



# School of Computer Science & Software Engineering

Bachelor of Computer Science (Multimedia & Game Development)

CSCI 321 – Project (MGD-16-S2-06)

Game Design Document

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## 1 – Game Mechanics

### 1.1 – Core Game Play

- **Player Versus Artificial Intelligence (AI) Combat Mode**  
The opponents in the game are all AI-based opponents. In order to defeat the opponents, the player used the physical cards to summon a Plushian creature and cast specific skills. The player wins when the opponent's health point (HP) hits 0. In contrary, the player loses when the player's HP hits 0 first.
- **Turn-based Combat System**  
At every stage, it begins with the player's turn. The combat will only start when the player has placed 3 cards in the Plushian card slots and the player's Plushian spawns. Only when the Plushian spawns, the player can play a card to execute a specific set of actions i.e. attack, buff, heal and/or swapping of cards. As a turn-based game, a turn ends after the player or the opponent has successfully executed all actions and all animations have been played.
- **Card Placements**  
Each of the physical game cards has multiple skills and abilities that are executed if the conditions are met. There are 2 kinds of card slots – action card slot and Plushian card slot. 'Plushian card slot' consist of the head card slot, the hands card slot and the legs card slots. This give a total of 4 card slots to play the cards in. When the player places a card in the head card slot, it determines the element and the head of the player's Plushian. Similarly, cards in the hands card slot and legs card slot determine the look of the hands and legs of the player's Plushian, respectively. When all 3 Plushian card slots have cards in them, a Plushian is summoned and appears on screen. The card in the action card slot will determine which ability will be executed depending on which condition(s) are met.
- **Battle**  
Cards in the action slot will determine what active or passive actions will be taken. The action may be to attack, heal or buff, or it may even force a change in the cards in the card slots. Attacks may directly or indirectly deal damage via melee or ranged skills. The type of action and the potency of its effect are determined by conditions, details of which are listed on the cards and/or game manual.

### ***1.2 – Game Flow***

The player must place the provided marker within the view range of their webcam. Once the marker is detected, a 3D play area with 4 card slots are generated on screen. The player must then shuffle the deck and draw 3 cards. These cards will fill the Plushian card slots, allocated according to the player's choice, and summon a Plushian on screen. The HP of both the Plushian and the boss are shown on the top of the screen. Players must draw another 3 cards to keep in hand.

Play starts with the player's turn. To make a move, the player must place a card from hand into the action card slot. The game will determine which conditions listed on the card have been met and will play out the respective action.

For example, if the action is an attack, the Plushian will carry out the animation and attack the enemy character. If a switch card – a card whose action calls for a change in card(s) at the end of the turn – is in the action slot, the number of cards to be switched must be taken from the Plushian card slots. The Plushian will be updated to its new form.

Once the action is carried out, after every turn, discard the cards from the action slot. It is then the boss character's turn.

After the end of each player's turn, if the player has no more cards in hand, 3 cards should be drawn from the deck.

Game ends when the opponent of each stage is defeated, or when the player's Plushian runs out of HP.

### 1.3 – Characters

Name		Kitsune	Element	Fire
Plushian’s Stats				
Health Points		30	Attack Power	20
		★★★★☆☆		★★★★☆☆
Plushian’s Skills				
Type of Skill		Description	Additional Condition	
Regular Skill	☆☆	Deals 20 damage	If Plushian’s element is Fire, grants additional 5 damage	
Special Skill	☆☆☆	Deals 60 damage	If 2 Kitsune cards are currently in play, this ability is activated	
Passive Skill	☆☆☆☆	Grants additional 20 damage (every turn)	If 3 Kitsune cards are currently in play, this ability is activated as a passive skill	

