



IP 2023

Team Members: Jasmine Giam, Lim Mei Fang Janel, Wong Qing Wei  
Justin Luis Hernandez

The logo for "Trotters" features three stylized, colorful feet in shades of pink, purple, and black, arranged in a triangular formation. To the right of the feet, the word "Trotters" is written in a playful, rounded font where the letter "o" has a small heart shape above it.

# Bird's Eye View with Jurong Bird Park

## INTRODUCTION

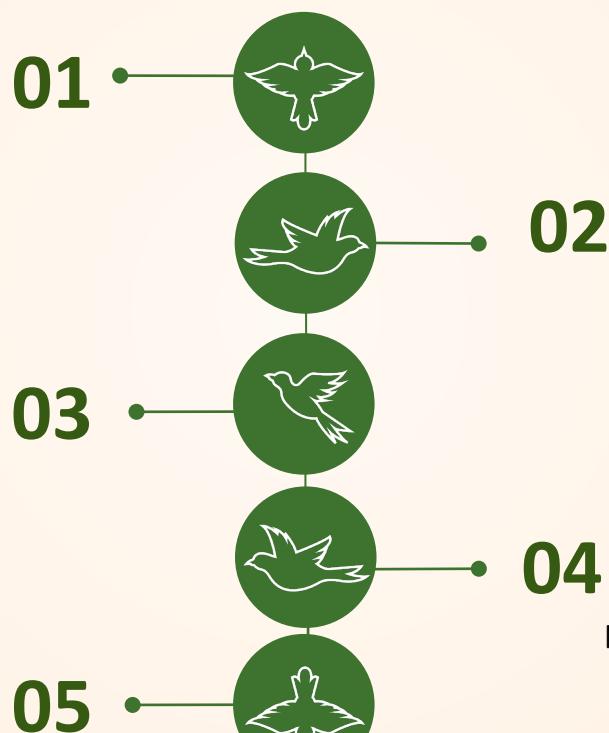
Game Background,  
About,  
Design Rationale,  
Promotional Poster,  
Trailer

## 3DE

Texture Atlas,  
Models Created,  
VFX Effects,  
Environment Preview

## ITD

Game Mechanics,  
**5** Progressive Stages,  
Game Play Video



## EXD

Unique Selling Points,  
Gameplay Loop,  
Inclusive Design,  
Usability Testing

## DDA

Data Structure,  
Reward System,  
Main Objective of Website,  
Features of Website

# O I INTRODUCTION

Game Concept, Design Rationale,  
Promotional Poster, Trailer

# Game Background - Background



- **Jurong Bird Park**

- Aviary and tourist attraction
- Opened : 1971
- Closed : 2022
- Reopening in Mandai Wildlife Reserve as Bird Paradise

# About Our Game



## • About Game

- Brings users around the 6 recreated areas of the park
- Each area (except the entrance) has an activity
- Finishing the activity unlocks the next area

## • Goals and Objectives

- Give users a way to experience/re-experience the park
- Invoke a sense of nostalgia

## • Target Audience

- Those who want to visit Jurong Bird Park
- Ages above 13



# Design Rationale

- **Low Poly Style**
  - Why?
    - Time constraints
      - Can be modelled and textured quickly
      - More models can be done in short amount of time
- **Our game must be played on a virtual reality headset**
  - Why?
    - Players can be "physically" in the park
    - Creates a more immersive experience



# Design Rationale

- **Low Poly Style**
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- **Our game must be played on a virtual reality headset**
  - Why?
    - Players can be "physically" in the park
    - Creates a more immersive experience

# Email Request to Mandai Wildlife Reserve

# Contact us

Please select a park  
**Mandai Wildlife Reserve**

Please select the type of enquiry  
**General Enquiries**

Name  
Wong Qing Wei, Jasmine Giam, Jonel Lim, Justin Luis Hernandez

Email  
qingweiwong5@gmail.com

Country code  
 +65

Contact number  
91019934

Country or city of residence  
**Singapore**

Your comment  
Dear Sir/Madam,

We are a group of students from Ngee Ann Polytechnic, studying in the school of ICT under the diploma of Immersive Media.

We are currently working on a school project commemorating the recently closed Jurong Bird Park.

The main goal of our project is to allow players to reminisce and relive Jurong Bird Park.

By submitting your enquiry or feedback in the form above along with your personal data, you acknowledge that you have read and understood Mandai Park Holdings Pte Ltd's [Data Protection Policy](#) (which includes your right to withdraw consent given herein), and consent to the collection, use and disclosure of your personal data by Wildlife Reserves Singapore Pte Ltd ("Mandai Park Holdings Pte Ltd").

## Contact Us

### General Enquiries

### Sales Enquiries

Please submit your query through the Contact Us form and we will respond within 3 working days.

**Business Development & Corporate Wildlife Benefits**  
Partner Collaborations, Promotions (Non-Travel Trade), Business Membership Products Email: [sales.bd.eng@mandai.cc](mailto:sales.bd.eng@mandai.cc)

**Event Sales**  
Family Days, Group Ticket Purchases, Social & Corporate Functions Email: [sales.eng@mandai.com](mailto:sales.eng@mandai.com)

**International Sales**  
Travel Trade Partners Email: [sales.international@mandai.cc](mailto:sales.international@mandai.cc)

**Partnership Development**

How may we help you today?



From: [enquiry@mandai.com](mailto:enquiry@mandai.com) <[enquiry@mandai.com](mailto:enquiry@mandai.com)>

Sent: Saturday, 18 February 2023 1:52 PM

To: Enquiry <[enquiry@mandai.com](mailto:enquiry@mandai.com)>

Subject: New Enquiry

Park:

[mandai-wildlife-reserve](#)

Enquiry-type:

general-enquiries

Name:

Wong Qing Wei, Jasmine Giam, Janel Lim, Justin Luis Hernandez

Email:

[gingwei.wong5@gmail.com](mailto:gingwei.wong5@gmail.com)

CountryCode:

+65

Contact-number:

91019924

Country:

Singapore

Yourmessage:

Dear Sir/Ma'am,

We are a group of students from Ngee Ann Polytechnic, studying in the school of ICT under the diploma of Immersive Media.

We are currently working on a school project commemorating the recently closed Jurong Bird Park.

The main goal of our project is to allow players to reminisce and relive Jurong Bird Park.

This project is a Virtual Reality experience that takes place at some of the more notable spots in Jurong Bird Park

These places include; Penguin Coast, Parrot Paradise, Waterfall Aviary, Lory Loft, and Pools Amphitheatre (High Flyer Show).

We are writing to see if you are interested in possibly collaborating with us to further this project.

Since we are unable to send any images and/or videos here, if this piques your interest, please contact us for images/videos of our Virtual Reality environment and interactions.

