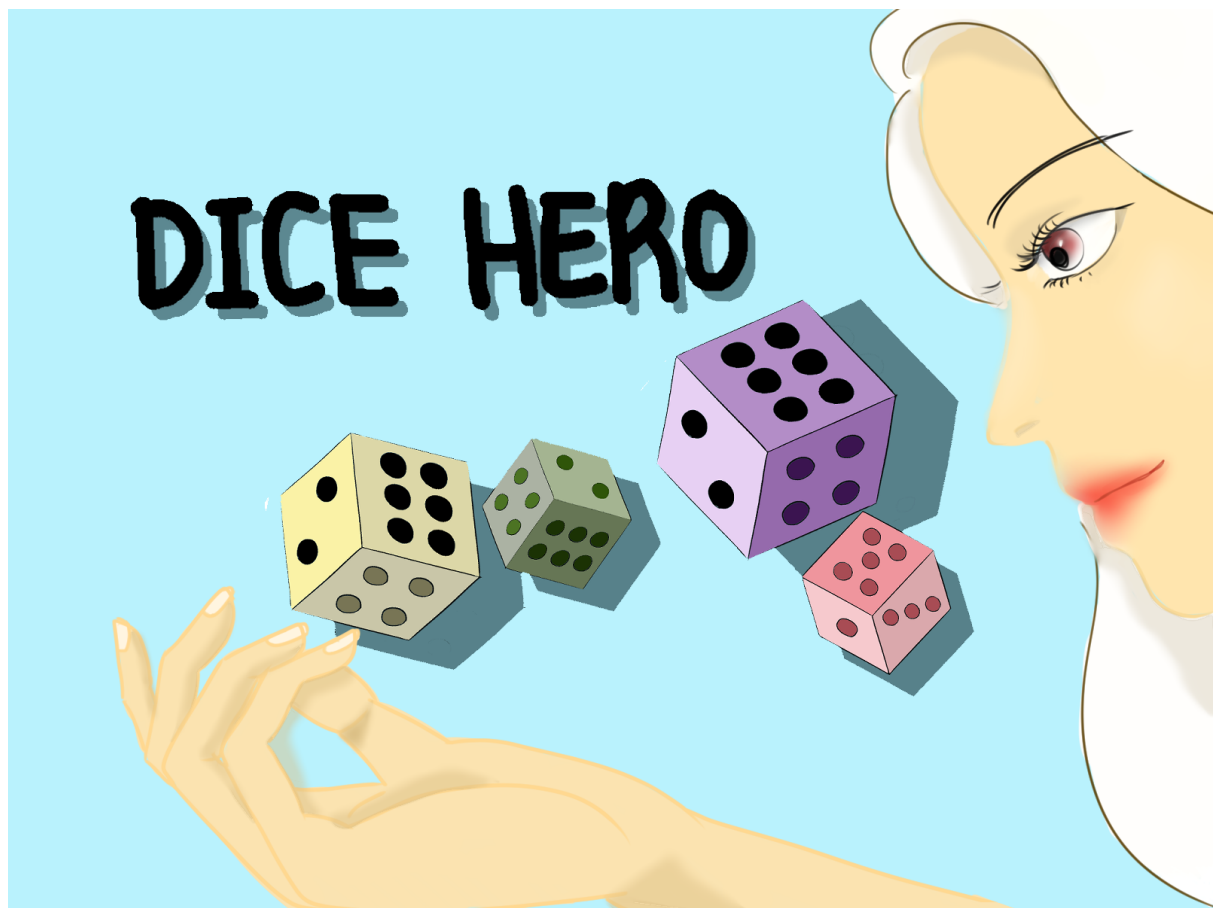# Dice Hero

Game Design Document

Producer: Daehyeon Kim
Technical Director: Junsu Jang
Lead Designer: Taeju Kwon
Test Manager: Jihyeon Song

High Concept

"Dice Hero" is a turn-based RPG game in which the four traveling heroes destroy the enemy by most strategic choice when they are in a random situation, and get a variety of materials and make a great equipment, and kill the last boss.

Summary

There is a famous game where you should make the best choice in the result of the dice. The Blue Marble. Our game is an RPG game of the same way. It's a game where you make the best choice in a random situation, collect money and materials, equip the best equipment, and defeat the final boss.

- **Farming System**

    Chapters 1 through 6, the players can get specific items per chapter. The appearance of items is probability. It will be used for combination or buying great equipment.

