Push Sushi

Game Design Document

Table Of Content

Legenda

Inspector paramters: +placeholder
SFX: +placeholder
Animation: +placeholder

Other links:

1. UI/UX Design Document (Buttons & Menus)
2. Level Design Document
3. ADD
4. Icon/Buttons Table (Image,Description and SFX)
5. Asset List

1.0 Overview

Push Sushi is a **3D puzzle game** with **top down perspective** and a **slide system gameplay**. The player will have to face multiple levels where **the main scope has to drag the piece of sushi from the left side of the screen to the exit of the level** which is located on the right side. There are **different types of level where the difficulty will increase as the player progresses.**

1.1 External info

1.1.1 Publisher

[Zplay (Beijing) Info. Tech. Co.,Ltd.]

1.1.2 Platforms

- Apple/IOS
- Android (**OnePlus 8**)
- Windows/Mac-IOS

[1.2 Project Management]

1.3 Description

The main **scope** of the **player** will be to **beat** every **level** that it will face by **solving** the **puzzles** presented on the **board**. The **more** the player **progresses** the **more** the **difficulty** will **increase**. Each **level** will **present** a **standard** series of **obstacles** that, **depending** on the **level**, will **change** the **aesthetic** of those **pieces**. There are going to be a **total** of **30 playable** games that the player has to **face** and it **can** always go **back** to the **previouses** levels to **improve** the last **score** made **or restart** the **latest** played **puzzle if** the player **made mistakes**.

2.0 Target & Scope

The Remake seeks to renew the original title through 2 new themes while maintaining the mechanics and systems originally developed.

3.0 Team Goal

Within **four weeks**, the **team** should be **able** to **develop** and **replicate** the **mechanics** of the **game** '**Push Sushi**' as **far** as **possible**.
In **addition** to the **theme** and **aesthetics** of the original **title**, the **team** will have to **develop two** completely new **themes** to be **used** in the **project**.
Thirty fully functional **levels** and all the **main interfaces** will be **required**, and **everything will** have to **run** on the **android One Plus 8** device.

4.0 Art Style

The **artstyle** of the game **revolves** around a **2D cartoon style** and uses **sushi** rolls,**temples**,**sakura flowers** and more to recall **Japan**. **Sakura flowers** are the visible **objects** used as **star points collected** by **beating** levels, the **sushi rolls** are used as **obstacles** but also have the main **pawn** that the **player** can **use**, also all of them **have** multiple **skins** that resemble a **different** type of **sushi pieces**.The **art style** put **japanese** objects like **lanterns** and **chopsticks** or constructions like **temples** to give an environmental **background** to each playable **level**.

- **2D:** The **title** is originally 2D, **characterized** by **flat colors** and **minimalist design**.
  The **team** will have to try to **use** similar color **palettes** to the **original title** both in **game** and in **concepts.**

- **3D:** **Differently** from the **original title**, the team will **develop** the game in **3D**, then use an **orthographic camera** to **recreate** the **2D environment** as **faithful** as possible to the official **Push Sushi**.
  The **models** will **necessarily** be **Low Poly** with a **low** level of **detail**.

5.0 Themes

1) Sushi (original Theme)

This theme represents the typical Japanese cuisine recipe in all its forms.
The piece of sushi to be brought to the goal point is always a nigiri while the obstacles are always either vegetables or uramaki.
The buttons, on the other hand, are always minimal with a coloured background and a recognisable icon.
The background is a pattern reminiscent of Japanese culture and the chopping board on which the sushi is placed is reminiscent of one used in the kitchen.

2) Penguins & Icebergs

The penguin theme twists the original theme by having penguins of different types or dressed and decorated instead of nigiri.
Obstacles change from uramaki to icebergs and orcas.
Instead, the cutting board becomes a block of ice with some snow details.
The buttons are now frozen and very similar to each other, while retaining the original style of the icons inside them.

3) Sweets

The theme of desserts features different types of recipes.
The board is now a table of both white and dark chocolate, reminiscent in this case of a chessboard.