Name	Sotong	Element	Water
Plushian’s Stats			
Health Points	25	Attack Power	0
	★★☆☆☆		☆☆☆☆☆
Plushian’s Skills			
Type of Skill		Description	Additional Condition
Regular Skill	☆	Heals 25 HP	If Plushian’s element is Water, heal additional 5 HP
Special Skill	☆☆	Full heal	If 2 Sotong cards are currently in play, this ability is activated
Passive Skill	☆☆☆	Heal 5 HP (every turn)	If 3 Sotong cards are currently in play, this ability is activated as a passive skill

Name	Diyang		Element	Earth
Plushian’s Stats				
Health Points	40		Attack Power	10
	★★★★☆			★★★★☆
Plushian’s Skills				
Type of Skill		Description	Additional Condition	
Regular Skill	☆	Deals 10 damage	If Plushian’s element is Earth, deals additional 5 damage	
Special Skill	☆☆	Deals 20 damage and grants 50% defence	If 2 Diyang cards are currently in play, this ability is activated	
Passive Skill	☆☆☆	Grants 25% defence (every turn)	If 3 Diyang cards are currently in play, this ability is activated as a passive skill	

Name	Ciruttai		Element	Light
Plushian’s Stats				
Health Points	30		Attack Power	10
	★★★☆☆			★★☆☆☆
Plushian’s Skills				
Type of Skill		Description	Additional Condition	
Regular Skill	☆	Deals 10 damage		
Special Skill	☆☆	Deals 10 damage and blind opponent	If 2 Ciruttai cards are currently in play, this ability is activated	
Passive Skill	☆☆☆	Grants 10% chance to blind opponent (every turn)	If 3 Ciruttai cards are currently in play, this ability is activated as a passive skill	
Unique Skill		Replace any 1 Plushian card that is currently in play with any 1 new card drawn from the deck or the hand		

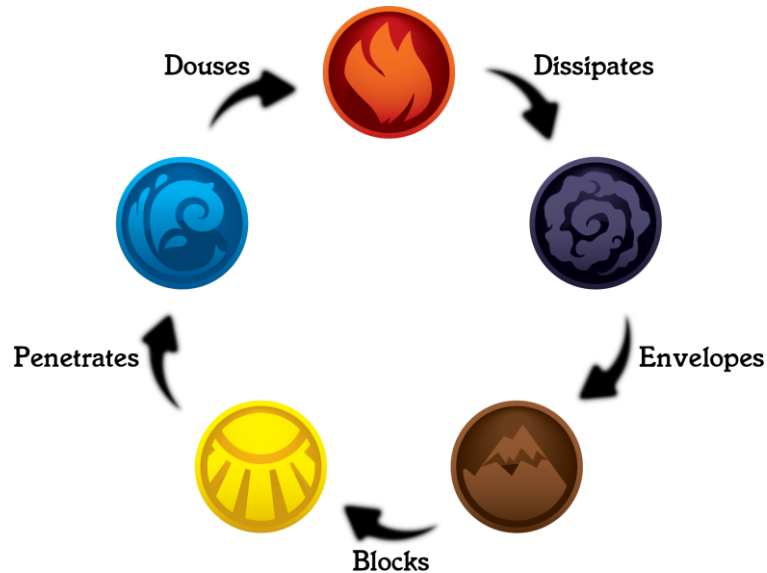
# Game Design Document

Name	Hookage		Element	Shadow
Plushian's Stats				
Health Points	30		Attack Power	10
	★★★★☆			★★★★☆
Plushian's Skills				
Type of Skill		Description	Additional Condition	
Regular Skill	☆	Deals 10 damage		
Special Skill	☆☆	Deals 10 damage and confuses opponent	If 2 Hookage cards are currently in play, this ability is activated	
Passive Skill	☆☆☆	Grants 10% chance to confuses opponent (every turn)	If 3 Hookage cards are currently in play, this ability is activated as a passive skill	
Unique Skill		Replace any 1 Plushian card that is currently in play with any 3 new cards drawn from the deck		



## 1.4 – Game Play Elements

### 1.4.1 – Elements



**Figure 1: Element Relationships**

Fire element:	The attack element with mostly damage-inflicting skills. When matched with another of the same element, damage increases. Banishes Shadows.
Shadow element:	The debuff element with crowd control skills. Envelopes the Earth.
Earth element:	The passive-aggressive element with both attack and buff skills going for it. When matched with another of the same element, adds defence and nullifies weakness. Grounds Lightning.
Light element:	A debuff element with the ability to blind the opponent. Penetrates Water.
Water element:	The passive element with mostly healing and buffing skills. When matched with another of the same element, heals become more powerful. Douses Fire.