- **Dice - In Game**

    The player's actions are all determined to roll the dice. There are a pair of dice to play the board game. The best choice should be made using the dice and tokens appropriately.

- **Dice - Item System**

    There is the combination point. For getting high combination points, good dice eyes will be needed.

- **Characters**

    According to the story, there are four characters. 'Warrior', 'Mage', 'Thief' and 'Archer'. There are each special skills and abilities. Every character can move and attack the monsters in the board game.

Story

Ancient dice heroes lost the battle against the devil king. The fatally wounded demon king gave a curse of bad luck to the dice village, and ran away. The dice villagers, who relied on the power of the dice, had been living a hard life for a long time because there were no more than four eyes on the dice. And the devil king was dreaming of rehabilitation. Over time, the curse of the devil weakened, and children who overcame the curse were born. The children became heroes, set out on their journey to prevent the devil king from coming back again.

Game Flow

- **All scenes**
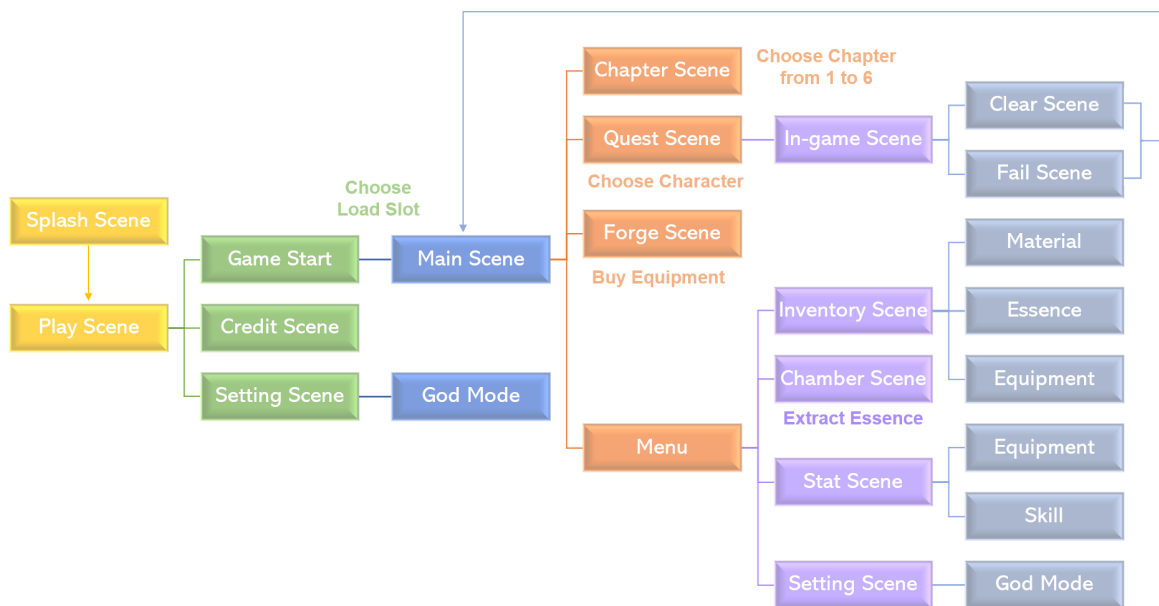
- **In-game flow**
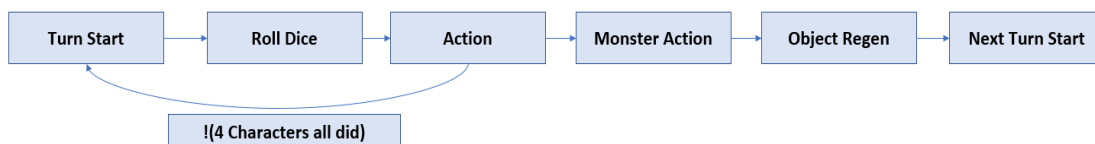
When the new game starts, only a playable stage is the first stage of chapter1. If the stage is cleared, the next stage will be changed to playable. The purpose of the stage is different. There are 3 kinds of quest. Proceed with the stage, knock down the boss of the chapter, and move on to the next chapter. As the chapter changes, the difficulty increases rapidly, but the player can also proceed quickly without 'farming' in the hope that dice will show nice eyes. Of course, the player can safely farm and proceed. Players should choose between the time it takes to repeat the stage until good dice luck or the time to farm goods and clear the stage with excellent items safely. If the player chooses farming, the player has to note that the chamber system, which will be used to get essence for excellent equipment, must also be followed by the luck of the dice to achieve the desired results.

