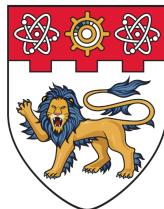


**NANYANG TECHNOLOGY UNIVERSITY**  
**SCHOOL OF ELECTRICAL AND ELECTRONIC ENGINEERING**



**NANYANG  
TECHNOLOGICAL  
UNIVERSITY  
SINGAPORE**

**Prepared by:**

HENG YIN QI (U2121551A)

TEA MI WEN (U2020530D)

**Tutorial Group:**  
IP01

**Information Engineering and Media**

AY 21 / 22 Semester 2

**In partial fulfilment of the requirements for the module**

**IM2073 INTRO TO DESIGN AND PROJECT**

Module 1: Game Programming

**Professor:**

Dr Muhammad Faeyz Karim

**Submission Date: 14 February 2022**

## Content Page

---

### 1 Brief Description

1.1 Game backstory	2
--------------------	---

### 2 Game Mechanics

2.1 How to play the game	2-3
2.2 How does the scoring system works	3
2.3 Winning levels	3-4

### 3 Game User Interface

3.1 Start Menu	4
3.2 Options Menu	4
3.3 In-Game	5
3.4 End Menu	5

## Appendix

List of Softwares	6-7
List of Illustrations	8
Resources	9

## Contributions

- **Heng Yin Qi - 50 %**
  - Game Environment Creation
  - Game User Interface
  - Game Winning Level Triggers
  - Dialogue (Audio) Triggers
  
- **Tea Mi Wen - 50%**
  - Game Character Creation
  - Collectibles Generation
  - Game Scoring and Collection Trigger System
  - Character Movements

## 1. Brief Description

---

### 1.1 Game Backstory

After Planet War II, the once magnificent Vox Planet was struck and broken into several pieces of small land. As the only person on one of the lands, the sole survivor fell into depression and picked up the habit of drinking, earning himself the name “The Tippler”.

As time passed, the land piles up with rubbish such as liquor glasses, cans and plastic bottles.

On a nearby planet, Merryland lives a helpful prince who vowed to revive all things ruined by the war. One day, the Little Prince paid a visit to the tippler and offered him a helping hand to rebuild the land into something beautiful.

The Little Prince brought along a friend, the Recycle Manager to help the Tippler understand how to recycle and practice an eco-friendly lifestyle.

## 2. Game Mechanics

---

### 2.1 How to play the game

First-person perspective is used in this game. As the Tippler, the player has to leave the house to collect specific items based on the respective levels, such as plastic bottles, cans, and liquor glasses which are thrown everywhere to rebuild a clean environment for Vox Planet.



Figure (1) Player's starting view  
Figure (2) The Tippler's (player) room

At the beginning of the game, there is a commentary on the history of the planet and then instructing the player to find the Little Prince. The player needs to locate the Little Prince (left) and listen to his instructions on what item to collect for Level 1. The Recycling Manager (right) will give the instructions for Level 2. The two NPCs will take turns giving instructions for all the levels. Use control key W(↑), A(←), S(↓), D(→), space (jump) and shift (speed up) to move around



Figure (3) The Recycle Manager's location  
 Figure (4) The Little Prince's location

## 2.2 How does the scoring system work

After obtaining the instructions from the NPCs, the player will start collecting the respective collectables around the world. The player earns 20 points for collecting every correct item. There will be a deduction of 20 points for every wrong item collected. The player needs to score at least 100 points to unlock the next level.



Figure (5) Metal cans and plastic bottles in the world

Level	Collectables required
1	Collect plastic bottles ( $5 \times 20 = 100$ )
2	Collect cans or glasses ( $5 \times 20 = 100$ )

## 2.3 Winning levels

When the player reaches the 100 points mark, there will be a commentary instructing the player to make his way to the recycle bins located near the recycle building. The player needs to approach the appropriate recycling bins to throw all collectables. This will trigger a level complete display to pop up on the screen to indicate the level completed. The next level will be automatically triggered to load.