Sincerely,

Wong Qing Wei, Jasmine Giam, Janel Lim, Justin Luis Hernandez

# Promotional Poster



# Trailer



The background features a dense jungle scene with various tropical trees and foliage. A bright blue river flows across the bottom of the frame, with a small cluster of lily pads on the left side.

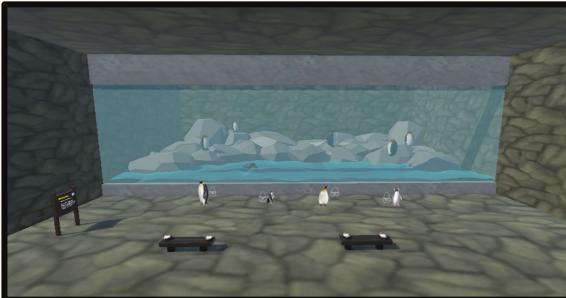
02

**EXD**

Unique Selling Points,  
Gameplay Loop, Inclusive Design,  
Usability Testing

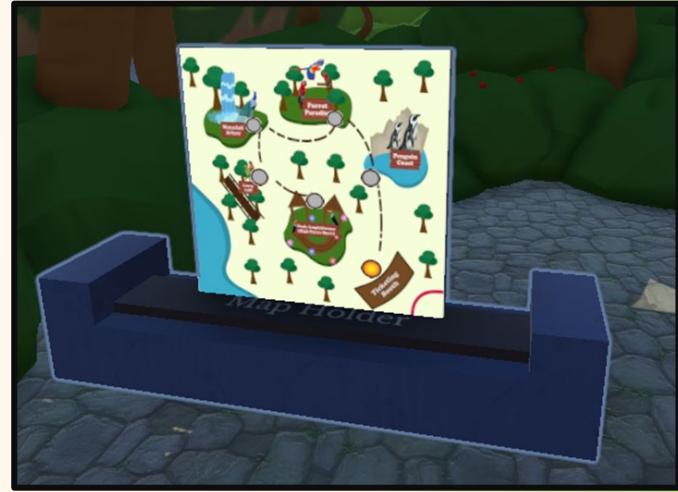
# Unique Selling Points

## Iconic Jurong Bird Park Attractions



# Unique Selling Points

Snapshot & Interactive In-Game Map



# Unique Selling Points

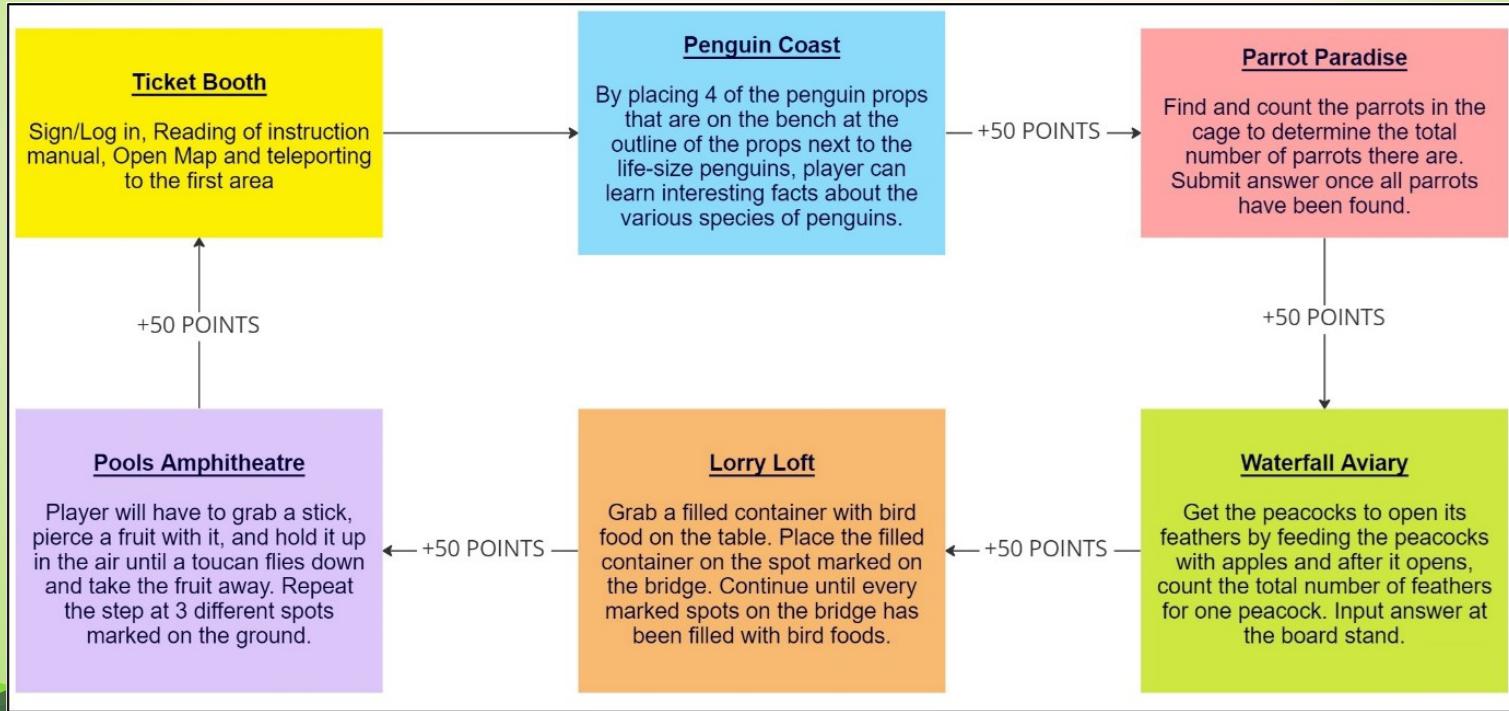
## Interactive Activities

Each of the 5 areas in our games:

- Penguin Coast
- Parrot Paradise
- Waterfall Aviary
- Lory Loft
- Pool Amphitheatre

Have their own activities that the player must complete in order to progress through the game by requiring the players to move around and interact with the environment.