6.0 Input System

6.1 Click

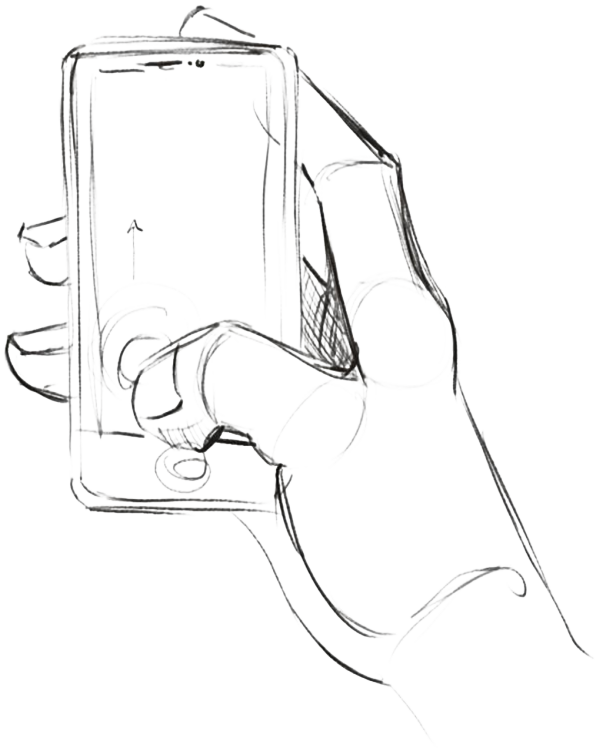
Action consisting of rapidly pressing and releasing a point on the screen.

- **Mobile:** Finger/fingers of the hand
- **Pc:** Cursor & Left-click mouse

6.2 Drag

Action of dragging something while holding down

- **Mobile:** Finger/fingers of the hand
- **Pc:** Cursor & Left-Button
- **Drag Speed:** The movement speed of the dragged object is always equal to that of the finger/cursor/input.



6.3 Hold

Something while being pressed

- **Mobile:** Finger/fingers of the hand
- **Pc:** Cursor & Left-Button

7.0 Main Mechanic

The **gameplay** revolves around a **slide** system where the **player** has to move different **pieces** of sushi that are presented on the **board** to **drag** the **main pawn** from the **left** side of the screen to the **right** side and once got to the **goal** point it will show the **score** made and **unlock** the next **level**. The player can **make** as many **moves** as he wants and based on the distribution of the pieces on the board it can move them by **pressing** on them **left** to **right** or **upside down** respecting the limits of the board.

8.0 Win/Lose Condition & Player Progression

8.1 Win Condition

The **player** will have to **get** his **piece** along **his line** past the **victory point**.
His **score** will **improve** if he **manages** to do **this** with as **few moves** as **possible**.

8.2 Lose Condition

There is no 'Lose Condition' or failure screen.

If the **player** is **not** able to **surpass** the **level** that is currently **playing**, it will **not** be **able** to **make progress** nor **unlock** new **levels**.
*The **player** is **frustrated** because of its **failure**.*

8.3 Player Progression

By completing levels in the various categories/difficulties, the player unlocks new ones, and in each level he can obtain coins that will allow him to buy and use new skins and themes.

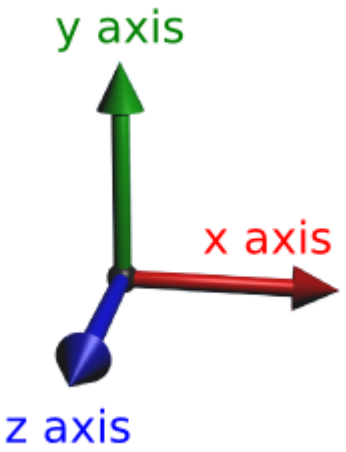
9.0 Game flow (Flowchart)

Once the **player presses** the button **start**, the player will be **dragged** in the level **selection** menu and choose which **level** has to be **played**. The **player** will **use** the **touchscreen** function to **drag** the **piece** selected in the **direction** that the **object** is oriented and create a **path** that will lead the **main pawn** of the puzzle system to the **goal** point. This will be the main **scope** that the player has to do in order to make **progression** and **unlock** new **levels** and **skins**.

Every **level** will also have a **counter** move on the **top left** side of the **screen** that will **help** the player know the **minimum** number of **moves** that has to make in order to **win**. Every object **inside** the **board** can be moved **every time** the player will **touch** the **screen** and each **movement** made following this **system** will increase by one the **counter** of **actions.**

Whenever the **player** wants to **try again** the level he will find the **restart button** in the **pause** screen **menù**. If the player **takes** too much **time** to **make** actions **inside** the game a **white glowing outline** will **show** which **pawn** of the board has to be **moved** and a **white glowing arrow** will tell in which **direction** that has to be **moved** so that the player will be able to **solve** the **puzzle**, but if the automatic **helps** are **not** going to be **enough** the player can get **access** to the **solution** by clicking the H**int Button**.

