WSOA 3003: EXAM REFLECTION

Kushal Sithlu,1882078

Introduction

Over the course of the design process, the game of *Rat Run* has evolved. The culmination of testing, retesting, and feedback, has led to a different, yet even more enjoyable game than what was initially proposed. This document tracks the design process, following the order of Intent, Process, Reflection.

Intent

This intent process begins following the group presentation and verbal feedback provided. This project will also make reference to the original Project Plan, attached as Appendix A.

It was clear that Rat Run's issues lied in defining exactly what it was. I looked at the idea of Realtime 2d clicker with a single input, and rather decided to change the focus into revolving around 2 core aspects, 1 being puzzle interactions, and 2 being pacing.

Rat Run had a clear issue in balancing these 2. The problem was that puzzles needed to get more complex and often the pacing of the game made it hard just to accurately click and made it more of a twitch skill game. To fix this a new feature would be added, making using of the Right Mouse Button, Time Slow. Upon clicking, the rat would begin to move in slow motion for the duration of 6 seconds with time increasing slowly over the 6 seconds. This added feature allowed players to be able to cope with more intense puzzles, yet it does not make the game immediately too easy.

Along with this, it was decided that a single level would only be designed, allowing for time to focus on better puzzles and a more well thought out and satisfying single level. Given the original plan to create maze like levels with multiple exits that encourage replayability and exploration, this decision would allow for a focus on these given the limited time for the project.

These were the initial primary changes made to the game, and elements such as scheduling were adjusted from the original Project plan(Appendix A). Further changes were made past this and will be discussed in the Process section of this paper.

Task Breakdown

This section details the adjusted tasks as a result of intended changes.

Task	Scope (in hours)	Design Element/Iteration
Core mechanics: • Physics and forces applied to the rat, including movement. • Non-interactable threats which kill the rat – traps, toxic waste and spikes the rat must avoid. • Interactable objects – breakable walls, climbable walls, air vents (applies directional force to rat) and rotating platforms used to guide rat. • Slow motion button that activates on click.	7	Basic Design Features
Overall Level design: • Single level with multiple paths of varying difficulty. • A tunnel system with multiple end-points. • Various maze systems per level to increase replayability.	6	Level Design Features
Level design for objects: • Placement of non-interactable threats. • Placement of interactable objects.	4	Level Design Features
Art assets: • Rat sprites and animations. • Interactable object art assets. • Non-interactable art assets. • Threat art assets. • Environment art assets.	7	Communication Design Features
Interactable objects: • Lack of UI as a purposeful tool to increase difficulty(encourages slow motion use) • Air vent particle effects showing the direction of airflow. • Platforms indicate they are rotatable	5	Communication Design Features
Polish: • Player light source acting as a fog of war to control the visual information the player has access to. • User-interface such as mouse over icon.	3	Communication Design Features
Negative feedback loop: • Level restarting after rat dies. • Single level that gets progressively more difficult.	2	Feedback Loops
Tutorial Scene	1	Communication Design Features

• Communicate intractability with all relevant objects and functions		
Playtesting	5	Playtesting

Process

Rat Run begun in Unity 2D, this section will take you through the design and playtesting of the game to reach the final product.

Basic Design Features

This section details the specific decisions and choices made during the basic design of the game. All features listed in the initial features list were accomplished.

- Air vent
    - Area affecters used to push the rat .
    - Particle effector used to visualize effect.
    - Trigger colliders added to detect clicks in attached script.

- Turn Around Trap
    - Object with a tag
- Rotating Platforms
    - Rotates on click
- Death Spikes
    - Object with a Tag
- Rat
    - Detects TurnAround Tag and flips direction and sprite
    - Detects Spikes and dies
    - Detects final door to end stage

Level Design

The initial goal behind the level design was to create challenging puzzles that involved different combinations of interactions across a broad level.

Level design ultimately posed a ton of questions about the intended difficulty, and it was decided that the game would lean into a less forgiving style of gameplay. The level is purposefully decently long to leave room for the player to slip up and die, resetting the level.

The levels were also designed in a way that while taking a path, often other paths are noticeable in the scene, thereby hinting at other routes to the player and encouraging replayability.

One of the biggest changes made during design was the addition of a new interactable component, the Laser. The Laser is pulsating laser beam animation with a collider, the

player has a small chance of slipping past it, but it can be touched off by clicking the laser box. This was added during level design as the levels felt as if they were missing an element. There was no threat to stop in the game and the current interactables left little room for interacting with more threatening objects in intense scenarios. The addition of this component led to larger scale puzzles towards the ends of the level, posing great threat to the player and forcing them to make use of the Time Slow.