#### 1.4.2 – Action Types

- Regular Skill:** The basic action that cards in the action slot will carry out even if the conditions of the other action types are not met.
- Special Skill:** An action that replaces the Regular Skill. It is only active and cast if conditions are met. The conditions are for the Plushian card slots to have either 1 or 2 cards of the same element. If only one of the same element is present, the chance of casting the Special Skill is 50%. With 2 cards of the same element in the Plushian card slots, the Special Skill has a 100% chance of casting.
- Passive Skill:** An action that adds on to other skills as long as the right conditions are met. To activate, a complete set – when all Plushian card slots activated by cards that are of the same element – is required.
- Unique Skill:** A skill that indirectly affects the attack, defence and other abilities of the Plushian. Requires the player to change one or more cards that are in play as a card in the Plushian card slot. Ensures the player does not keep a ‘trump card’ combination for the whole stage. Also ensures the player has a chance to improve their Plushian card combination if it is not effective enough against the current opponent.

### ***1.5 – Game Physics and Statistics***

#### **Movement**

The player character – the Plushian – is made of 3 body sections, the head, upper body and lower body. As the Plushian is made of an unpredictable combination of 3 of all available characters' body parts, all section's 3D models are individually created, but they are designed to be smoothly connected so that there are no gaps in the whole Plushian model. This smooth continuity extends to the movement physics. The 3 body models, of any combination at any point during gameplay, should animate and move in sync with each other as if the Plushian was made of a single model.

#### **Projectiles**

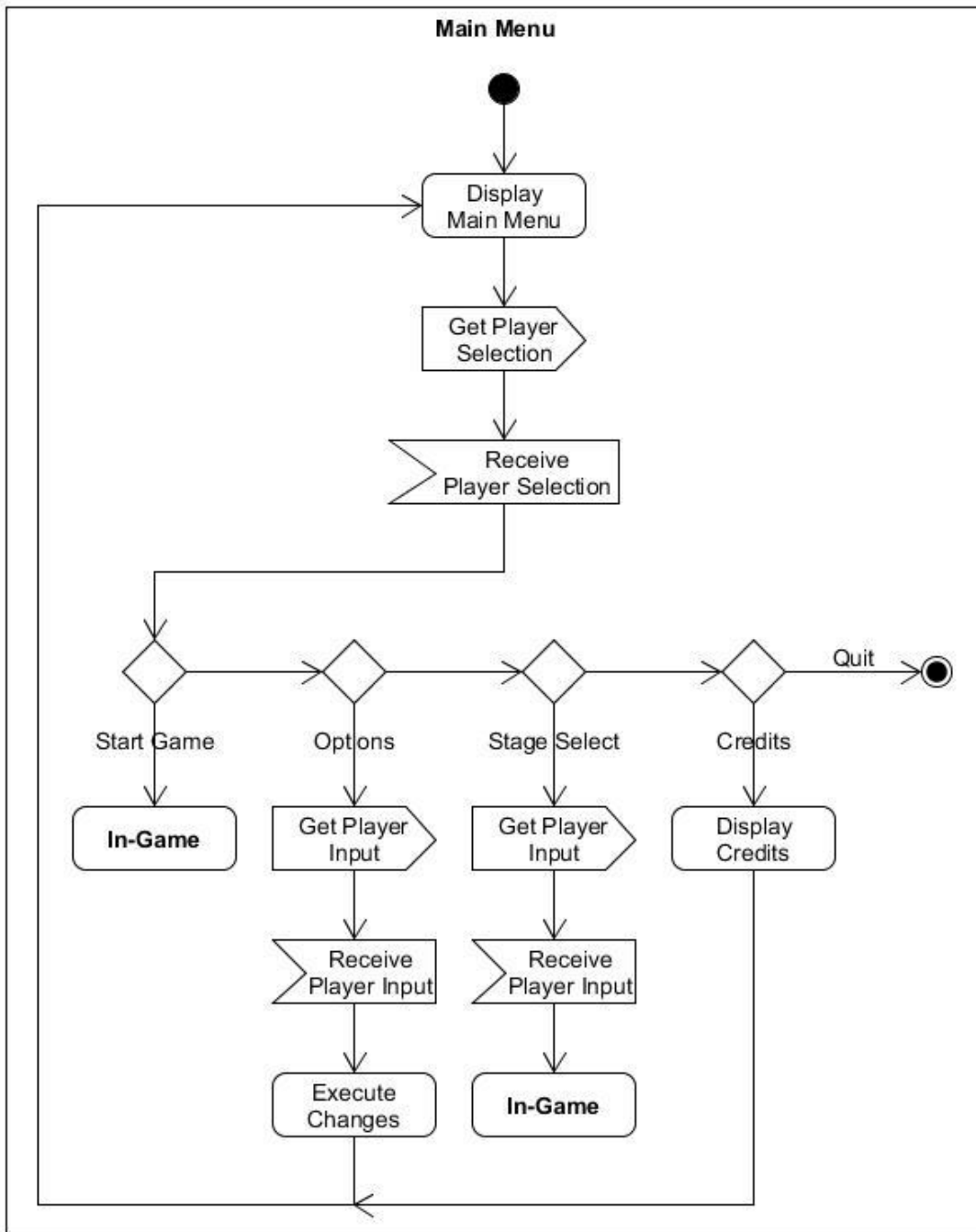
The projectile attacks in the game – fireball, lightball and shadowball – move at a fast but constant pace. The spawn from the caster's position and heads directly for its target.