# Gameplay loop



# User Journey Map

Journey Steps Which step of the experience are you describing?	Discovery Finding Out About the VR Experience	Task 1 Signing In/Up	Task 2 Penguin Coast (Penguin Educational Game)	Task 3 Parrot's Paradise (Count number of birds)	Task 4 Waterfall Aviary (Get peacock to open its feathers and count the number of feathers)
Actions What does the customer do? What information do they look for? What is their context?	keen to try VR if he had the chance  looking for an exciting and new experience when playing the VR game	Walk to the Ticket Booth and read instructions  Try sign up for an account	Read the instructions on the board  Grab props on the benches  Read the fun facts about the penguins  Explore the environment  Place props at the outline beside the penguin.  See the 2 penguins come to the glass	Explore all the other exhibits at parrots paradise  Select the parrots as they are counting them.  Read the instructions on the board  Click submit button after selecting all the parrots.	Explore the environment and interact with the peacock and the waterfall  Take the apples and feed the peacock  Get to see the peacock open up its feathers  Read the instructions on the board  Click submit button after selecting all the feathers.
Needs and Pains What does the customer want to achieve or avoid? Tip: Reduce ambiguity, e.g. by using the first person narrator.	wants to be able to have a good first VR experience  wants to avoid feeling dizzy when he uses the VR headset	Customer looks for intuitive UI  Dropping the map and the ticket counter and not being able to pick it up  Avoid getting an error in the authentication process	Not being able to place the props in the socket Interactor  Completing the game and being able to see the penguins come to the glass panel  Dropping the props	not being able to select all the birds and clicking submit  Completing the game and being able to select all the parrots successfully	keeps dropping the apple  not being able to count the number of feathers  successfully getting the peacock to open up its feathers  being a little confused on how to feed the peacock  successfully guessing the total number of feathers on the peacock
Touchpoint What part of the service do they interact with?	only had experience with VR/AR/XR at universal studios	Interaction with the environment (Walking around)  Interact with the ticket counter (Sign Up)	Interact with the player assets (Camera and Map)- figuring out how to use  Interact with the props, the penguins and the environment  Interact with the socket interactors to place the props	Interact with the board, reading the instructions  Interact with the environment and the parrots.	Interact with the board, reading the instructions  Interact with the submit button  Interact with the peacock by feeding it apples and counting their feathers  Interact with the board, reading the instructions  Interact with the submit button to submit answer for number of feathers
Customer Feeling What is the customer feeling? Tip: Use the emoji app to express more emotions	!	!	!	!	!
Opportunities What could we improve or introduce?	introduce more games in the VR realm	Make the camera spawn in front of the player to make it easier for the player to grab	Make the socket interactors more sensitive	Continue making more activities such as this one as it is simple for the user	Make the socket interactors more sensitive

# User Journey Map

Journey Steps Which step of the experience are you describing?	Task 4 Waterfall Aviary (Get peacock to open its feathers and count the number of feathers)	Task 5 Lory Loft (Bird Feeding)	Task 6 Pools Amphitheatre (High Flyers' Show)	Conclusion
Actions What does the customer do? What information do they look for? What is their context?	<ul style="list-style-type: none"> <li>Explore the environment and interact with the peacock's feathers.</li> <li>Read the instructions on the board.</li> <li>Take the apples and feed the peacock.</li> <li>Get to see the peacock open up its feathers.</li> <li>Counting the number of feathers and keying in the answer on the board.</li> </ul>	<ul style="list-style-type: none"> <li>Explore the environment and interact with the peacock and the waterfalls.</li> <li>Read the instructions on the board.</li> <li>Spawn food with the spawn food button.</li> <li>bring food to the respective spots in order</li> <li>See the lorikeets animation go towards the food.</li> </ul>	<ul style="list-style-type: none"> <li>Explore the environment.</li> <li>Read the instructions on the board.</li> <li>grab the pear and branch from the table.</li> <li>Watch the toucan get the pear from the end of the branch.</li> </ul>	<ul style="list-style-type: none"> <li>Actually expected to play an obstacle course game</li> </ul>
Needs and Pains What does the customer want to achieve or avoid? Tip: Reduce ambiguity, e.g. by using the first person narrator.	<p>keeps dropping the apple</p> <p>successfully getting the peacock to open up its feathers</p> <p>being a little confused on how to feed the peacock</p> <p>not being able to count the number of feathers</p> <p>successfully guessing the total number of feathers on the peacock</p>	<p>keeps dropping the food</p> <p>Being able to see the lorikeets animation</p> <p>having to keep dropping food and fetch to get the food</p>	<p>dropping the branch and the pear</p> <p>Being able to see the toucan come get the pear from the branch</p>	<p>Parrots paradise was enjoyable as it resembled a shooting game</p> <p>The Highfliers was fun as the bird follows the branch</p> <p>The VR headset need some getting used to, can feel a little dizzy</p>
Touchpoint What part of the service do they interact with?	<ul style="list-style-type: none"> <li>Interact with the board, reading the instructions</li> <li>Interact with the peacock by feeding it apples and counting their feathers</li> <li>Interact with the submit button to submit answer for number of feathers</li> </ul>	<ul style="list-style-type: none"> <li>Interact with the instructions board and the button to dispense the food</li> <li>Interact with the environment while placing the food at their respective spots</li> <li>Interact with the lorikeets when they come to get the food</li> </ul>	<ul style="list-style-type: none"> <li>Interact with the instructions board and the button to dispense the food</li> <li>Interact with the environment while placing the food at their respective spots</li> <li>Interact with the lorikeets when they come to get the food</li> </ul>	<ul style="list-style-type: none"> <li>Interact with the whole game's environment</li> <li>Interact with the game's controls</li> </ul>
Customer Feeling What is the customer feeling? Tip: Use the emoji app to express more emotions	:(	:)	:)	:)
Opportunities What could we improve or introduce?	Make the socket interactors more sensitive	Include a running/ sprinting function for the users to get from place to place faster	Continue making more activities that have such interactions	Continue making more activities that have such interactions

# **Considerations for Inclusive Design**

# Inclusive Design

## Language Barrier among people with different ethnicities

- Incorporate more icons
  - Common visual language effectively bridges the language gaps
  - Helps players quickly and easily identify what they need and want during the game.

Thus, utilizing more icons will help a wide range of individuals and improve visual interest and be able to grab the players attentions more easily.

# Inclusive Design

Language Barrier among people with different ethnicities



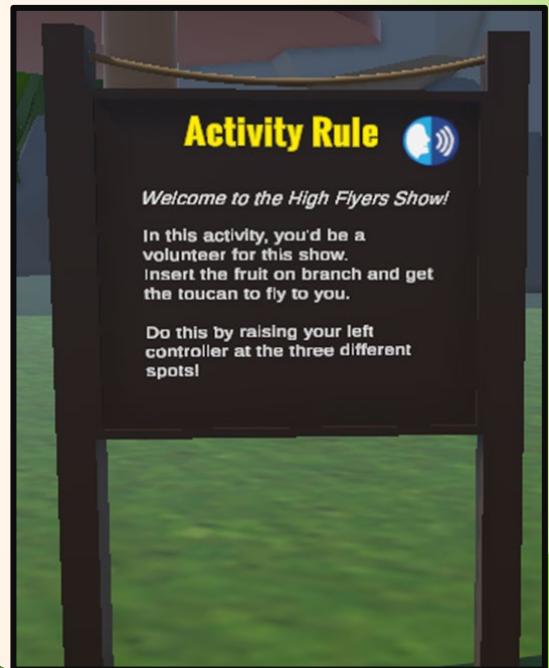
# Inclusive Design

## People with mild vision impairments

In our game, we have implemented a speaker icon next to the text for each instruction board that we have.