Throughout the map certain wind vents are left on or off, and these are purposefully done to encourage the player to stay agile in the darker sections as the wrong vent may send them flying into spikey death.

Communication Design

Art assets were designed for each component of the game with the goal of communicating function or warning.

In terms of UI, a canvas was added with a button returning to the menu, as well as mouse image indicating right click as 'slow time'.

The final thing was the tutorial. This was initially a page that allowed players to click on each component , however after playtesting it was scene that this did not correctly prepare players for the level, and was instead replaced with a tutorial level that the player plays through and indicates all necessary information.

Playtesting

Playtesting was conducted with a group of 5 people over the course of 3 iterations of the game. 2 players played each iteration of the game, the others played the game at 1 stage ,and all provided feedback during live discord play sessions. Notes were taken during the players sessions.

The initial testing showed that players were not aware on how to interact with the game after the original tutorial, this resulted in a new tutorial scene which then proved to be far more understandable to players.

The initial level proved to be too easy, and lacked momentum. Wind current speeds were adjusted and new vents were added.

Visuals of the game were enjoyed by all.

Sound was wanted.

Reflection

Ultimately, this game resulted in me exploring many features in unity I did not expect. I made used of the universal render pipleline to greatly improve the lighting of the game, as well as designing all the art for the game.

I think the game succeeding in addressing the issues posed during lecturer feedback, and is ultimately far more engaging than the original.

I do wish there was time to add music to the level and relevant sound effects to each object to improve the communication and immersion of the game.

I am satisfied with the game and will absolutely be looking at it further.

Appendices

Appendix A

Project Plan

Sherilynne Herb - 1690080
Kushal Sithlu - 1882078
Juliette Love - 2095873
Luyolo Mbatha - 1874467

Introduction

Rat Run will be a real-time 2D puzzle platformer where the player manipulates a rat's surroundings in order to guide the rat through a maze of tunnels to an exit. The idea of environmental manipulation was inspired by *Where's My Water?* (2011, Disney Interactive Studios). The player will need to click interactable objects within the environment to ensure the rat stays out of harm's way whilst on its path. As the player is unable to control the rat directly, the rat will continue moving in its designated direction unless its path is obstructed by an environment object. Interactable objects will be shown to the player using clear dynamic feedback as the player mouses over objects. This clicking mechanic is simple so that the player is able to focus on the puzzles of the level rather than how to interact with the level elements. Furthermore, this makes the game accessible to many people as this mechanic is not overly difficult to understand but challenging to execute correctly. As an increasing number of items must be interacted with as the levels increase, an increasing level of challenge is provided. Production will start on the 24th of May and will end on the 25th of June.

Design Methodology

We chose the iterative agile methodology because the ADTC method (analysis, design, code, test) is best suited for our team, as the team aims to:

A - Analyse and collaborate different objectives for each iteration, ensuring that each idea and approach is discussed.

D - Design through iteration, iterating multiple design aspects of the game such as level design and user-interface design to provide the clearest design goals.

C - Coding through iterations to ensure that the most efficient code is utilized within the project, that allows for easy expansions within the code for future iterations.

T - Testing each iteration to ensure that each change is tested thoroughly and problems are identified quickly.

Feature List

Task Breakdown

Task	Scope (in hours)	Design Element/Iteration
Core mechanics: • Physics and forces applied to the rat, including movement. • Non-interactable threats which kill the rat – traps, toxic waste and spikes the rat must avoid. • Interactable objects – breakable walls, climbable walls, air vents (applies directional force to rat) and rotating platforms used to guide rat.	7	Basic Design Features
Overall Level design: • Multiple levels increasing in difficulty. • A tunnel system with multiple end-points. • Various maze systems per level to increase replayability.	6	Level Design Features
Level design for objects: • Placement of non-interactable threats. • Placement of interactable objects.	5	Level Design Features
Art assets: • Rat sprites and animations. • Interactable object art assets. • Non-interactable art assets. • Threat art assets. • Environment art assets.	7	Communication Design Features
Interactable objects: • Clickable objects indicated when player's mouse hovers over them. • Increasing number of cracks as the player clicks the breakable walls to better communicate damage done to wall. • Air vent particle effects showing the direction of airflow.	5	Communication Design Features
Polish: • Player light source acting as a fog of war to control the visual information the player has access to. • User-interface such as mouse over icon.	3	Communication Design Features
Negative feedback loop: • Level restarting after rat dies. • Levels get progressively more difficult as the player goes on.	2	Feedback Loops

Needs

- Impactful non-interactable threats and dynamic interactable objects.
- Physics and forces applied to the rat.
- Rat movement and direction changes when confronted with a wall.
- A single level tunnel system.
- Clickable objects communicated to the player when they are moused over.
- Simple assets communicating different objects.