### ***1.6 – Artificial Intelligence (AI)***

The AI characters in the game – the player's opponents – have different attack capabilities. Those with melee attacks will have simple movements that searches for the player's Plushian position and move forward toward it. As there are no physical obstacles between the player and enemy characters, the AI movement is simple and straightforward. In addition, at any one time, there will only be one attacking opponent AI, hence, there is no need for avoiding friendly fire amongst AI.

## 2 – User Interface (UI)

### 2.1 – Flowchart



**Figure 2: UI Control Loop**

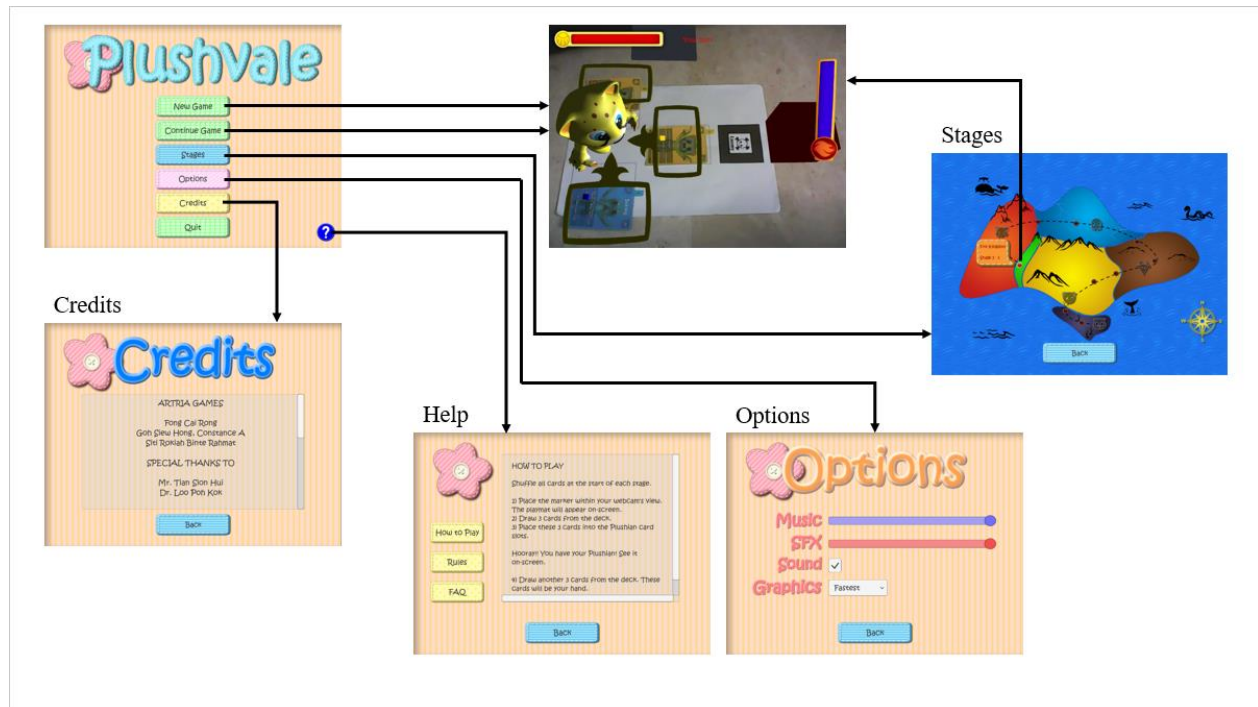


Figure 3: UI Flowchart

## ***2.2 – Functional Requirements***

### **2.2.1 – In-game Screen**

The 3D aspects of gameplay are shown here, along with the HUD.

The following elements are shown in the HUD:

- **Player Health Bar**  
Indicates how much health the player character has.
- **Boss Health Bar**  
Indicates how much health the boss character has.
- **Buff Bar**  
Indicates current activated buffs and debuffs.
- **Elemental Icons**  
Indicates element of boss and player.
- **Turn Text Box**  
Indicates whose turn it is.

### **2.2.2 – Main Menu Screen**

The main menu screen will display the three main options that the user has.

These are:

- **New Game**  
Starts a new game.
- **Continue Game**  
Continue from last game stage
- **Stages**  
Allows user to select any previously played stage, to replay
- **Options**  
Allows the user to enter the options screen to modify settings.
- **Credits**  
Displays the list of developers of the game.
- **Help**  
Provides guidance and information on the rules of the game and an FAQ.
- **Quit**  
Quits the game application.

### 2.2.3 – Options Menu Screen

The options screen will display the aspects of the game that can be changed. This is needed to provide a more comfortable gaming experience based on the user's preferences.

The customisable settings are:

- **Music Volume**  
The volume of background music in the game.
- **Sound Volume**  
The volume of all other audio – sound effects – in the game.
- **Graphics Quality**  
The quality of the graphics in-game.

### 2.2.4 – Credits Screen

Displays a list of the development team members – the members of Artria Games – and sources of used assets. The following is the button available on this screen:

- **Back to Main Menu**

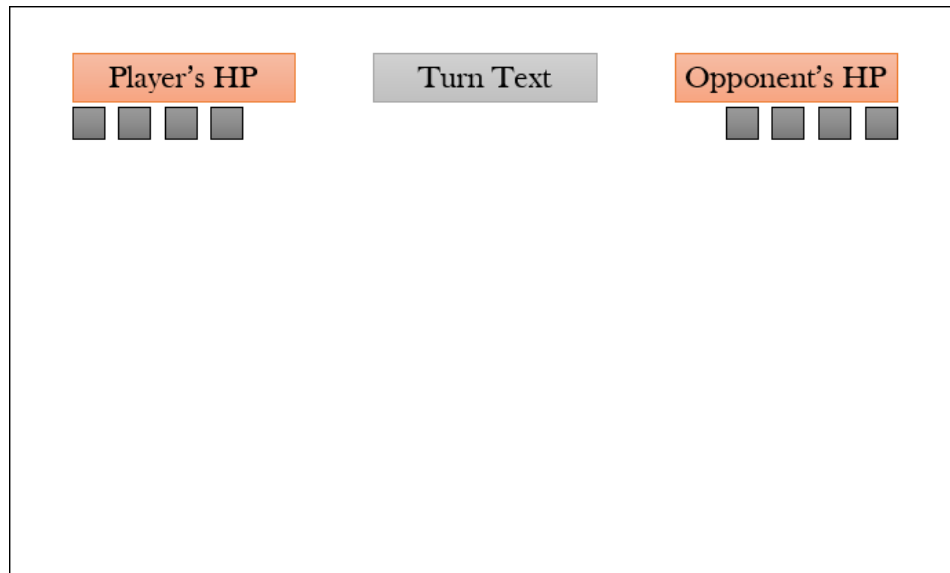
### 2.2.5 – Paused Menu Screen

The paused menu appears when the player pauses the game. From there, the player has the following options available:

- **Resume**  
Closes the paused screen and unpauses the game.
- **Retry**  
Restarts the stage.
- **Options**  
Opens up the options menu.
- **Main Menu**  
Quits the stage and return to the main menu.
- **Help**  
Provides guidance and information on the rules of the game and an FAQ.
- **Quit**  
Hides the pause menu and display confirmation of quitting the game.

## 2.3 – Mock-ups

### 2.3.1 – In-game Screen



**Figure 4: In-game Screen Layout Mock-up**

Both the Player's HP bar and the boss opponent's HP bar will show their respective characters' health points. Minion opponents will not have their HP bar as part of the HUD; their HP will be shown above their heads. The Turn text box indicates to the player whether it is the player's turn or the enemy's turn.