Initially, it will be largely influenced by in-game dice luck, but when the player learns skills and is ready to use new magic, the importance of in-game dice luck will be relatively low. All the probability is constant, so the player will have to try many times to get what they want quickly. So the player will have to try to raise the level to get new skills and gather materials to extract essence.

The first image will help you to know about the scene and the second image explain how the turn progresses in the in-game.

1. **play_scene**
   - **game start -> save and load -> game_scene_main**
   - **credit -> credit_scene**
     The player can see the credit. There are information about game and copyright.
   - **setting -> setting_scene**
   - **quit -> close window**

   The player can

2. **game_scene_main**
   The player can see basic information for this game. On left top side show the player status (level and gold). And there are lots of buttons to access.
   - **Chapter -> set chapter from 1 to 6**
   - **forge -> game_scene_forge**
     If the player has some materials, the player can get essences and change its weapons through the forge.
   - **quest -> game_scene_quest**
     And the player can be performed stages through variable quests.
   - **menu -> inventory, chamber, stat, setting, quit**
     Lastly, there is a menu button. The player can go inventory, chamber, stat and setting through this button.

3. **game_scene_quest**
   - **select each quest -> game_scene_ingame**
     The player can choose each quest and then move to the in-game scene.
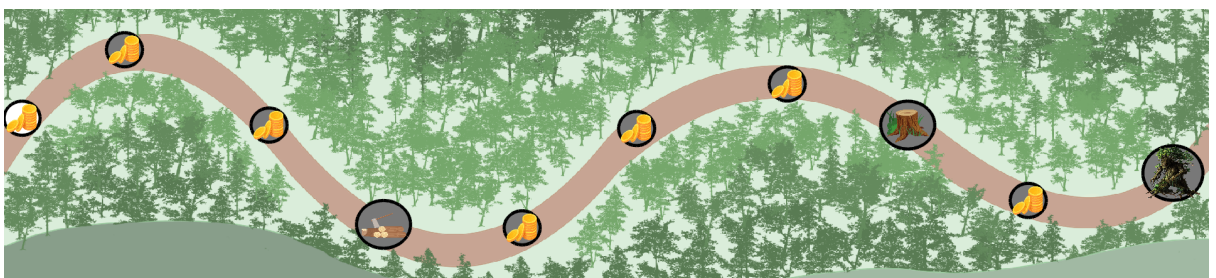
     However, not all quests can be performed simultaneously. As shown in this chapter, you can only challenge white-button quests. If you clear the first quest, you can also proceed to the next quest sequentially.
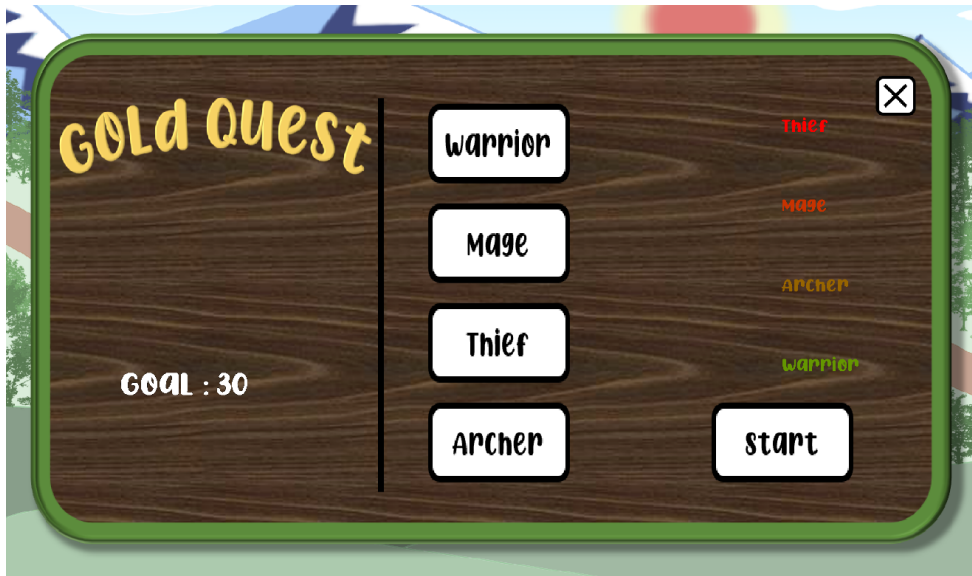
Before the start of the game, the player must choose the order of the characters (Warrior, Mage, Thief, Archer).