There will be a commentary for the player to locate the Recycle Manager and receive the next instructions.



Figure (6) Location of recycling bins  
Figure (7) Level completion display

### 3. Game User Interface

#### 3.1 Start Menu

After starting the game application, the player will see a start menu. In the start menu, the player can choose to start the game, open the options menu and quit the application.



Figure (8) Start Menu

#### 3.2 Options Menu

Under the “Options” menu, the player can adjust the master volume of the game.

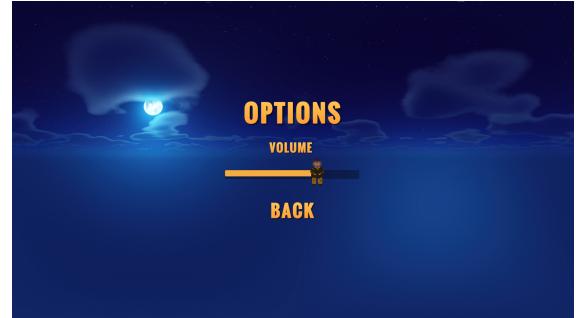


Figure (9) Options Menu

### 3.3 In-Game

While in-game, the player can keep track of his score by checking the score counter on the top left corner of the screen. Other than that, the player can also choose to stop the game by pressing the “Esc” key to activate the mouse and clicking on the “Quit” button on the top right corner of the screen.



Figure (10) In-Game Menu

### 3.4 End Menu

After the player completed all game levels, the end menu will be triggered. On the end menu, we show our appreciation for the player for playing our game. We also put credits for our development team. The player can quit the application by pressing the “Esc” key.



Figure (11) End Menu

## Appendix

---

### List of Softwares

- **MagicaVoxel**
  - Game objects creation
  - Game character creation
- **Character Models (using MagicaVoxel)**

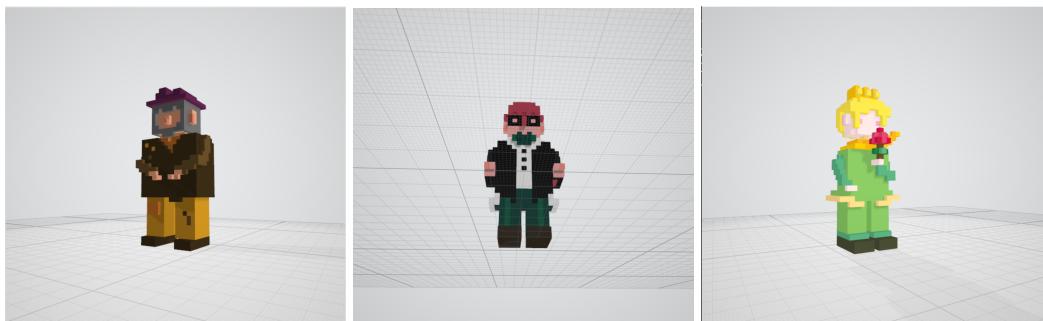


Figure (12) The Tippler (most right)  
 Figure (13) The Recycling Manager (centre)  
 Figure (14) The Little Prince from Merryland (most left)

- **Game Collectables (using MagicaVoxel)**

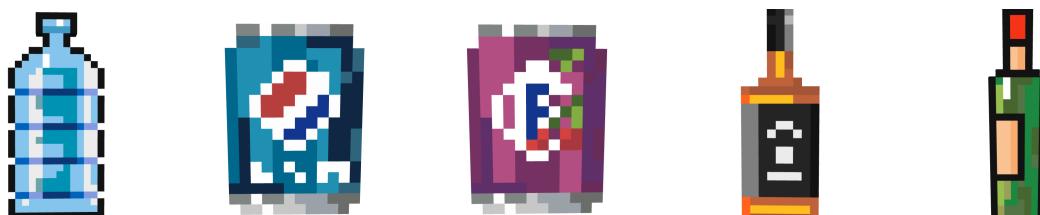


Figure (15) Plastic Bottles  
 Figure (16 and 17) Metal Cans  
 Figure (18 and 19) Glass Bottles