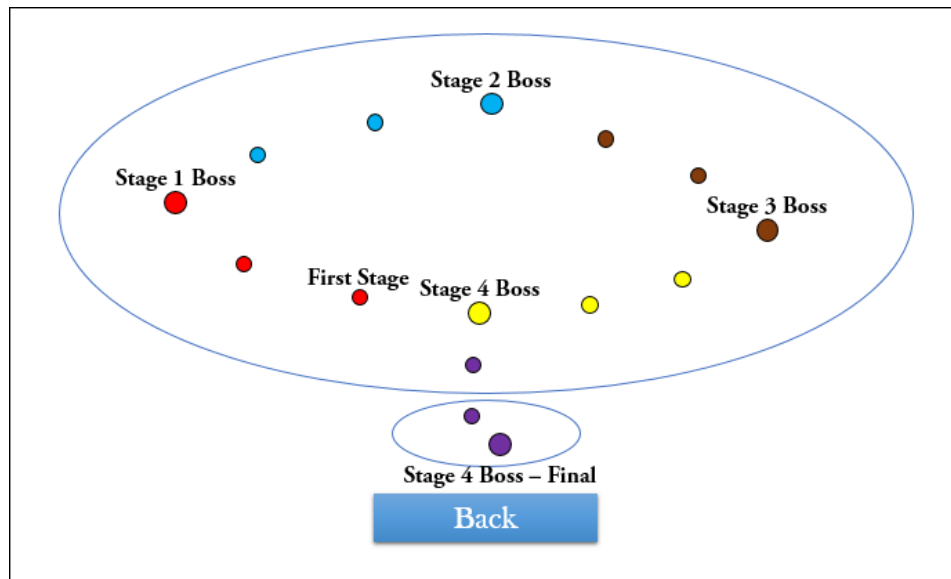
### 2.3.2 – Main Menu Screen



**Figure 5: Main Menu Layout Mock-up**



### 2.3.3 – Stages Menu

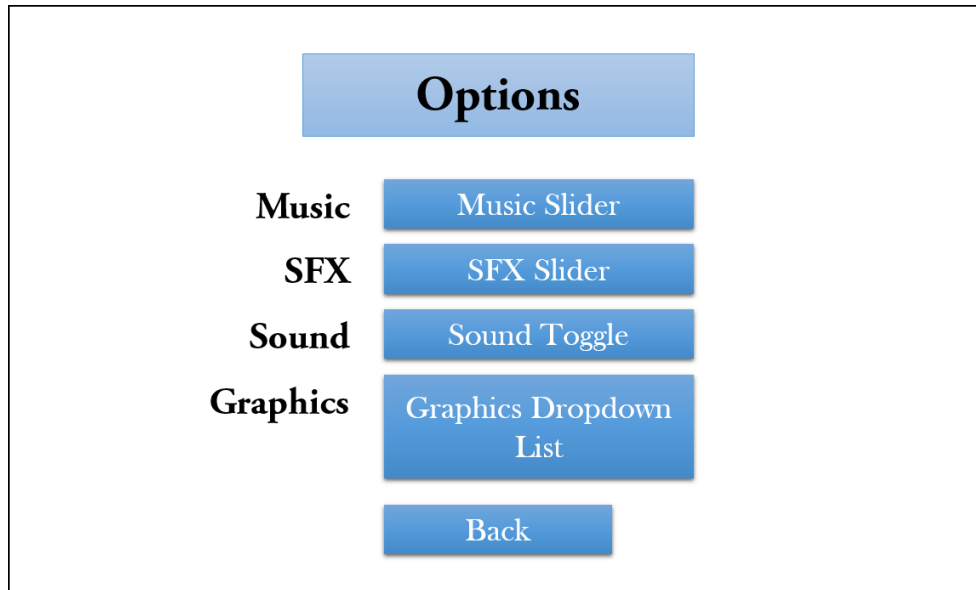


**Figure 6: Stages Layout Mock-up**

The stages screen features a large layout of a map representing the land of Plushvale. This map layout is represented by the two ovals as shown above in Figure 5. Within the map are a dispersed group of buttons represented by the small dots above. Each button leads to a specific stage. The smaller buttons lead to minion stages while the larger dots lead to stages against a boss opponent.