9.1 Movement system



The **movement** is based on the **X/Z axis** where the board is composed of 6x6 **cubes**. The **distribution** of the pieces on the **board** are dispatched on the **vertical** axis where the player can **move** the pieces of sushi from the **upper** part of the board to the **lowest** one or vice versa, while the ones **distributed** on the **horizontal** axis can be moved from **right** to **left** or from **left** to **right**. The **player** can move the pieces of as many **tiles** as he wants but remaining **inside** the **limits** of the board and can make as **many** moves as he **wants**.

Note: In the game, it will not be possible to interact with the same input twice at the same time.

9.2 Camera

In **order** to **keep** the **visuals similar** to the **original** game, the **team** decided to **use** the **orthographic** camera.
In **the** orthographic **view**, all **objects appear** at the **same scale**.
The **view** will be **top-down** and **therefore** from **above** but **rotated** in **X** of **65**.

9.2.1 Why?

The orthographic camera was chosen to recreate the 2D style of the game even with 3D assets. The tilt and position, on the other hand, serve to help the player visualize the entire scenery and assets in the level.

9.3 Score system

The **more** the **action** the **less** will be the **score** obtained which is measured with **flowers** that goes from **one** to **three** as peak **score**. In case the **player** does **resolve** the puzzle with the **least** amount of **moves**, will be **compensated** with a **crown**.

Based on the number of moves made by the players to reach the goal point, the game will assign a number from 1 to 3 of 'flowers' that will change appearance depending on the theme (Fish, candy, etc.).
To calculate the players' score:

3 Flowers (Text: “Perfect”): PlayerMoves <= OptimalMoves.

2 Flowers (Text: “Great”): OptimalMoves < PlayerMoves <= OptimalMoves * 1.5

1 Flower (Text:“Good”): PlayerMoves > OptimalMoves * 1.5

Crown: If the player starts a level for the first time and completes it with a 3-flower result in one attempt, he gets a crown in addition to the 3 flowers (he can still reset and cancel moves if done before the level is completed).

10.0 Hint (Algorithm)

The player may keep a maximum of '**x**' (**+NumberOfHints**) available (also shown by a small indicator positioned next to the Hint-button) and acquire new ones by spending '**x**' amount of money.
When the player clicks the Hint button, an algorithm will be activated that will indicate step by step all the necessary moves the player must make to solve and complete the level, the player must necessarily follow the indicated moves.

Note: Hints are represented by an outline and an arrow indicating the piece to be moved and the position.

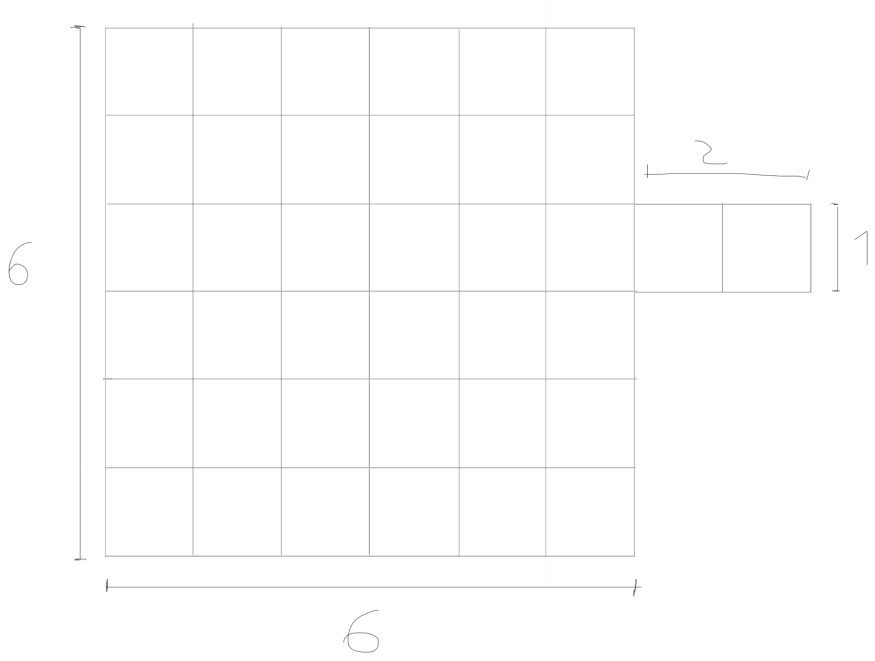
When the Hint is active it can be stopped by the Hint pause button positioned in place of the remaining Hint indicator.
If the player stops the hint after activating it with the hint pause button, he can move freely again until he presses the play button located at the same position as the hint pause button.