- **Game Environment Objects (using MagicaVoxel)**



Figure (20) Others recycling bin  
 Figure (21) Plastic recycling bin  
 Figure (22) Paper recycling bin

- **Game Buildings (using MagicaVoxel)**

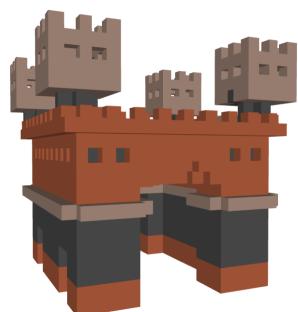


Figure (23) Recycle centre  
Figure (24) Tippler's house  
Figure (25) Little Prince's castle

## List of Illustrations

### Figures:

Figure 1	Player's starting view	2
Figure 2	The Tippler's (player) room	2
Figure 3	The Recycle Manager's location	3
Figure 4	The Little Prince's location	3
Figure 5	Metal cans and plastic bottles in the world	3
Figure 6	Location of recycling bins	4
Figure 7	Level completion display	4
Figure 8	Start menu	4
Figure 9	Options Menu	4
Figure 10	In-game menu	5
Figure 11	End menu	5
Figure 12	The Tippler (most right)	6
Figure 13	The Recycling Manager (centre)	6
Figure 14	The Little Prince (most left)	6
Figure 15 & 16	Plastic bottles	6
Figure 17 & 18	Metal Cans	6
Figure 19	Glass Bottles	6
Figure 20	Others recycling bin	6
Figure 21	Plastic recycling bin	6
Figure 22	Paper recycling bin	6
Figure 23	Recycle centre	7
Figure 24	Tippler's house	7
Figure 25	Little Prince's castle	7

## Resources

- *Create a Score and a collectable by using Unity 3D.* (2022). Retrieved 9 February 2022, from <https://www.youtube.com/watch?v=kqkqxfRvXck>
- *Collectible Items | Build Your First 3D Game in Unity #7.* (2021). Retrieved 9 February 2022, from <https://www.youtube.com/watch?v=YQEg6Lkd69c&feature=youtu.be>
- *DIALOG BOX AND POP UP MENU - UNITY UI TUTORIAL.* (2019). Retrieved 9 February 2022, from <https://www.youtube.com/watch?v=VaDhk2eOQXM>
- *DIALOGUE SYSTEM UNITY TUTORIAL #2 - Triggering, Dialogue Color, and more.* (2019). Retrieved 9 February 2022, from <https://www.youtube.com/watch?v=O11qQ5vBa1k>
- *FIRST PERSON MOVEMENT in Unity - FPS Controller.* (2019). Retrieved 9 February 2022, from [https://www.youtube.com/watch?v=\\_QajrabyTJc&feature=youtu.be](https://www.youtube.com/watch?v=_QajrabyTJc&feature=youtu.be)
- *How to make a Dialogue System in Unity.* (2017). Retrieved 9 February 2022, from [https://www.youtube.com/watch?v=\\_nRzoTzeyxU&feature=youtu.be](https://www.youtube.com/watch?v=_nRzoTzeyxU&feature=youtu.be)
- *START MENU in Unity.* (2017). Retrieved 9 February 2022, from [https://www.youtube.com/watch?v=zc8ac\\_qUXQY](https://www.youtube.com/watch?v=zc8ac_qUXQY)
- *[Unity3d] Dialogue System Tutorial.* (2018). Retrieved 9 February 2022, from [https://www.youtube.com/watch?v=p4a\\_OYmk1uU&feature=youtu.be](https://www.youtube.com/watch?v=p4a_OYmk1uU&feature=youtu.be)
- *WINNING LEVELS - How to make a Video Game in Unity (E09).* (2017). Retrieved 9 February 2022, from <https://www.youtube.com/watch?v=lv7A8TzreY4&t=169s>