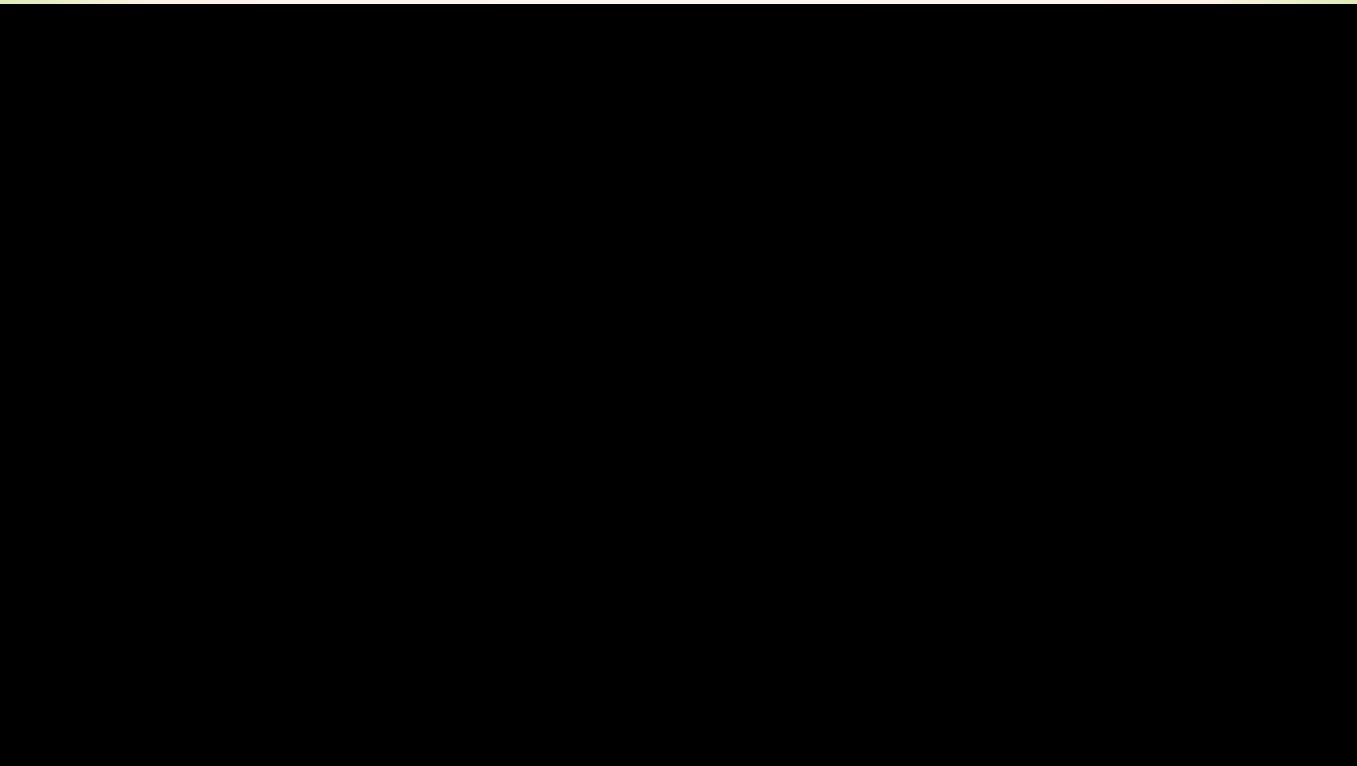
By activating them, a voice will start reading the content aloud benefitting:

- People with mild vision impairments
- People who rather listen to the information than read it.
- People who struggle with reading english



# Inclusive Design

People with mild vision impairments



# User Persona

## Kelvin Giam Working Adult



"I remember playing in the water near the waterfall with my primary school friends"

Age: 50

Occupation: Thai Restaurant owner

### Bio

Kelvin owns a Thai restaurant, named Tom Yum Kungfu. He has two daughters aged 16 and 19. In his free time, he likes to go for a swim. The last time he went to Jurong Bird Park was around 10 years ago. The most memorable part of Jurong Bird Park for him is the waterfall.

### Motivations

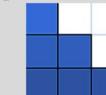
- doing things he likes
- his children



### Favourite games



Temple Run



Blockudoku

### Wants and Needs

- immersive experience
- interesting storyline/activities
- multiple interactions to make it more fun
- game surrounding corresponds to user actions

### Frustrations

- Text too small (hard to see/read)
- too much/lengthy description

# Usability Testing Video



# Summarized findings

## Penguin Coast

- Hard to continue with the activity when the props are dropped

## Waterfall Aviary

- Peacock feathers closes too fast making it difficult for the player to count

## Lory Loft

- Area is too big and the player has to keep walking back and forth to complete the activity

# Summarized findings

## In-game Map

- Unable to recover the map when it has dropped

## VR Controls

- Still needs to get used to them and the player feels a bit giddy while playing.

## Expectations

- Wanted to see an obstacle course implemented into our game

# 03

# 3DE

Texture Atlas, Models Created, VFX Effects,  
Environment Preview

# PureRef Visual Research

Ticket Booth / Entrance

grey Parrot

hyacinthMacaw

Parrot Paradise

Waterfall Aviary

Lorry Loft

Gantry

Leaves/flower/trees

Benches

Tree stump

Penguin Coast

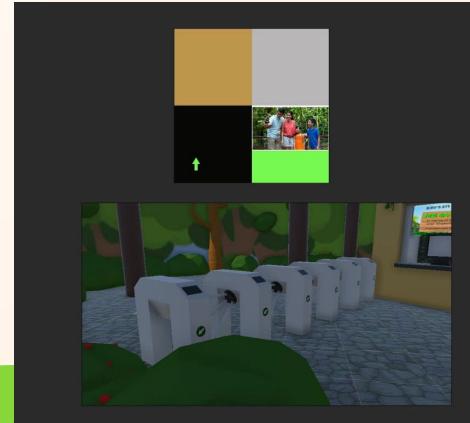
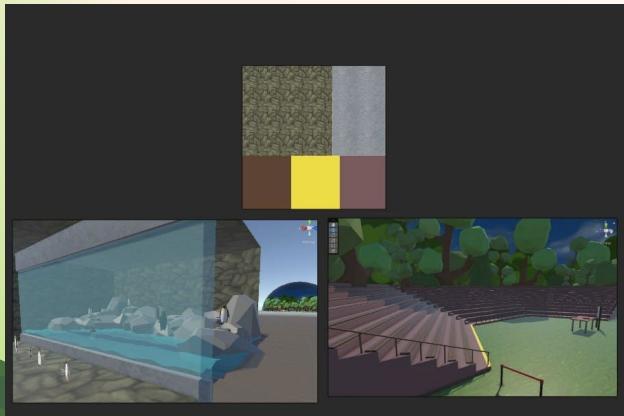
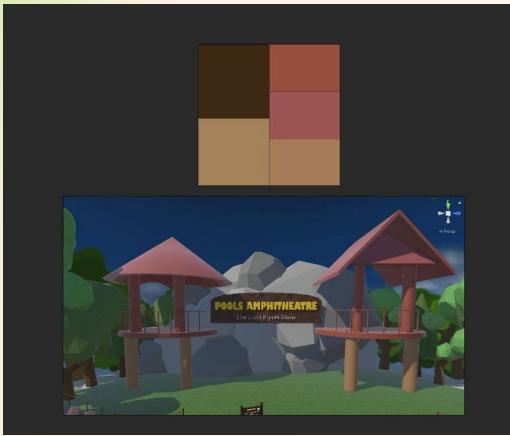
Scarlet Macaw

