

# Detailed Report Document

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## Introduction:

In this detailed report document, we will cover all the details about our team, our game, our assets and design choices, as well as playtest reports and an explanation of our targeted serious issue that is affecting disadvantaged communities.

## Group Members and Responsibilities:

### **Albertus Louw:**

- Lead Artist
- Assistant Game Designer

### **Jude Cooksey:**

- Team Lead
- Lead Game Designer
- Developer
- Artist

### **Joshua Brian Miller-Pio:**

- Lead Developer
- Game Designer

### **Leondro Dos Santos:**

- Game Designer
- Assistant Artist

## Role Responsibilities:

### Game Designer:

Will need to apply game design practices, project planning and scope planning in concern to the overall project timeline, as well as use Game Design theory and practices to design and plan and possibly implement the game elements which may include but are not limited to, within their relevant sphere: Art, Visuals, Game World, Narrative, Game Mechanics, Level Design, UI and UX Design.

### Developer:

Developers will be responsible for the programming of the game within the chosen engine of the team, which is the Unity Engine. Developers will utilise and manage a Github repository to share both code and the project using their student Github accounts (Github accounts used previously for projects at Vega). Developers will be responsible for the following elements which may include but are not limited to, within their relevant sphere: Programming in C# language, writing the games code for controls and mechanics, managing the unity project, creating functional UI, integrating external assets.

### Artist:

Artists will be responsible for the production art and assets for the use of the game, which adhere to the games Essence Statement, Problem Statement, Aesthetic, Setting and Theme, as outlined and agreed upon by the Game Designers and group, respectively. Artists will be responsible for the following elements which may include but is not limited to, within their relevant sphere: Creation of Art Assets, Modelling 3D models, Rigging, Animation, Lighting, applying relevant Art theories into design, UI asset creation, VFX, SFX, Music.

### Game Title:

The game is called RATT-Bot, featuring the name of the main protagonist and playable character.

### Explanation of Serious Issue:

#### Serious Issue:

*Poor Health and Quality of Living conditions affecting the disadvantaged communities of South African townships.*

### The Primary Problem:

The primary serious issue we are focusing on are the Poor Health and Quality of Living conditions that the disadvantaged communities of South African Townships suffer from. According to StatsSA, 88.5% of South African households live in a formal dwelling. And 8.1% of households live in an informal dwelling (StatsSA, 2022). There is also an estimated backlog of 1.4 million South African households in need of better-quality housing, as per the Census 2022 for South Africa (Roa & Geffen, 2023).

However, Sonia A. Roa and Nathan Geffen, from the South African news agency GroundUp (2022), noted in an article that the number 1.4 million may be a serious undercount, as StatsSA had confirmed that the 2022 South African Census suffered a staggering undercount of 31% (Roa & Geffen, 2022).

Roa and Geffen (2022) followed up with a second key finding, that there is a major discrepancy between the undercount of 1.4 million households in need of a formal dwelling and the 2.5 million households on the National Housing Needs Register (Roa & Geffen, 2022). This data suggests that there is a far greater demographic of disadvantaged individuals suffering from poor-quality housing, and, thus, poor quality of living.

### Defining Quality of Living:

#### Housing:

According to the 2022 South African Census, StatsSA defines a “Formal Dwelling” as any structure that includes brick or concrete, and lists flats, apartments, cluster houses, townhouses, semi-detached houses or any room or garden cottage in a backyard as an example of a Formal Dwelling (StatsSA, 2022).

Interestingly, the 2022 South African Census does not associate a households' ability to access water, electricity, public services, and transport as a requirement for a structure to be considered a Formal Dwelling, as there is a section separate from the Housing section which includes this information, called Access to basic services (StatsSA, 2022:72).

This suggests that the definition of a Formal Dwelling focuses solely on the physical structure, and not the environment in which the structure resides or the accessibility to basic services, such as water, electricity, ablutions, and waste management (StatsSA, 2022).

#### Low Income and Unemployment:

We believe that the Quality of Living also includes the sphere of a household's income, as the income will be used to better the qualities of a household's dwelling through food, water, and electricity, as well as clothing and other items. In South Africa, we have an incredibly high unemployment rate, with the majority populace not having any form of employment or income (StatsSA, 2022). Township households are also known to suffer from a very low rate of secure tenure, with many individuals often being thrown out of their dwellings, as well as only 41.6% of our population actually owning their dwelling (StatsSA, 2022; RTC, 2024).

#### Defining Health Conditions:

This contradicts how the World Health Organization (WHO) defined Healthy Housing in its housing and health guidelines in 2018, stating that a shelter should provide security, wellbeing, safety from natural elements, access to electricity, water, and sanitary ablutions, as well as provide protection against mould and pests (WHO, 2018:2). WHO designed the Housing and Health guidelines to help achieve the UN Sustainable Development Goals (SDG) 3 and 11, which are the SDG's of health and well-being regardless of age (UN, 2024), and making human settlements secure and resilient (UN, 2024).

These definitions are relevant to South Africa, as the National Development Programme (NDP) targets 74% of the SDG's established by the UN (StatsSA, 2019) and the WHO Housing and Health Guidelines were designed to help achieve the SDG's of the UN (WHO, 2018).

And the quality of household life is definitely a focus for the South African government. According to the new NDP vision released by Minister Jeff Radebe in 2016, the Medium Term Strategic Plan (MTSF) prioritises the desired outcomes of quality basic education, safety and security for all, decent employment, economic growth, and the improved quality of household life (Gov.za, 2016). And in the final and revised MTSF 2017-2024, the three outcomes for Priority 5 of human settlements were secure tenure, spatial transformation and improved quality of living environments, (Department of Planning Monitoring and Evaluation, 2019).

#### Sanitation and Cleanliness:

Townships are also notoriously dirty places, suffering from poor plumbing and sanitation, as well as poor waste management which often results in garbage not being collected, leaving Township streets and corridors full of old garbage bags left to rot (Moghayedi, A., Memhood, A., Michell, K., Ekpo, C. O., 2023).