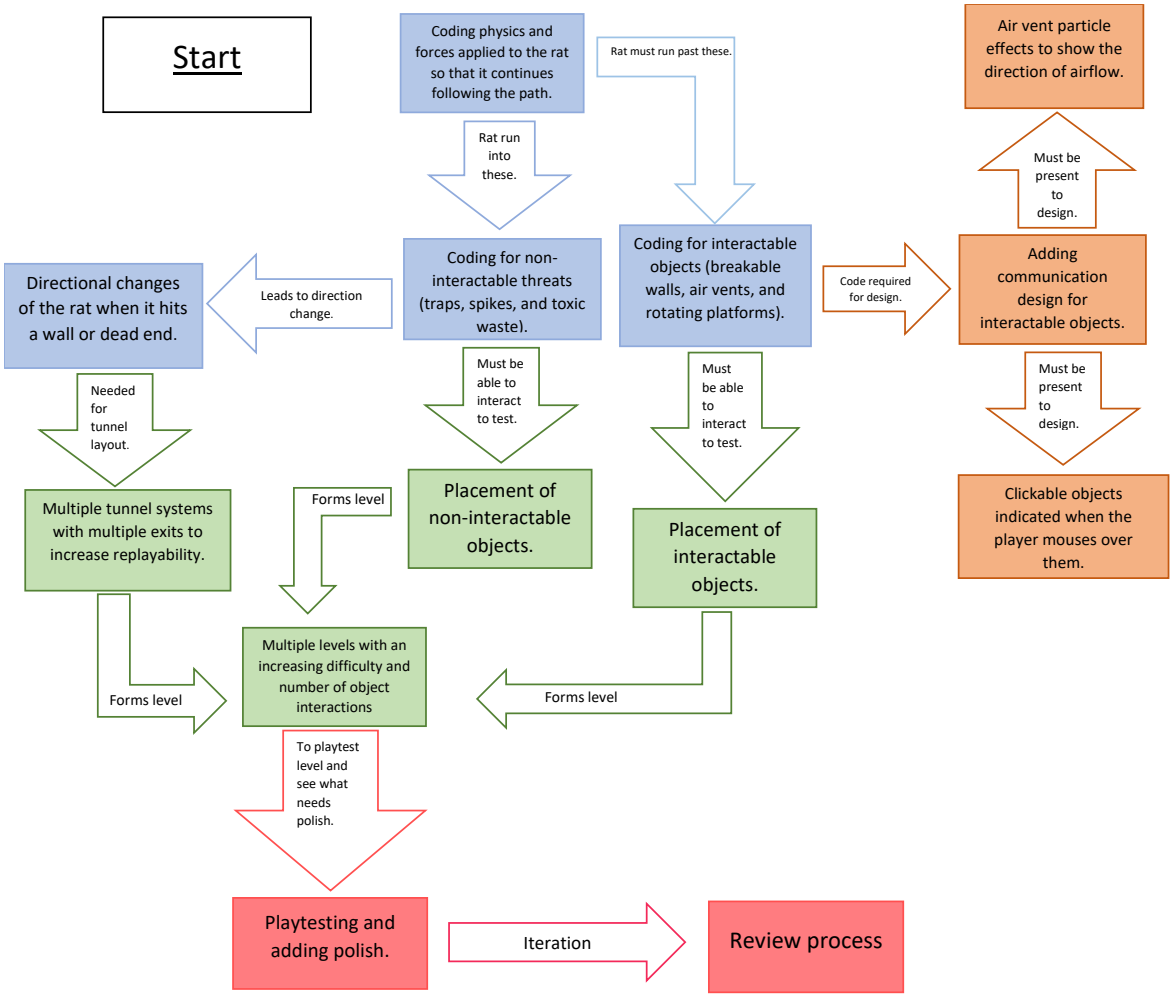
Wants

- Breakable wall cracks when clicked.
- Vent particle effects showing direction of airflow.
- Player light source acting as a fog of war.
- Multiple levels with scaling difficulty.