Peacock

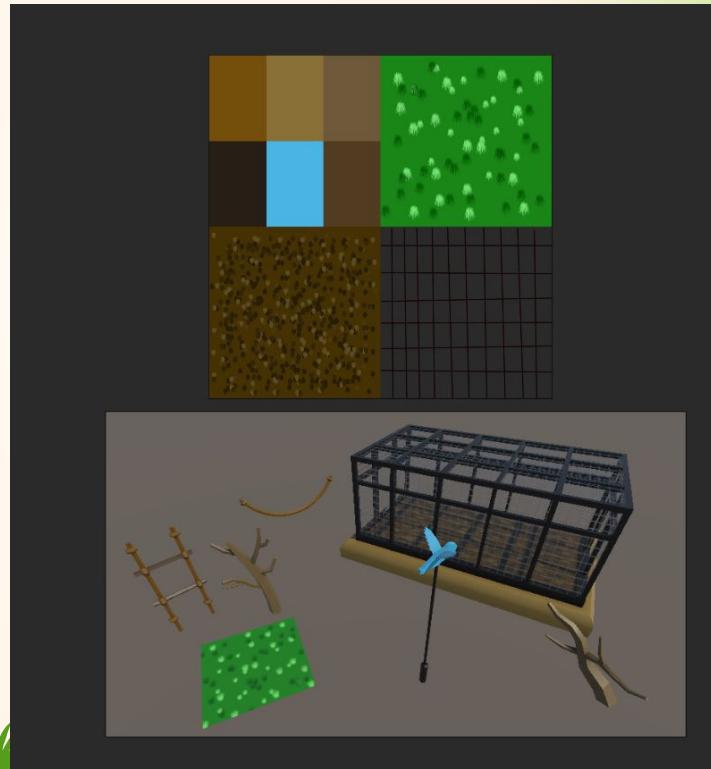
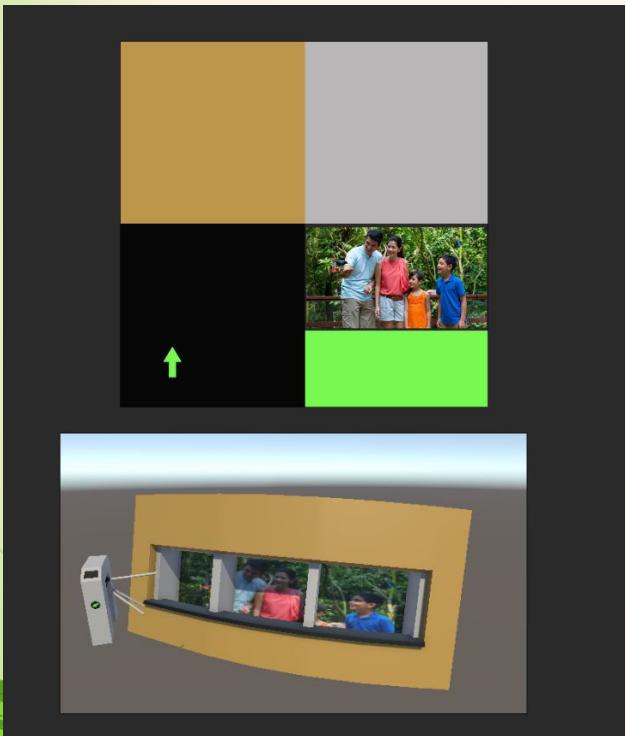
High Flyers Show (Pools Amphitheatre)

This visual research board illustrates a variety of exhibits and features at a bird-themed attraction. It includes sections for ticketing, entrance areas, different types of parrots, a waterfall aviary, a lorry loft, a gantry, foliage, benches, tree stumps, penguins, scarlet macaws, peacocks, and a high flyers show. The board also features a comprehensive park map.

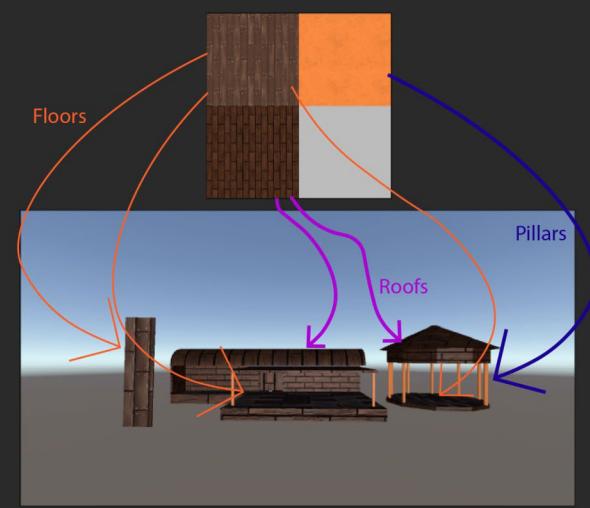
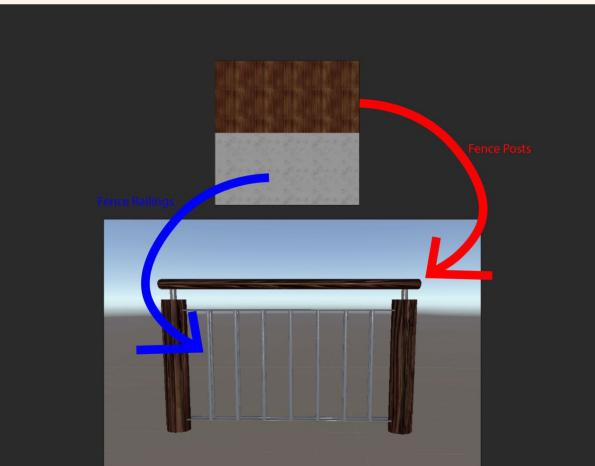
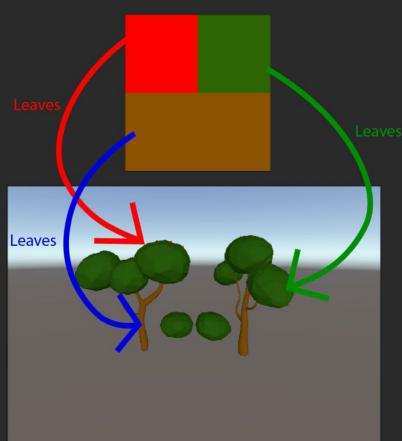
# Texture Atlas Created - Janel