These garbage bags left around, and general illegal dumping, allow the rat population in Townships to grow at an alarming rate (Du Plessis, P., 2019). And rats are known to carry a slew of diseases, such as Salmonella, tuberculosis, and E Coli, just to name a few (The Specialists, 2024).

Just a House does not make it a Home:

WHO also goes on to emphasise that determining a healthy house should also require the assessment of the community or environment in which the shelter resides within, emphasizing that healthy homes should also be determined by the quality of social wellbeing which the environment around the household supports (WHO, 2018:2). WHO also likens the access to public services (Water, Electricity, Transport, etc.) and waste management within a community area as contributors toward determining if a household is Healthy Housing (WHO, 2018).

Our Main Point:

That, in its totality, is the main focus of our game.

To bring to our target audiences' attention the poor health and quality of living conditions the disadvantaged communities of South African Townships suffer from.

Housing shouldn't just be a shelter, it needs to be an environment that can harbour a household, a family, and our future generations. It should be within a safe environment that is well kept by the municipalities and governing bodies responsible for keeping these township neighbourhoods safe and clean.

As WHO stated (2018), contributors that should be considered in order to determine a Healthy Housing includes the environment which the dwelling resides in, access to public services, access to clean toilets, healthy water, electricity and safety and security during the day and night. And another key contributor WHO noted in determining a healthy dwelling was the ability for the shelter to protect against Pests (WHO, 2018).

Communicating this issue to the Player:

In order to communicate the reality of the health and quality of living conditions that the disadvantaged communities of South African Townships are suffering from, we wanted to focus on a serious threat to both health and quality of living conditions, specifically the issue of rat infestations.

Rats are a serious problem in townships, as the current state of townships provides an environment that is well suited for the rodent populace, involving tight spaces, poor sanitation, and poor waste management (Moghayed, A., Memhood, A., Michell, K., Okobi Ekpo, C., 2023). Poor waste management is a very large factor in enabling the rat populace of an area to grow (Du Plessis, P., 2019), as well as cramped spaces and dilapidating structures (Himsworth et al., 2013 Cited in Nattrass, N., 2022; Jassat et al., 2013 Cited in Nattrass, N., 2022; Himsworth et al., 2014 Cited in Nattrass, N., 2022).

Rats also have a serious negative effect on the residents of areas who suffer from infestations. Residents feel unsafe, fearful, and disgusted, recalling experiences of rats running over them while sleeping, and having the rodents cause damage to their residences through clawing and biting, as well as leaving droppings, which are commonly seen as a sign of the presence of rats and cause suffering residents a deeper feeling of disgust within their dwelling (Chelule, P. K., Mbentse, A., 2021).

Rats also pose a serious threat to health, as the rodents are known to carry several seriously harmful diseases such as Salmonella, Tuberculosis and E Coli (The Specialists, 2024). Rats are also able to squeeze through holes of up to 12mm, or 1.2cm in height (The Specialists, 2024) and are able to chew through insulation, wires, and walls (CleanLab SA, [n.d.]).

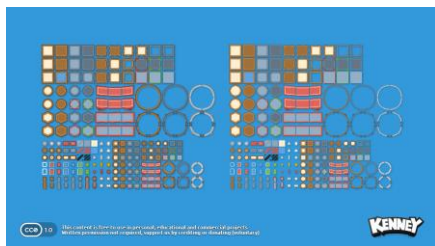
## Game Genre:

Our game is a Puzzle Tower Defense game, as it involves the player defending a primary objective (REFERENCE) all while figuring out how to manoeuvre their surrounding environment while keeping themselves safe.

## Targeted Age Group:

Our target age group includes adolescents aged 14 to 17.

## Asset Pictures and Explanations:



**Figure 1: Kenny. 2024. UI Elements for Game Interface.** Kenny's *UI Pack - Adventure*. [Online]. Available at: <https://kenney.nl/assets/input-prompts>. [Accessed 26 October 2024].

### Kenny's UI Pack - Adventure: Game Interface Elements

This UI pack from Kenny's *Adventure Series* provides a complete set of interface elements specifically designed for vibrant, adventure-themed games. With clean, adaptable visuals, this pack helps streamline player interactions and enhances in-game readability, supporting a professional and cohesive game interface.

**Contents:** The pack includes essential UI components like buttons, progress bars, icons, overlays, and menus, each crafted to suit a variety of gaming needs.

**Style and Customization:** The UI pack's visual style combines adventure-inspired design elements with a touch of minimalism, making it versatile for a variety of game settings. Colours are bright and engaging, with options to adjust tones and hues for a more personalised look to match each game's colour scheme.





**Figure 2: Dos Santos, L., and Kenny. 2024. UI Elements for Game Interface.** Adapted from Kenny's *UI Pack - Adventure*. [Online]. Available at: <https://kenney.nl/assets/input-prompts>. [Accessed 26 October 2024].



**Figure 3: Dos Santos, L., and Kenny. 2024. UI Elements for Game Interface.** Adapted from Kenny's *UI Pack - Adventure*. [Online]. Available at: <https://kenney.nl/assets/input-prompts>. [Accessed 26 October 2024].



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## Main Menu

- **Description:** The main menu is framed with a wooden structure that gives a rustic, handmade feel, resonating with the inventive, homemade theme of the game. The game title is prominently displayed at the top, with the *Play* button just below it to guide the player's attention. Additional buttons hang below on wooden planks, connected by wooden poles and beams. The three main options are arranged from left to right:
  - **Quit:** Displayed with a striking red background to highlight its finality.
  - **How to Play:** Set against a blueprint background, adding a technical, informative look to guide the player on game mechanics.
  - **Settings:** Given a neutral grey tone, signifying a functional, adjustable area. This layout combines thematic elements with clear functionality, ensuring a cohesive look while keeping buttons intuitive and accessible.