Only the button labelled 'First Stage' is unlocked at the beginning. Subsequent stages will unlock in a clockwise order, ending with 'Stage 4 Boss – Final', when players have completed the respective stages.

### 2.3.4 – Options Menu Screen

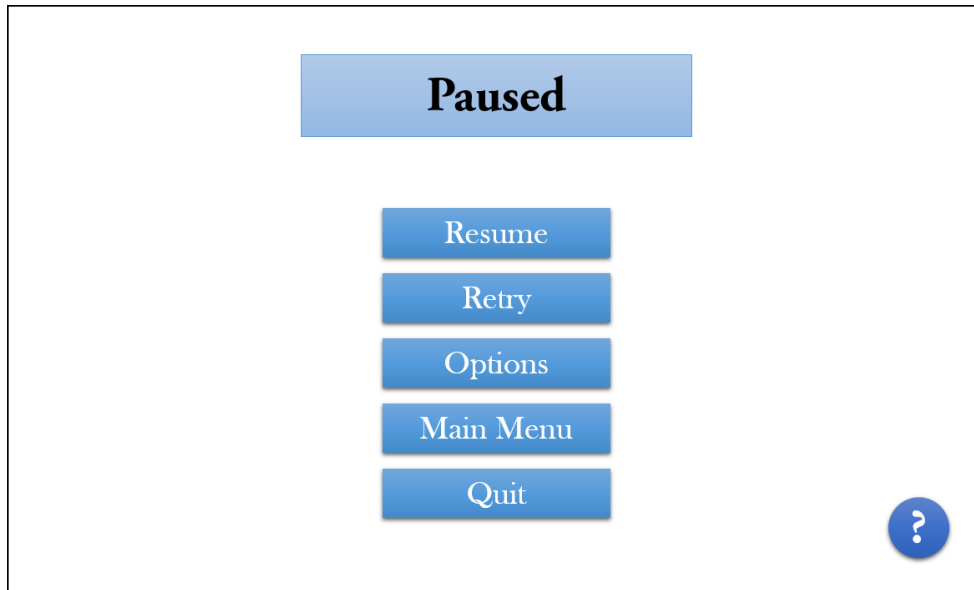


**Figure 7: Options Layout Mock-up**

Music and sound effect (SFX) volumes are adjustable via sliders. There will be a master volume control to enable and disable both background music and SFX; this master volume control is labelled 'Sound' in Figure 6.