If the player remains stationary for '**x**' seconds **+TimeForHint** the algorithm will be activated automatically and will only suggest the next move to proceed (can move freely).
If the player has received "**x**" hints by standing still (**+FreeHints**), he will no longer be advised on the next move but to use the hint key to solve the current level.

11.0 Undo Moves

Using the appropriate button, the player may cancel the last move made.
The player can use this feature until all the moves it has made are canceled, thus bringing the move counter to 0.

12.0 Map/Grid



The **sushi** that the **player** will have to **move** are **placed** on a **table divided** into a **grid 6 wide** and **6 high**, with a **2x1 overhang representing** the **point** to be **reached** and which may **vary** in **size** (visible) **depending** on the **device** being **used** to play.

13.0 Level Editor Tool (WIP)

LDD

Given the **timing** and the **above**, the **implementation** of a **tool** to help the **team** quickly **edit** the **30 levels** of the game will be **necessary**.
This **tool** should **enable Game Designers** to quickly **position** the main **pawn** and **obstacles**.
In **particular**, **they** should be **able** to **change** the **path, position** and **rotation** of each **piece** (whether **vertical** or **horizontal**) and **replace prefabs** in the **level**.

14.0 Economy

14.1 Coins

Once per level the player can find **1 or more coins** placed on the grid.

+MaxCoinsPerLevel: 3
+MinCoinsPerLevel: 1

Coins spawn in random positions on the grid when you start the level and can also be under one of the pieces to be moved and therefore only visible later.
If the player has already collected all the coins in a level, they will not respawn when replaying the level.

+CoinSpawn: true/false

14.3 Coin Collect

The player can collect coins by '**Click**'.

When the player clicks on a coin to collect it, an animation (**+CoinAnimation**) starts and '**x**' (**+CoinValue**) coins are added to the player's coin inventory.
If the coin has been collected, it vanishes and cannot be taken again.

14.2 Shop

Through the shop, the player can buy skins and Hint Points at a cost of “x” coins (**+ItemValue**)

- **Skins:**
    - **+SkinName (Text)**
    - **+SkinPreview (Image)**
    - **+SkinPrice: “x”**
- **Hint Points:**
    - **+NumberOfHints**
    - **+CostPerHint**

15.0 UI/UX Design Document (WIP), User flow, Buttons List

16.0 Feedback System

16.1 Audio

- Buttons OnClick SFX
- Background Music (Loop)
- Sushi/Obstacle Interaction (OnClick)
- Victory SFX (End Level)

16.2 Visual/Animations

(UI/UX Animations)

16.2.1 Object/Sushi In-Game Animations

When the player clicks on an object to be moved (**sushi**, **penguin**, **iceberg**, **sweet**, **etc.**) a short **2D animation** will start on a specific point of the object.

(**+FacialAniamtion2D**)

If the player **holds down** this animation will loop until it is released.

Animation Description: Facial animation including eyes and mouth moving in a loop.

Animation Time: 0.1/0.5 sec.

16.2.2 Coins In-Game Animations

When the player clicks on a coin to collect it, an animation (**+CoinAnimation**) starts.

Animation Description: The coin rises and turns on itself, vanishing at the same time

Animation Time: 0.7/1.0 sec.

16.2.3 Flowers Animations

When the player completes a level, an overlay screen will appear showing the player's score accompanied by a group of 3 flowers.
Each flower represents a score, if the player gets 3 of them he will have reached and/or exceeded the maximum.

When the player finishes the level and then this screen opens, an animation will immediately be triggered (**+FlowersAnimations**) that sees the scored flowers move to their reference slot.

Note: If the player obtains 1 flower, the animation will only consist of 1 flower.

16.3 Why?

In order to be able to communicate to the player whether the clicked/pressed element has been activated, it will be necessary to implement audio and visual feedback.

17.0 Save system

Player actions will have to be saved in order to keep track of progression and to allow the player to access all completed levels, achievements and skins purchased/obtained

The following data will therefore have to be saved:

- Levels Unlocked
- Levels Best Moves
- Levels Best Scores
- Player skins unlocked
- Player Coins