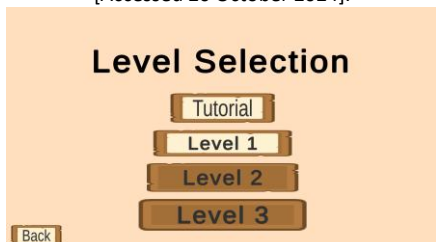
## How to Play Menu

- **Description:** This menu adopts a blueprint-style aesthetic, aligning with the game's inventive spirit and Grace's engineering background. Here, players can cycle through various instructions, each covering different aspects of gameplay:
  - **Game Rules, Objectives, and Function:** A basic overview of gameplay mechanics.
  - **Controls:** Displays control schemes, providing visual aids to clarify movement and actions.
  - **Rats and Traps:** Describes interactions between rats,

**Figure 5: Dos Santos, L., and Kenny. 2024. UI Elements for Game Interface.** Adapted from Kenny's *UI Pack - Adventure*. [Online]. Available at: <https://kenney.nl/assets/input-prompts>. [Accessed 26 October 2024].



**Figure 6: Dos Santos, L., and Kenny. 2024. UI Elements for Game Interface.** Adapted from Kenny's *UI Pack - Adventure*. [Online]. Available at: <https://kenney.nl/assets/input-prompts>. [Accessed 26 October 2024].



**Figure 7: Dos Santos, L., and Kenny. 2024. UI Elements for Game Interface.** Adapted from Kenny's *UI Pack - Adventure*. [Online]. Available at: <https://kenney.nl/assets/input-prompts>. [Accessed 26 October 2024].

traps, and the player, helping players understand the game's core combat mechanics. Players can navigate through instructions using the *Next* and *Back* buttons, with a red exit button (X) available for easy menu exit.

### Settings Menu

- **Description:** The settings menu includes three primary buttons:
  - **Mute SFX:** Allows players to toggle sound effects.
  - **Mute Music:** Lets players control the game's music volume.
  - **Back:** Returns the player to the main menu. This minimalistic design focuses on practicality, allowing players to adjust audio preferences quickly, with buttons visually distinct for ease of navigation.

### Level Selection Menu

- **Description:** The level selection menu provides a clean, straightforward layout for choosing levels. Available levels are displayed in light-coloured buttons, with only the *Tutorial* level unlocked initially. As players progress, additional levels unlock and become accessible, guiding the player through a gradual learning curve.



Figure

8: Dos Santos, L., and Kenny. 2024. **UI Elements for Game Interface.** Adapted from Kenny's *UI Pack - Adventure*. [Online]. Available at: <https://kenney.nl/assets/input-prompts>. [Accessed 26 October 2024].

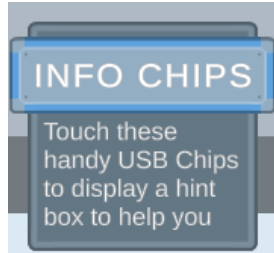


Figure 9: Cooksey, J., and Kenny. 2024. **UI Elements for Game Interface.** Adapted from Kenny's *UI Pack - Adventure*. [Online]. Available at: <https://kenney.nl/assets/input-prompts>. [Accessed 26 October 2024].



Figure 10: Dos Santos, L., and Kenny. 2024. **UI Elements for Game Interface.** Adapted from Kenny's *UI Pack - Adventure*. [Online]. Available at: <https://kenney.nl/assets/input-prompts>. [Accessed 26 October 2024].

## In-Game UI

- **Description:** The in-game interface is designed for clarity and functionality:
  - **Pause Button:** Located on the main screen, allowing players to access the pause menu without disrupting gameplay flow.
  - **USB Info Pop-Ups:** Activated when near a USB, these pop-ups provide hints, tips, or lore, appearing contextually to enrich the player's experience without intruding.
  - **Pause Menu:** Features options to *Resume*, *Restart*, *Return to Main Menu*, and toggle sound (Mute SFX and Mute Music), giving players flexibility during gameplay.
  - **Timer:** Displayed in a box at the center-top of the screen, the timer visually tracks the level's duration, helping players manage their time effectively.

## Failure Screen

- **Description:** If the player loses, the failure screen offers clear options for moving forward:
  - **Play Again:** Restarts the level for another attempt.
  - **Quit (To Menu):** Returns the player to the main menu.
  - **Super Quit:** Exits the game entirely.



Figure 11: Dos Santos, L., and Kenny. 2024. UI Elements for Game Interface. Adapted from Kenny's *UI Pack - Adventure*. [Online]. Available at: <https://kenney.nl/assets/input-prompts>. [Accessed 26 October 2024].



Figure 12: Miller-Pio, J.B., and Kenny. 2024. UI Elements for Game Interface. Adapted from Kenny's *UI Pack - Adventure*. [Online]. Available at: <https://kenney.nl/assets/input-prompts>. [Accessed 26 October 2024].

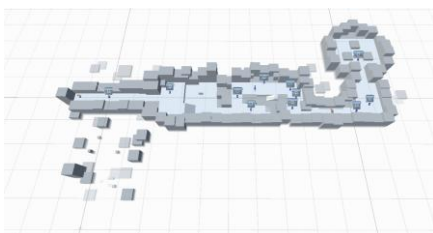


Figure 13: Cooksey, J. 2024. Tutorial Level Layout. Level design created by J. Cooksey.

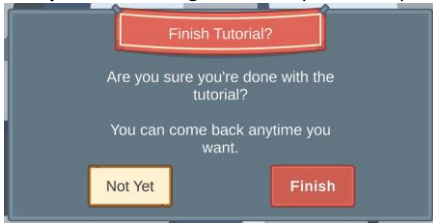


Figure 14: Miller-Pio, J.B., and Kenny. 2024. UI Elements for Game Interface. Adapted from

**Tutorial**

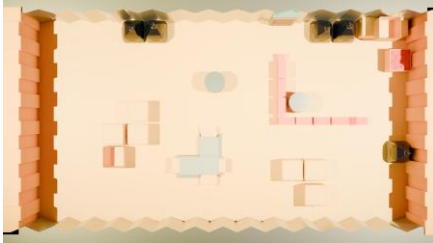
- *Overview:* A blank, white “simulation” room designed for players to learn the mechanics. Blue USB sticks with question marks appear as “info chips” that provide tips and tutorials.
- *Mechanics Learned:* Players learn to set traps, dodge them using dashes, and jump across gaps.
- *Objective:* Roam the level while mastering the robot’s abilities.