Graphic settings can also be adjusted via a dropdown list that features 6 settings – Fastest (Worst), Fast, Simple, Good, Beautiful and Fantastic (Best).

### 2.3.5 – Paused Menu Screen



**Figure 8: Paused Menu Layout Mock-up**

The paused menu allows the player to resume the current stage or to restart the stage. It also provides access to the options menu and help menu if the player needs to review rules and FAQ. If the player wishes to stop playing and exit the stage, they may choose to return to the main menu or quit the whole Plushvale application.

### ***2.4 – GUI Objects***

Please refer to Section 2.2 – Functional Requirements above.

### **3 – Art and Video**

#### **3.1 – Overall Goals**

The game theme is supposed to appeal to people of all generation and ages. It will have bright bubbly colours to match the more adorable character designs.

#### **3.2 – Art and Animation**

The playable characters – Plushians – are so named due to the inspiration of plush toys that appeal to younger audiences. Plushians will take on a simple form without too much details on the body. The Plushians will have a soft, huggable look with some stitch textures to accent the design, in order to reflect a plush toy texture. The models will have little straight and sharp edges because they would take away from a soft look. They also will not adorn any clothing.

UI will consist of simple shapes and bright colour schemes.

##### 3.2.1 – Marketing and Packaging

- Cards                    x15
- Deck Box                x1
- Marker                  x1
- Game Manual        x1
- Game Trailer        x1

##### 3.2.2 – 3D Models

Plushians

- Kitsune
- Hookage
- Ciruttai
- Diyang
- Sotong

3.2.3 – Cinematic

<b>Cinematic 1 – Intro Scene</b>	
<b>Type</b>	Stop motion flash animation
<b>Duration</b>	50 seconds
<b>Purpose</b>	Provide backstory from players point of view

**Table 1: Cinematic 1**

<b>Cinematic 2 – End Scene</b>	
<b>Type</b>	Stop motion flash animation
<b>Duration</b>	20 seconds
<b>Purpose</b>	Provide conclusion to game, with credits and special thanks

**Table 2: Cinematic 2**

## **4 – Sound and Music**

### ***4.1 – Overall Goals***

In this game, the music is light-hearted and cheerful. There will be no need for sounds of disaster, like explosions.

### ***4.2 – Sound Effects***

Sound effects is needed for the following:

- UI Button Clicks
- Pause and unpause
- Initial Plushian Summoning  
A celebratory tone to indicate the player's first summon of a Plushian at the beginning of the game
- Skill Usage  
Have different sound effects for different attacks, buffs, heals and other skills, for both player's Plushian and the boss character
- Element Change  
Play an appropriate elemental sound effect that suits the Plushian's new element whenever it changes element.
- Turn Change to Player's Turn
- Victory & Defeat

### ***4.3 – Music***

Background music is needed for the following:

- UI Screens
- In-game Battle
- Victory Screen
- Defeat Screen

## **5 – Level Requirements**

### ***5.1 – Levels Structure***

Plushvale has a linear structure of levels. There are 15 stages, starting with Stage 1. Subsequent stages are only unlocked and playable when the player successfully defeats the enemy character in the previous stage.

### ***5.2 – Asset Revelation Schedule***

The level design reveals the AI elemental types in the following order, starting with Stage 1:

Stage 1 – 3, Fire

Stage 4 – 6, Water

Stage 7 – 9, Earth

Stage 10 – 12, Light

Stage 13 – 15, Shadow