives, where each twist and turn tells a piece of our story.

With love and apologies, Your Father.

#### *Appendix B.2. Stories in the Night - Daughter's Diary*

Dear diary,

Today wasn't fun. Daddy's not here, and I miss him lots. Mommy and I are in a tiny home. I remember when Mommy and Daddy used to read me stories before bed to keep the monster away when we all fell asleep. Now, it feels like the monster is hiding in the shadows. Going to bed is scary now.

See you tomorrow.

#### *Appendix B.3. Watcher in the Night - Wife's Letter*

My dear,

Nights are getting scarier. I feel like I'm being watched from the window when we all fall asleep. The shadows in the room seem to morph into a haunting presence, an ominous figure that lingers in the darkness. Many times, I've glimpsed this creature, dark and haunting, staring at me from outside. Its eyes pierce through the night, and the air is thick with an unsettling tension. I long to be back with my husband; it's where I feel safest. Going to bed is frightening now, as if the room itself is a canvas for my deepest fears.

With yearning, Your Wife.

#### *Appendix B.4. Echoes of Guilt - Boss' Journal*

Ink stains these pages as I write the twisted tale. The broken family was under constant watch, monitored by a man named Tom. After the father repaid the debt, I decided it was time to end it all. I enlisted Tom, a shadow with a hunger for despair. He will execute the family when they reunite, and all have fallen asleep. The pieces on the chessboard move with cold intent, orchestrated to perfection. As I sit in my solitary armchair, I witness the unfolding tragedy, each move a step closer to the checkmate of their lives. All these letters and diaries now reside in my own journal, a chronicle of the darkness I've unleashed.

With cold intent, The Boss.

*Appendix B.5. Tom's Watchful Eyes - Tom's Journal*

Hi, Tom,

it's me, or should I say, it's you. I'm your subconscious. In the shadows of ink, I inscribe my final confession. Having extinguished the family while they slumbered, you fled, only to meet the unyielding force of a speeding car. Plunged into a coma, I conjured a cavern where death hunts, blind yet attuned to the breath of the living, including yours. After all you've wrought upon that family, do you truly deserve survival? The echoes of their fading dreams reverberate through the cavern, a haunting reminder of your deeds.

Now you have to choose between life and death.

**References**