<p>Kenny's UI Pack - Adventure. [Online]. Available at: <a href="https://kenney.nl/assets/input-prompts">https://kenney.nl/assets/input-prompts</a>. [Accessed 26 October 2024].</p>	
<div></div> <p><b>Figure 15: Cooksey, J. 2024. Custom Assets – Blue USB Stick.</b> Created by J. Cooksey.</p>	<p><b>Blue USB Stick</b></p> <ul style="list-style-type: none"><li>• <i>Description:</i> A small USB stick featuring a prominent question mark, scattered around the tutorial level as “info chips” that provide helpful tips on gameplay and mechanics.</li><li>• <i>Purpose:</i> Serves as the player’s tutorial guide, delivering hints and instructions on how to play effectively.</li></ul>
<p><b>Figure 16: Louw, A. 2024. Level 1 Layout.</b> Level design created by A.Louw.</p> <div></div> <p><b>Figure 17: Louw, A. 2024. Level 1 Layout Ortho.</b> Level design created by A.Louw.</p> <div></div>	<p><b>Level 1</b></p> <ul style="list-style-type: none"><li>• <i>Layout:</i> A simple, open area with few obstacles. The defensive objective is located on the far right, while rat spawn points are on the far left, allowing players to easily navigate and practice trapping mechanics.</li><li>• <i>Challenge:</i> Introduces basic rat movement and attack patterns with straightforward paths for dodging and trapping.</li></ul>

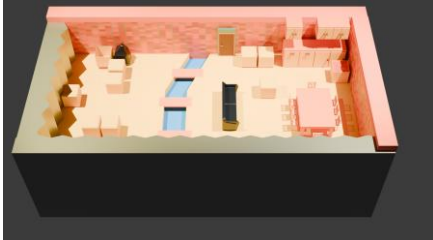
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**Figure 20: Louw, A. 2024. Level 3 Layout.** Level design created by A.Louw.



**Figure 21: Louw, A. 2024. Level 3 Layout Ortho.** Level design created by A.Louw.



#### Level 2

- *Layout:* A narrow, cluttered back alley with unfinished brick walls, discarded timber, and garbage bags, making navigation more challenging.
- *Challenge:* The limited space and cluttered obstacles encourage strategic movement and precise trap placement to fend off rats effectively.

#### Level 3

- *Layout:* A split room with a cozy living room on one side and an entrance filled with storage boxes. A small stream divides the room, crossed by three planks that act as chokepoints.
- *Challenge:* Players must cross the stream to reach traps and counter rat spawns, balancing the risk of navigating chokepoints with the reward of nearby traps.



Figure 22: Louw, A. 2024. Custom Assets – Box of Apples. Created by A. Louw.

#### Defence Objective: Apple Crate

- **Description:** A rustic wooden crate filled with glistening, ripe red apples, each with stems and fresh green leaves still attached, giving the objective a vibrant, tempting appearance that draws the eye. Positioned in each level as the item players must protect, this apple crate is an essential part of the gameplay, acting as RATT-Bot's primary focus and defence goal.
- **In-Game Effects:** Soft particle effects surround the crate, adding a subtle glow or sparkle to emphasise its importance as the defence objective. These effects help players identify it quickly, even in crowded environments or amid action.
- **Mechanics:** The crate is highly vulnerable and will shatter if even a single rat manages to land an attack on it. Players must ensure that no rat reaches the apples, creating tension and urgency as they deploy traps and strategize to keep the intruders at bay.
- **Visual Appeal:** The combination of glossy red apples and crisp green leaves gives the crate a fresh, appealing look that contrasts with the surrounding environment, making it a clear and visually engaging objective for players to protect.



Figure 23: Cooksey, J. 2024. Custom Assets – RATT-Bot. Created by A. Louw.

**RATT-Bot**

- *Description:* Grace’s creation, a charmingly makeshift robot built from recycled parts. RATT-Bot’s body resembles a round tin can with a bright red label, giving it a unique and endearing look. Its dome-shaped head includes a screen with eyes that expressively light up, and it sports three antennas. Its arms, made from metal pipes, end in wrench-like hands, and it manoeuvres using a single wheel.
- *Functionality:* Equipped with basic defences and manoeuvrability, RATT-Bot is capable of picking up traps and strategically placing them to ward off the rats.



Figure 24: Louw, A. and Cooksey, J. 2024. Rat Character Asset. Created by A. Louw with colour adjustments by J. Cooksey.

**The Rats**

- *Description:* Vicious pests with dark, scruffy fur and menacing red eyes that glow ominously in low light. Equipped with sharp buck teeth, these rats are formidable intruders capable of damaging the player if not dealt with.
- *Behaviour:* Emerge from wall holes, seeking out the house’s weak points and moving swiftly toward their target.

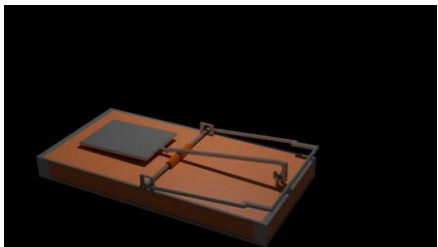


Figure 25: Louw, A. 2024. Custom Assets – Rat Trap. Created by A. Louw.