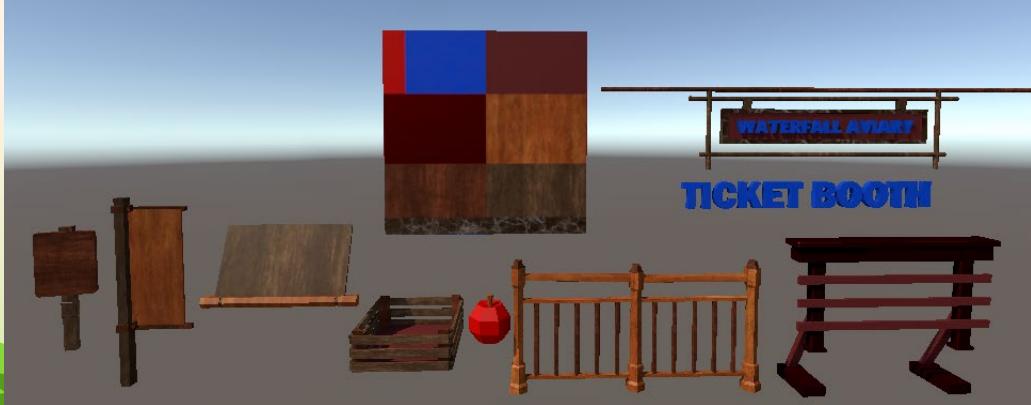
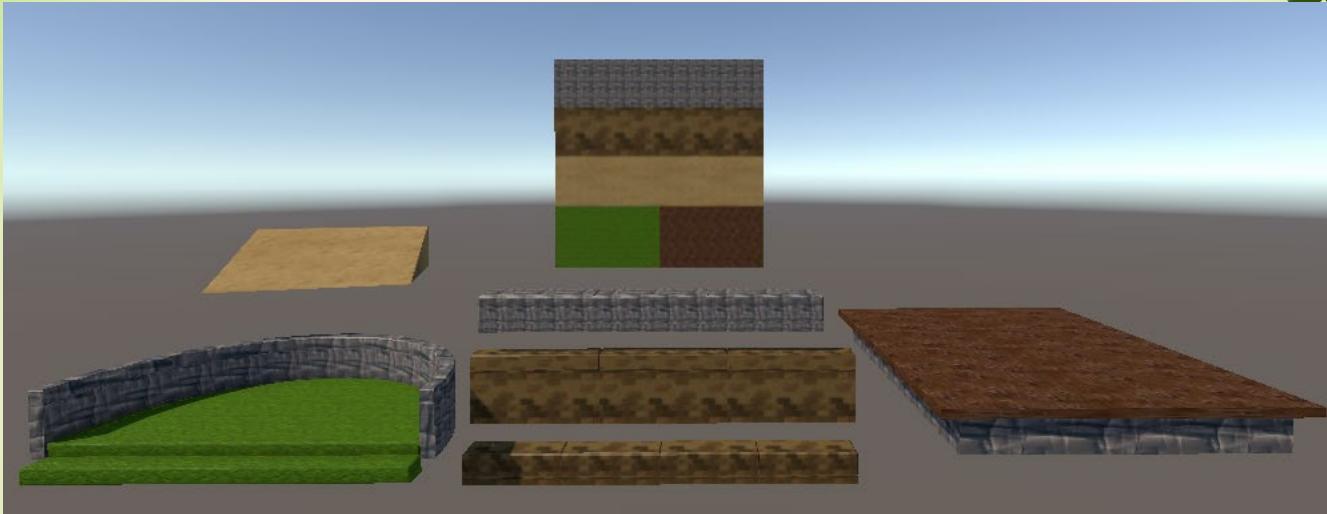
# Texture Atlas Created - Jasmine