Dreams

- Sound design.
- Soundtrack.
- Animated sprites.
- Detailed environment artwork.

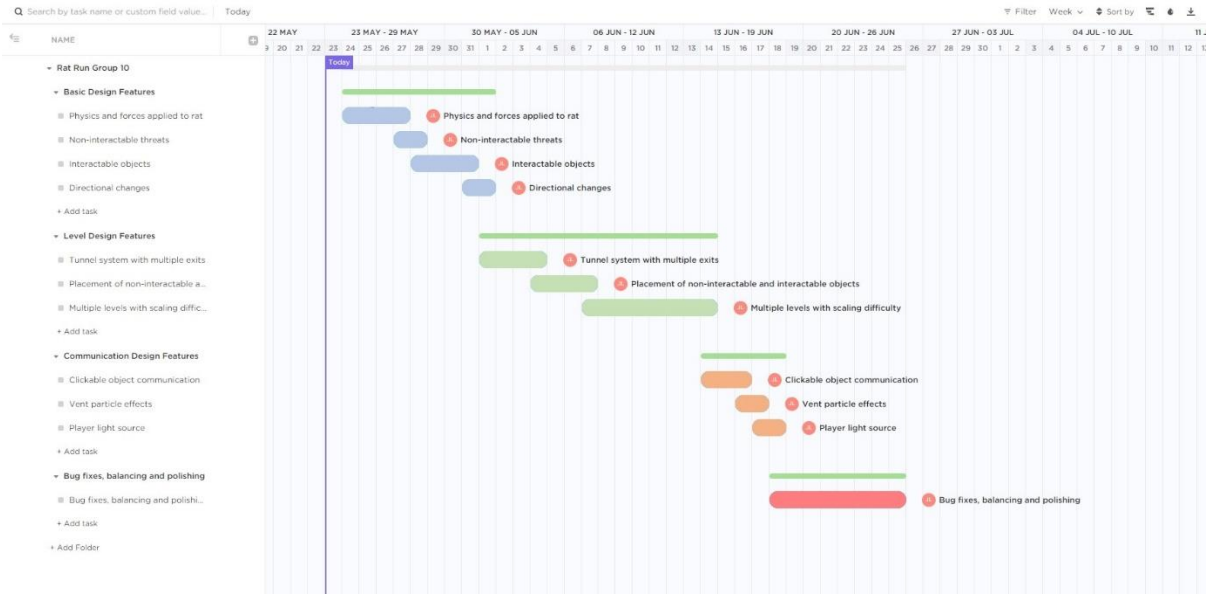
Dependencies



Requirements

- Software:
  - Made using Unity and Microsoft Visual Studio
  - Krita
  - Github
- Technology:
  - Wacom Intuos S drawing tablets
  - Hardware that is compatible with Unity and Microsoft Visual Studio

Task Scheduling



As each member of the group will be completing this project individually, all tasks will be assigned to each person. This can be seen in this linear schedule as a single person will only be able to work on one task at a time. The last week may also act as a buffer to prevent risks such as illness impacting the game.

Risks and Management

Risks	Level of Risk	Management
Technical Difficulties such as corrupted files or stolen property.	Medium	Backing up of files Github.
Loadshedding	High	Plan in advance to our best ability and work when there is no scheduled loadshedding. Acquire funding for backup generator/converter.
WiFi problems	Medium	An extra week provided before submission (Bug fixes, balancing and polishing).
Covid and sickness	Medium	An extra week provided before submission. We will work from home.

Milestones

- Due 1 June – Basic Design Deliverable: Implement basic features of the game regarding rat movement and object manipulation.
- Due 14 June – Level Design Deliverable: The creation of appropriately scaled and replayable levels with careful placement of environment objects to facilitate learning.
- Due 18 June – Communication Design Deliverable: Implement simple and effective feedback which clearly communicates which objects can be interacted with and how they function.
- Due 25 June – Final Deliverable: Implementation of final bug fixes, balancing and polishing.

References

Where's My Water? (2011). Android/ Microsoft Windows [Computer game]. Disney Interactive Studios: Burbank, CA.

Wilson, F. (2018). *What Is the Agile Iterative Approach and Where Is It Used?*. Available at: https://www.ntaskmanager.com/blog/what-is-agile-iterative-approach/#:~:text=The%20iterative%20strategy%20is%20the,time%20known%20as%20a%20timebox (Accessed: 23 June 2021).