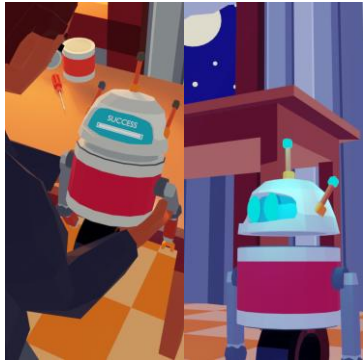
**Rat Trap**

- *Description:* A classic spring-loaded trap with a pressure-sensitive trigger that snaps shut when stepped on. Found around the house, they serve as RATT-Bot’s primary defence against the rats.
- *Use:* When activated, traps damage rats but also slow down RATT-Bot unless players dash over them to avoid the effect. Traps disappear after a short time, adding a tactical layer to gameplay.



<p>comic strip collection :</p>	<p><b>Comic Strips</b></p> <p>Each level in the game opens with a comic strip, setting the stage for the challenges ahead and immersing players in Grace’s story. Here’s a breakdown of each comic’s theme and visuals:</p>
<div> </div> <p><b>Figure 26: Cooksey, J. 2024. Comic Strips for Tutorial Level 1.</b> Created by J. Cooksey for the Tutorial level.</p> <p><b>Figure 27: Cooksey, J. 2024. Comic Strips for Tutorial Level 2.</b> Created by J. Cooksey for the Tutorial level.</p> <p><b>Figure 28: Cooksey, J. 2024. Comic Strips for Tutorial Level 3.</b> Created by J. Cooksey for the Tutorial level.</p> <div> </div> <div> </div> <p><b>Figure 29: Cooksey, J. 2024. Comic Strips for</b></p>	<p><b>Tutorial Comic Strip</b></p> <ul style="list-style-type: none"> <li> <p><i>Scene:</i> Set in a Cape Town township, Grace—a young, determined inventor—works late into the night on her creation. In a small room filled with recycled materials, she holds the head of her robot, “RATT-Bot,” while tinkering with its internal mechanisms. Text reads, “In an informal settlement, a young inventor tinkered away at her dream project, something extraordinary that would change her community and country.”</p> </li> <li> <p><i>Visuals:</i> RATT-Bot’s head rests on the table, wires and tools scattered nearby, as it loads up and downloads its programming, preparing to come to life.</p> </li> </ul>

**Tutorial Level.** Created by J. Cooksey for the Tutorial level.



**Figure 30: Cooksey, J. 2024. Comic Strips for Level 1.1.** Created by J. Cooksey for Level 1.  
**Figure 31: Cooksey, J. 2024. Comic Strips for Level 1.2.** Created by J. Cooksey for Level 1.  
**Figure 32: Cooksey, J. 2024. Comic Strips for Level 1.3.** Created by J. Cooksey for Level 1.



**Figure 33: Cooksey, J. 2024. Comic Strips for Level 1.** Created by J. Cooksey for Level 1.

**Level 1 Comic Strip**

- *Scene:* Grace’s work is complete. She’s exhausted but proud as she heads to bed, confident her new “RATT-Bot” will watch over the household. In the quiet night, a rat peers through a crack in the wall, its glowing red eyes signalling a lurking threat.
- *Visuals:* The panel shows RATT-Bot fully activated, while Grace sleeps nearby. Shadows hint at rats emerging, foreshadowing the coming confrontation between the bot and the intruders.



Figure 34: Cooksey, J. 2024. Comic Strips for Level 2.1. Created by J. Cooksey for Level 2

Figure 35: Cooksey, J. 2024. Comic Strips for Level 2.2. Created by J. Cooksey for Level 2

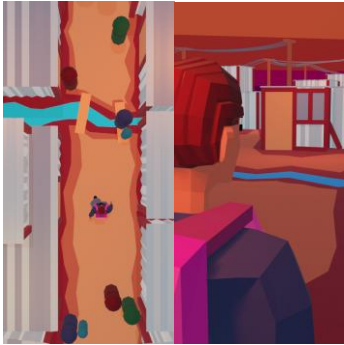
Figure 36: Cooksey, J. 2024. Comic Strips for Level 2.3. Created by J. Cooksey for Level 2



Figure 37: Cooksey, J. 2024. Comic Strips for Level 2. Created by J. Cooksey for Level 2.

### Level 2 Comic Strip

- *Scene:* As Grace heads off to school, RATT-Bot is left home alone. Soon, its sensors pick up movement—a gang of rats rummaging through a trash bin outside. Determined to protect the home, RATT-Bot prepares to face them.
- *Visuals:* The strip shows Grace waving goodbye, and RATT-Bot’s “eyes” lighting up as it spots the rats outside. Rats claw and dig through trash bags, illustrating their relentless persistence.



**Figure 38: Cooksey, J. 2024. Comic Strips for Level 3.1.** Created by J. Cooksey for Level 3.

**Figure 39: Cooksey, J. 2024. Comic Strips for Level 3.2.** Created by J. Cooksey for Level 3.

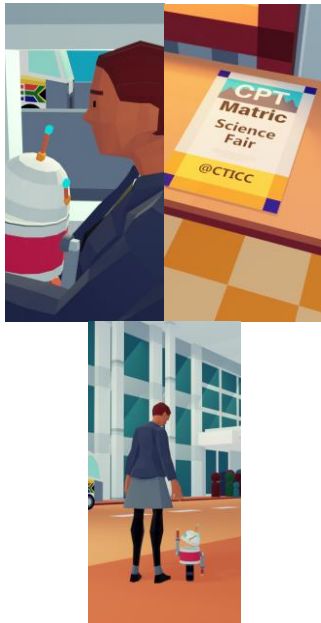
**Figure 40: Cooksey, J. 2024. Comic Strips for Level 3.3.** Created by J. Cooksey for Level 3.



**Figure 41: Cooksey, J. 2024. Comic Strips for Level 3.** Created by J. Cooksey for Level 3.

### Level 3 Comic Strip

- *Scene:* With her parents away, Grace visits her grandmother in a nearby area known for flooding. Streams run through the alleys, and plank bridges cross them. As night falls, RATT-Bot readies for one last stand against the persistent rats.
- *Visuals:* A bird's-eye view of a small river cutting through rows of makeshift homes, setting a tense atmosphere as the rats prepare for their assault.