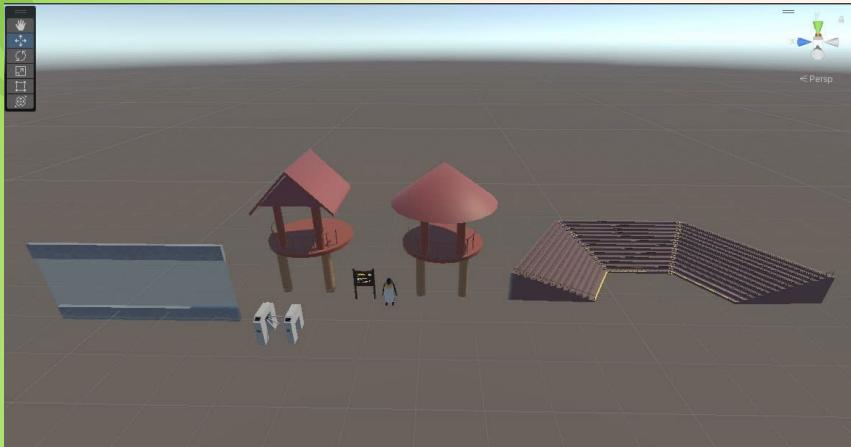
# Texture Atlas Created - Justin



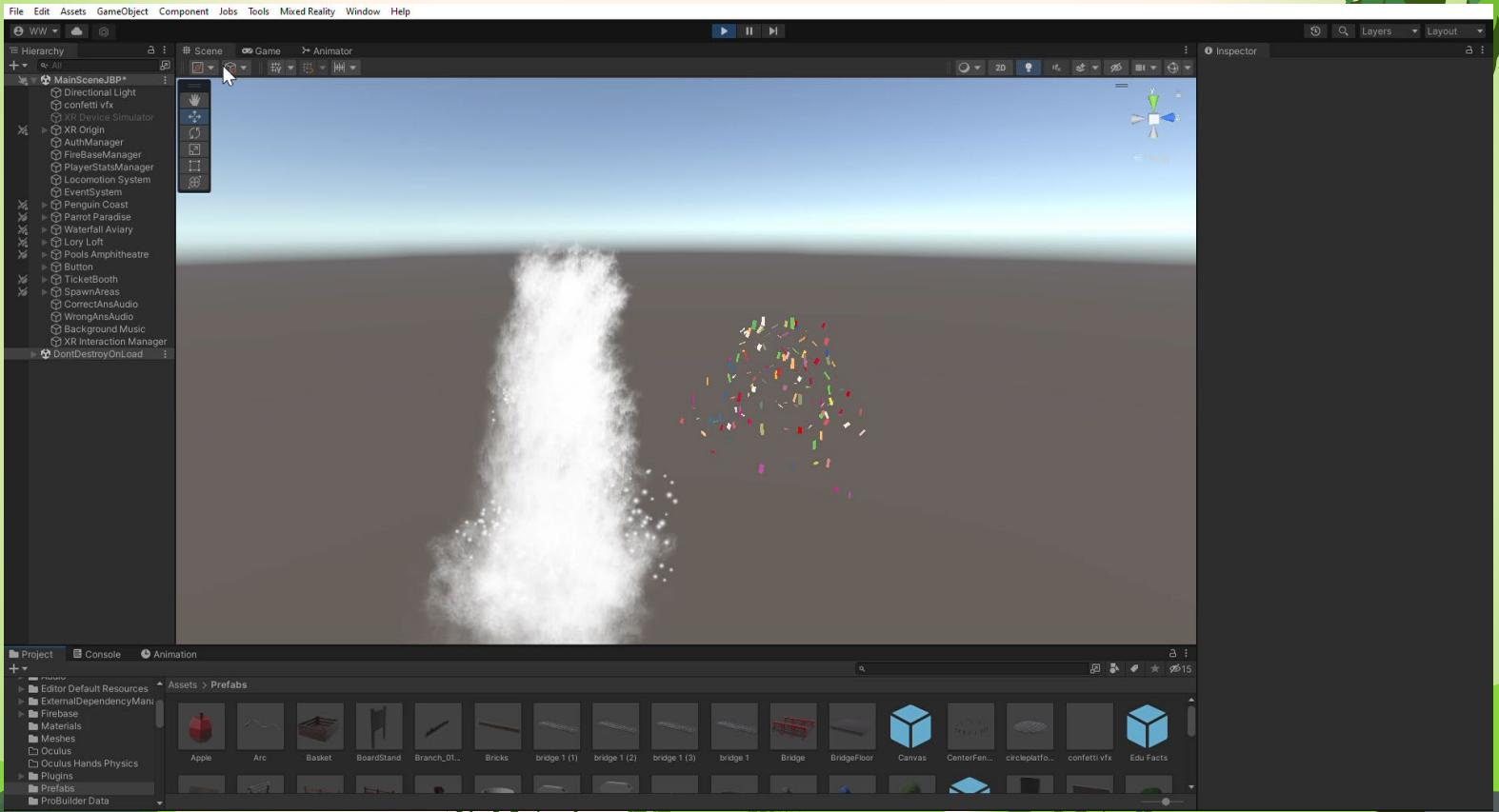
# Texture Atlas Created - Qing Wei



# Models Created



# VFX Effects



# Environment Preview - Entrance



# Environment Preview – Penguin Coast



# Environment Preview – Parrot Paradise



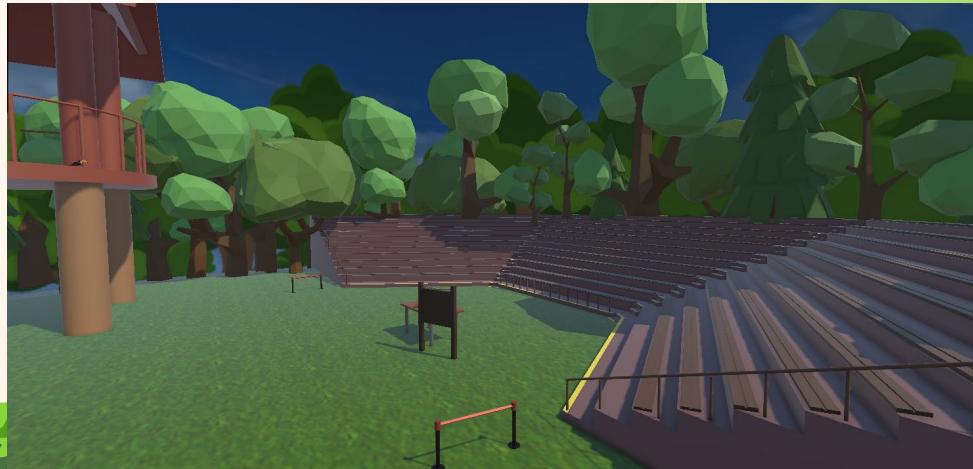
# Environment Preview – lory loft



# Environment Preview – Waterfall Aviary



# Environment Preview – Pools Amphitheatre



# 04

# DPA

Reward System, Data Structure  
Main Objective of Website,  
Features of Website

# Reward System

- Each area will have an activity to complete (Total of 5 areas to complete)
- + 50 points will be awarded for each completed activity
- - 5 points deduction for each incorrect answer
- If player's total points exceed 500:
  - 50% discount admission to any one of the Singapore Wildlife Reserves' attractions



BIRD'S EYE VIEW with  JURONG BIRD PARK

**50% OFF ADMISSION**  
to any one of the attractions  
under Singapore Wildlife Reserves

If you earn more than 500 points

# Data Structure

- Player Information

- Easy access to player information
- Filter out player info from player statistics clearly

```
  PlayerInfo
    8DfrDebBBi0Ia2CKBDGFvc8YWcv2
      createdOn: 1676815976
      email: "k@gmail.com"
      isActive: true
      username: "123"
```

- Player Statistics

- Track their game progress individually
- Fetch data easily to the game, such as get accumulate points from previously recorded points

```
  PlayerStats
    8DfrDebBBi0Ia2CKBDGFvc8YWcv2
      fastestTimeToCompleteAll: 930.1592407226562
      numberofIncorrectAnswers: 2
      pointsLeftToReachReward: 110
      totalPoints: 390
      updatedOn: 1676815976
```

# Photo Storage

- This storage will receive screenshots captured by player from the **Camera asset** in the game
- Screenshots taken will be displayed on camera film and the website

gs://ip2-2-birdseyeview.appspot.com > images

Name	Size	Type	Last modified	Actions
1676736589-photo.png	122.01 KB	image/png	19 Feb 2023	<input type="checkbox"/>
1676739487-photo.png	136.63 KB	image/png	19 Feb 2023	<input type="checkbox"/>
1676739551-photo.png	131.1 KB	image/png	19 Feb 2023	<input type="checkbox"/>
1676739665-photo.png	140.57 KB	image/png	19 Feb 2023	<input type="checkbox"/>
1676744524-photo.png	146.4 KB	image/png	19 Feb 2023	<input type="checkbox"/>
1677127637-photo.png	149.2 KB	image/png	23 Feb 2023	<input type="checkbox"/>
1677127688-photo.png	144.66 KB	image/png	23 Feb 2023	<input type="checkbox"/>
Waterfallimg.png	660.97 KB	image/png	12 Feb 2023	<input type="checkbox"/>
peacock1.png	577.17 KB	image/png	12 Feb 2023	<input type="checkbox"/>

Upload file

1677127688-photo.... X



Name  
1677127688-photo.png 

Size  
148,127 bytes

Type  
image/png

Created  
23 Feb 2023, 12:48:08

Updated  
23 Feb 2023, 12:48:08

File location

Other metadata



# Main Objective of Website

- For **registered players** who can view their own personal information and game statistics
- Analyse/Track their game progress and performance
- Browse the Discovery page to view pictures taken throughout the game by other players

# Website Demo Video

The image shows a dual-monitor setup. The left monitor displays the GitHub Pages settings for the repository "QingweiII/IP2.2-Website". The right monitor displays the Firebase Realtime Database interface.