**Figure 42: Cooksey, J. 2024. Comic Strips for Conclusion Level 1.** Created by J. Cooksey for the Conclusion level.

**Figure 43: Cooksey, J. 2024. Comic Strips for Conclusion Level 2.** Created by J. Cooksey for the Conclusion level.

**Figure 44: Cooksey, J. 2024. Comic Strips for Conclusion Level 3.** Created by J. Cooksey for the Conclusion level.

#### Conclusion Comic Strip

- *Scene:* Grace, now proudly presenting RATT-Bot at a science fair, is seen walking into a well-lit building holding her robot's hand. A banner for the matric science fair hangs over the entryway, and Grace is beaming with pride.
- *Visuals:* Grace sits with RATT-Bot in her lap, looking forward with confidence. The fair setting contrasts the township, emphasising her journey and achievements.

## Game Rules, Specs and Instruction Manual:

### Game Rules:

#### Overview:

The rules of the game are simple. Control RATT-Bot to move around the level, grabbing Rat Traps and placing them down to stop the approaching rats from reaching the objective.

#### RATT-Bot Controls:

##### Moving:

Use the WASD keys, or the Arrow Keys to move RATT-Bot around the level.

#### Grabbing and Deploying Rat Traps:

Rat Traps will appear around the level. You can pick one up by moving into it. You can tell if you have a Rat Trap picked up as RATT-Bot will carry it above his head.

You can deploy a Rat Trap by pressing the Spacebar. This will toss the Rat Trap into the air and cause it to enter an arming phase. While arming, the Rat Trap is useless and will not detect any rats that touch it, so be wary! RATT-Bot can also only carry a single Rat Trap at a time, so choose wisely where you place them.

Rat Traps are also dangerous for RATT-Bot too! If he touches an armed Rat Trap, it will snap at him and slow him down for a few seconds, leaving him vulnerable to incoming rats!

#### Dashing:

Press the Left Shift button to perform a Dash. A dash lets you pass over armed Rat Traps without setting them off, giving you a safe way to evade your own traps! But RATT-Bot needs a short break between dashes, so be careful when you choose to use one!

#### Winning and Defeat:

You must keep both yourself and the objective out of reach from any Rat for 60 seconds. If even a single Rat touches you or the objective, it's Game Over, and you'll have to start the level all over again!

#### Specifications:

Our game is built to run on the Windows OS, and will require a laptop or Windows device to run it on. The player will also need to have a Keyboard and Mouse in order to play the game correctly.

#### Instruction Manual:

##### Download Instructions:

Our Itch.io page has a ZIP of the Unity Build for our game. Individuals can follow these simple instructions in order to download and play the game.

1. Navigate to the Itch.io page for the game.
2. Scroll down toward the bottom of the page where the download button is.
3. Click download and save the ZIP folder to your desired location on your computer.
4. Once downloaded, unzip the folder to your desired location.
5. Open up the folder and locate the *RATT-Bot.exe* file and run the file.
6. RATT-Bot should immediately open up!

### Startup Guide:

Once the game starts, you will be on the Main Menu screen. Here you can click Play, read the Guide to the game controls, or change some sound settings.

### Starting a Level:

While on the Main Menu, click on the “Play” button to take you to the level select screen. Here you can play the Tutorial Scenario and continue to the remaining chapters. Once a chapter is complete, you will be given the option to return to the main menu or continue immediately to the next chapter of the story. You have to complete a chapter to unlock the next one, so leaving mid-game will require you to restart the level you were originally on.

### Getting Help:

If you ever feel stuck, just head back to the Main Menu and check out the “How to Play” section for more info about the game mechanics and controls.

## Play Test Report:

### Bugs Identified:

During playtesting, we identified only a small number of bugs that disrupted the full playthrough of our game. One bug would cause the game to freeze for an unknown reason. There was a bug with our Pause menu where none of the buttons would perform an action when clicked, except for the unpause button, which only unpaused the game but didn’t remove the Pause Screen from the screen. We also noticed that RATT-Bot would suddenly begin spinning in place when brushing up against nearby objects. We identified that this was due to the Rigidbody component on RATT-Bot, which was not set to ignore any force rotations caused by collisions. Finally, a rather major bug in terms of playability, was that Rats would not cause the player to be defeated when making contact with them, which is definitely one of our main mechanics.

## Minimum System Requirements:

We plan to have the game accessible for both windows and mobile but targeted mainly towards mobile to the extended target market range we can meet. The game does not require advanced hardware or software to run, nor will it interact with any special hardware outside of the norm.

We would recommend the following minimum system requirements in order to run our game:

RAM	OS	Storage Space	Other
8GB	Windows 10/11	100MB	Keyboard & Mouse

## In-Depth Descriptions:

### Game Objective:

The main objective of the game is to defend your safety objective, such as food, clothes storage, and family members, from the rat infestation that is currently plaguing the township that your family resides in.

The player will face off against waves of enemy rats that will need to be dispatched by use of a mouse/rat trap; the traps will spawn in up to 4 different positions on the map allowing players to strategically move around the map and place traps. Players will need to not only trap the rats but out manoeuvre them and survive while actively trying to protect their defensive target.

### Characters:

#### RATT-Bot:

The main protagonist, and the character which the players will play as. RATT-Bot is a little robot built by the human inventor, Grace. His primary directive is to deploy Rat Traps around locations in order to repel any threats of Rats, so that he can keep his owner safe. Grace created RATT-Bot in the hopes that he could be manufactured and deployed throughout townships.

#### Assets:

Our game is set in a township just outside Cape Town. Our game is technically set in the future, but only so far ahead that the idea of a robot being built in an impoverished community could be believable. In this not so distant future robotics engineering has advanced leaps and bounds, and Grace has been studying and dreaming of working in robotics, so much so that she scavenged up the pieces needed for RATT-Bot to test her mettle. As seen with our environmental storytelling, the rooms will be filled or littered with metal and parts for material to create and design a robot. The materials for housing are the same during this time period as it is in ours. Rats are still a problem if not more of a problem. Flooding still exists and will be used in game and narratively.

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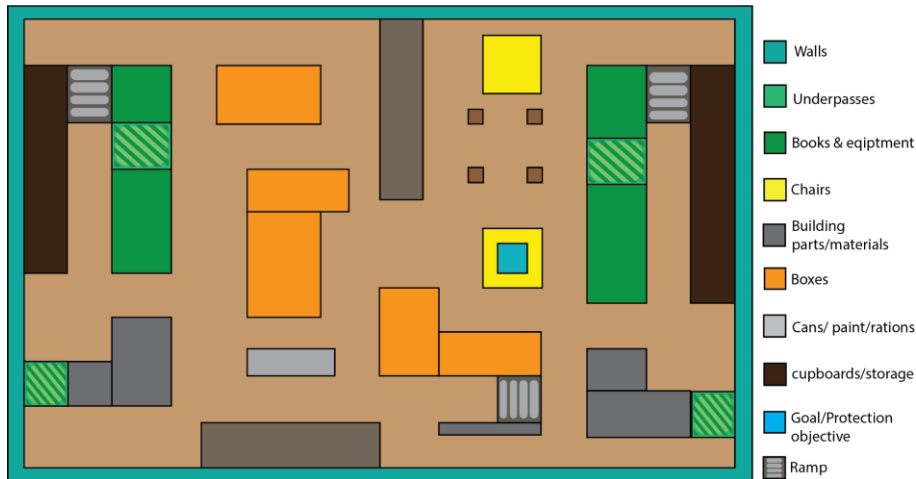


Figure 45: Louw, A.P. 2024. LevelDesign. [Personal drawing]. Cape Town: Unpublished.

The level design is inspired by the maze layout seen in Pacman (1998) that makes it so that the player can never hit a dead end. The environmental design will be a mix of clutter and organisation while conforming to the grid pattern of the map. We have areas where you can go underneath stuff like book piles and other objects. We have ramps that work like a one way passage.

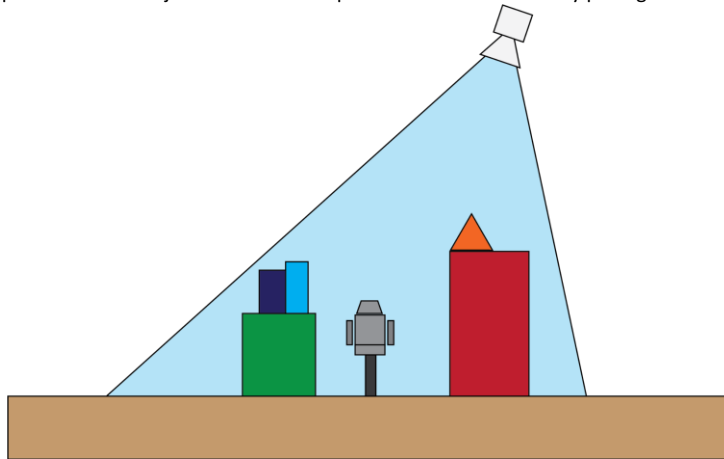


Figure 46: Louw, A.P. 2024. GameView. [Personal drawing]. Cape Town: Unpublished.

The level will be viewed as an almost top down game due to the labyrinth exploration type of gameplay that we want while making sure we stick to the 3D feel. The diagram below shows how some layout changes might appear.

## Game World:

You play as a little robot built by a young aspiring inventor living in a Township Dwelling. You were created to defend your creator's home from Rat invaders who would damage your family's property, ravage your food storage, and leave infectious droppings behind. You defend during the night, and will be in your creator's home, as well as other locations where your creator ends up sleeping (Possibly sleeping during late night studies or in a work shed where he/she tinkers away). You defend by collecting and deploying Rattraps and boarding up the holes with spare wood-chippings. Lure the Rats into already deployed Rat Traps by letting them see you, as Rats will soon give chase once they have spotted you.

## Interface Design:

The user interface is a simple yet effective design, allowing players to jump straight into gameplay and learn about the issue at hand without getting distracted by unneeded design features, buttons, and visuals. The user interface was created to allow the game to be navigated and understood by all ages, making it as user-friendly as possible. It will follow the theme of the game when fully created, allowing for a high-quality experience for the users. We utilised a UI asset pack from Kenny (2024) as we felt it complimented the cartoony style of our game.



Figure 47: Dos Santos, L. 2024. Main Menu Screenshot. Cape Town: Unpublished.

The menu within the game is the first screen to appear for the player once the game is launched; it is the central starting point for the player, allowing for easy access to key functions within the game. The main menu includes a "PLAY" button, which takes the player directly to the level selection screen, giving the player the ability to select a level of their choosing. The "Settings" button allows the player to be taken to a screen dedicated to adjusting the game to their preference easily and a "How to Play" button, which, when clicked, explains key controls and insights into how the game is played along with its mechanics. The "Exit" button gives the player the option to exit the game completely if they choose to do so.