**Left Monitor (GitHub Pages Settings):**

- General:** Shows the GitHub Pages URL <https://qingweiII.github.io/IP2.2-Website/> was last deployed 5 days ago.
- Build and deployment:** Set to "Deploy from a branch" (main).
- Custom domain:** Shows a placeholder for a custom domain.

**Right Monitor (Firebase Realtime Database):**

- Data:** Shows the database structure under the path <https://ip2-2-birdseyeview-default.firebaseioapp.com/>.
  - PlayerInfo:** Contains several player IDs (e.g., 8DfrDebb10Ia2CKBDGFvcByWcv2, VPOM10rxCSn4p0ZBa91Qx30z1z1, hCfQxBHnLc7N9cu0B2gCs2jqpDH3, KGZwCpo#HNNvE837ainevCTzwkG3, tYSH4tBaRhnF15Bu1T1wT8SUTac2, vIN0R5fcJHPZcMbgY2Y7YI770qw2).
  - PlayerStats:** Contains several player IDs (e.g., 8DfrDebb10Ia2CKBDGFvcByWcv2, VPOM10rxCSn4p0ZBa91Qx30z1z1, hCfQxBHnLc7N9cu0B2gCs2jqpDH3, KGZwCpo#HNNvE837ainevCTzwkG3, tYSH4tBaRhnF15Bu1T1wT8SUTac2, vIN0R5fcJHPZcMbgY2Y7YI770qw2).

# 05

# ITD

Game Mechanics, 5 Progressive Stages,  
Game Play Video

# Game Mechanics

- **Toggleable Map**
  - Helps players teleport to different locations
  - Players will use this map to move on to the next activity
- **Toggleable Camera**
  - Snap pictures of the environment during the game
  - Picture will render out on the film above the camera
- **Text-To-Speech**
  - Helps read out the instructions on the board
  - Top right icon on the board stand



# 5 Progressive Stages

## 1. Ticket Booth

- Sign up/ Sign into the account
- Help player get ready for the game

## 2. Penguin's Coast

- Place props at respective positions and learn some facts about the penguins

## 3. Parrot's Paradise

- Count the number of parrots in the enclosure

# 5 Progressive Stages

## 4. Waterfall Aviary

- Get peacock to show its feathers
- Count the number of feathers

## 5. Lory's Loft

- Feed the Lorikeets

## 6. Pools Amphitheatre

- Be a participating volunteer for the Highflyer's Show

# Gameplay Video

## Penguin's Coast



# Gameplay Video

## Parrot's Paradise



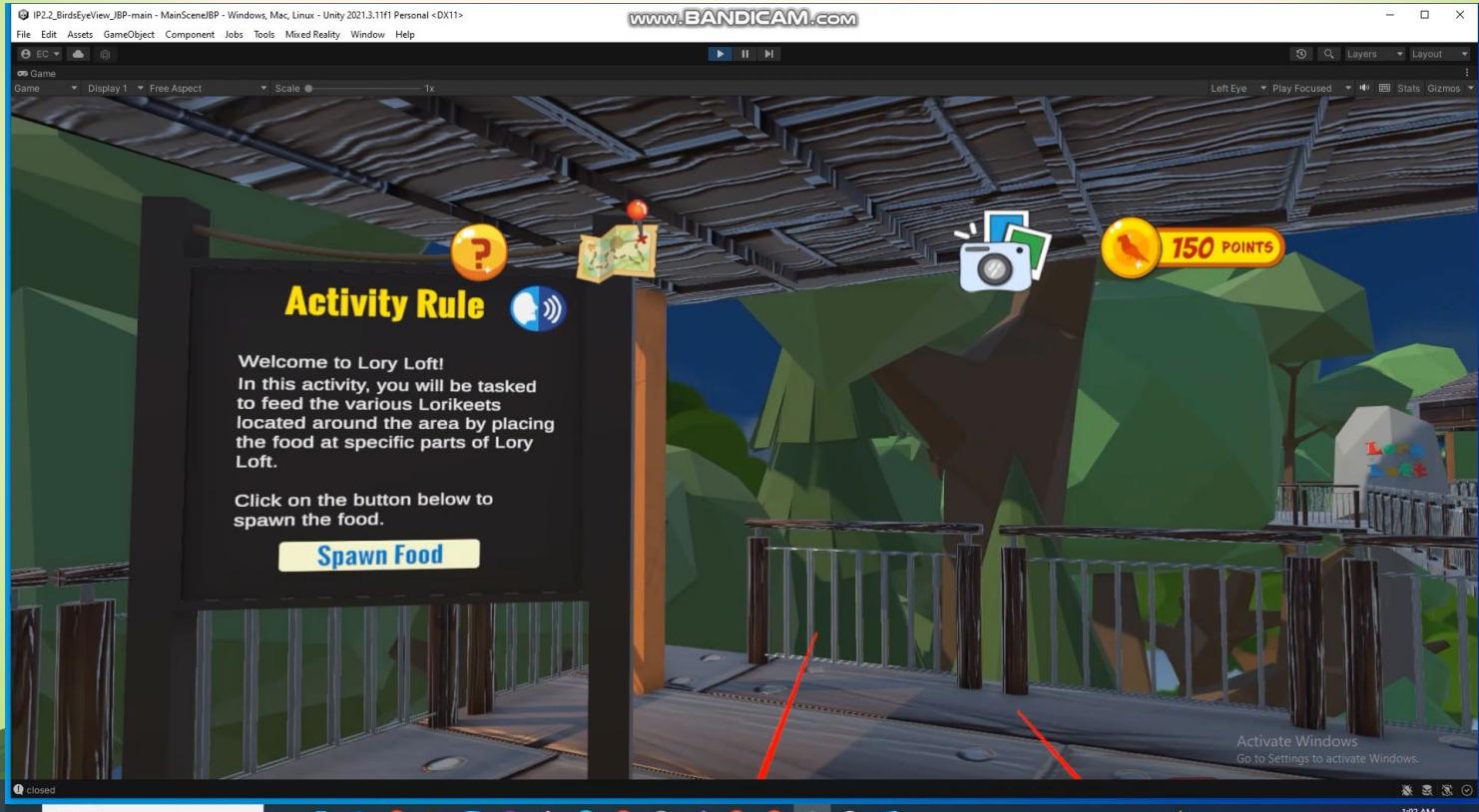
# Gameplay Video

## Waterfall Aviary



# Gameplay Video

## Lory's Loft



# Gameplay Video

## Pools Amphitheatre



# DEMO TIME!

For Demo Purposes (Test User)

Email: k@gmail.com

Password: 12345678

# THANK YOU!