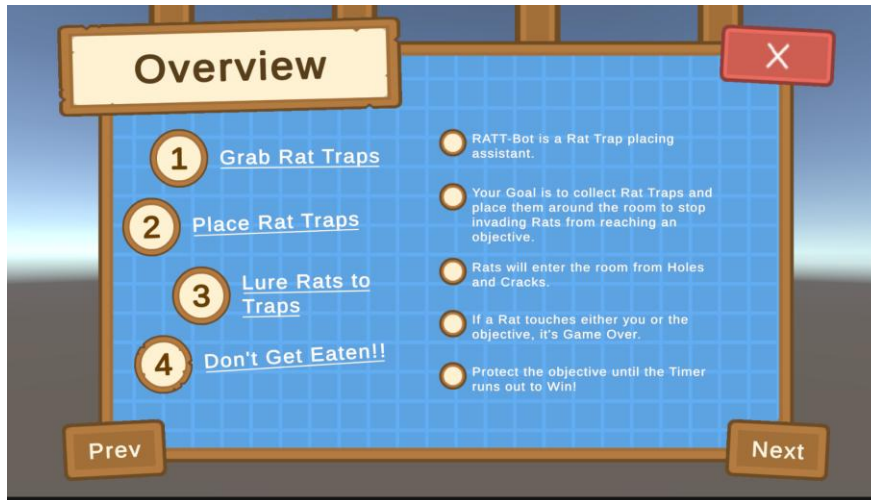


Figure 48: Dos Santos, L. 2024. Guide Menu. Cape Town: Unpublished.

The purpose of the guide menu is to give guidance to the player, giving them a step-by-step visual tutorial of the purpose of the game along with important information regarding mechanics within the game. The menu also allows the player to page through not just the overview of the game but also controls, allowing them to have a deeper sense of understanding with regards to keybinds and how to efficiently move around the environment and make use of the game's mechanics. The final page gives the player an understanding of the rats and traps system within the game, along with tips and tricks on how to make the best use of them. The menu is controlled using the "Next" button to move to the next page and the "Prev" button to go back to a previous page, along with the "X" button to exit the guide menu. The page the player is on is shown on the top left of the menu.

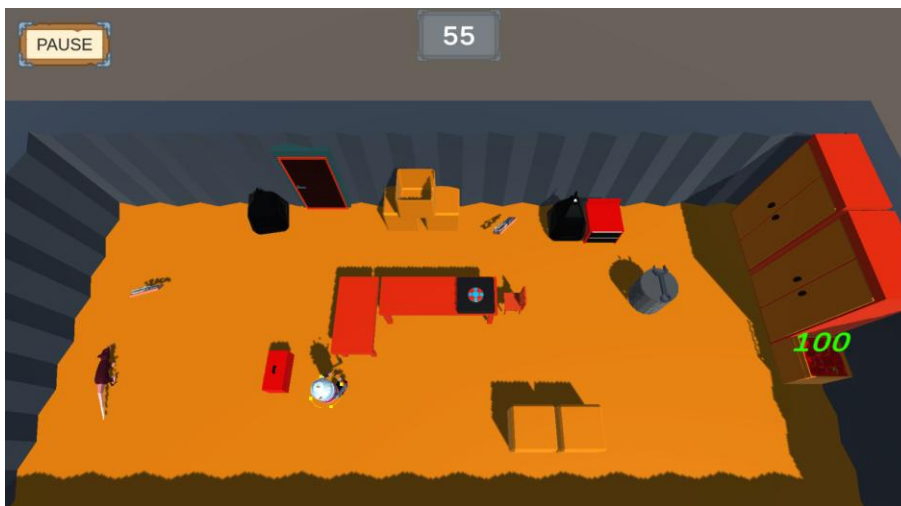


Figure 49: Dos Santos, L. 2024. Main Gameplay Screenshot. Cape Town: Unpublished.

The Heads Up Display (HUD) within the game is fairly simple, as the game is currently made for desktop use. It is open visually and not cluttered, giving the player a clear visual of the gameplay in the environment without taking away important visuals. The main user interface component within the game HUD is the “Pause” button, which, when clicked, suspends the gameplay and gives the player the options to resume the gameplay, restart the level of the game, return to the main menu, or turn off or on the sound effects or music in the game. These are accessible using buttons that can be clicked. The player is also given a timer that starts at the beginning of the level displayed in the top middle of the game; this counts down until the end of the round. These are the only user interface components that can be found within the game; simple and easy to navigate was our goal.

## Story and Narrative:

Our story revolves around a young and aspiring inventor named Grace. Living in an Informal Shelter in an unnamed Township just in the outskirts of Cape Town, the mother city, Grace works tirelessly on her studies with the hopes of creating a better future for both her family and her community. Her dream is to create a sustainable method of producing strong and safe affordable housing with the use of robots. However, her family’s life is difficult, living in a township and suffering from poor housing and health conditions, their quality of living is not like those who live outside of the township. And while it is her family’s house, it does not feel like a home.

Driven by the hope for a better future not only for herself, but both her family and community, Grace puts her ingenuity to the test and creates the perfect rat repellent, RATT-Bot.

This is where the player comes in, taking control of RATT-Bot as he runs around Grace’s house, deploying wooden rat traps to defend Grace’s family clothes, their food supply, or other shacks and areas where Grace may be during the night.

## Level Progression:

Each “Level”, we call them Chapters, that the player unlocks continues a bit of the story, as we follow Grace and her journey towards completing her studies and showcasing RATT-Bot at a local science fair. With each location, we wanted to showcase the struggles of disadvantaged communities in townships, and follow a story that showcases the financial, emotional and cultural struggles of a family living in a township.

While each stage is designed to be replayable, acting more like a “map” rather than a progressive level, with each map unlocked players will advance the story which aims to shine a light of hope and foster empathy toward the South Africans living in townships by exploring the environment and hardships these disadvantaged communities endure.

## Levels:

### Chapter 1:

In this chapter, the player starts in Grace’s family home where RATT-Bot must defend Grace’s family’s food cupboards during the night.

#### Chapter 2:

In this chapter, RATT-Bot gets deployed outside of Grace's shack in the narrow trash-strewn corridors between neighbouring shacks, attempting to keep rats away from getting in while Grace and her younger brother are at school, and both her parents are at work.

#### Chapter 3:

Having to leave for external work, Grace and her younger brother go and stay with their Gogo, who lives near the wetlands and has a problem with rats too. As RATT-Bot you'll be protecting both Gogo and Grace's younger brother as rats get in from the rain. But beware the water that leaks in from the wetlands, as parts of Gogo's shack will begin to flood.

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