4. game_scene_ingame
- a pair of dice / three (or more) tokens / game board
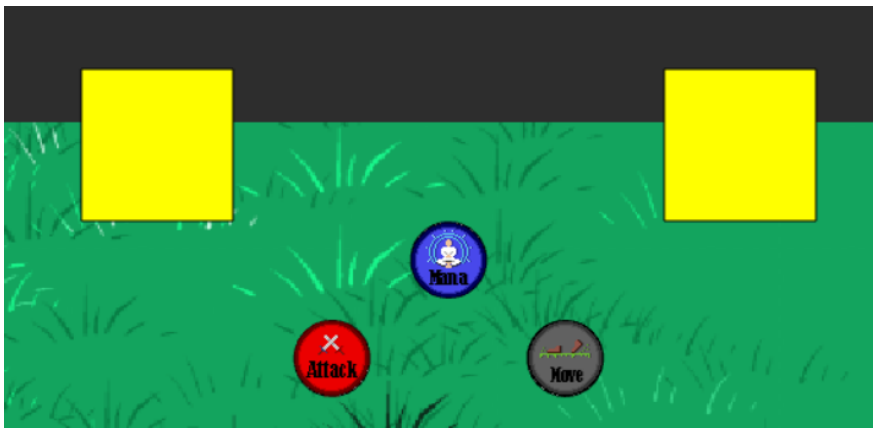
There are a pair of yellow dice for this board game.

- **Result**

If the player completes this stage game, the scene will change to 'game_complete_scene'.

If the player loses or presses back button during the game, the scene will change to 'game_fail_scene'.

After the result scene, the scene will go back to 'game_scene_main'.
And if player clear final quest of final chapter, the scene will change to 'ending_credit'.

Game Mechanics

1. Damage

- Each character has offense power(OF). The player can damage this much.
  Give Damage = OF * Number of Dice Eyes * 0.5

- The player can use the magics. If the player uses attack magic, damage this much.
  Give Damage = OF * Magic's Damage

- The monster will damage proportionally to his remaining HP. Each character has Defense power(DF). The monsters can damage this much.
  Receive Damage = (Remaining HP - DF) * 0.996^DF

- The bosses will damage the player with their own pattern. It usually gives a percent of the character's remaining HP.

2. EXP System

Players have levels for each individual game. The game EXP is related to the in-game level. If the level rises by 6 in the game, the player will get 6 EXP after turning to the main screen.
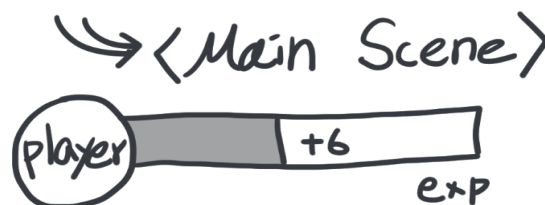
3. Reward System

Failure to achieve the purpose of the stage will result in the loss of property and experience gained in the in-game.

4. Item System

Combination System

Material1 + Material2 = Higher Level Material

ex) Genie's Lamp + Flame of Efret = Efret's Lamp

(A lot of formula for 42 different materials)

Material + High Material = Equipment
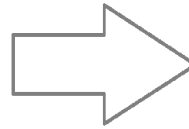
ex) Pearl + Efret's Lamp = Efret's Wands

(More formula)

Extract System

Get Essense (Chamber)

Material1 (2 point) + Material2 (5 point)

Dice Number 4 , 7

=>Formula : (2 + 5) * 4 * 7

Get Equipment (Forge)

Certain Level of Essence + Money = Equipment

★ **Two materials with Dice → Essence → Equipment**

It is simpler than initial design. The player get materials through in-game. And the player can extract random essence using two materials. Finally, the player can buy equipments using essence. All characters have suitable equipments(weapon and armor) and they can develop with these.

Game Characters

- ● **Player Character**

Class	Ability	Lv	Skill Name	Skill Details
Warrior	This character can have one more turn, when his rage status is full. Basically, Health status and defense status are high. There are skills according to the damage received.	5	Physical Training	Max HP +5 DF +2 AD +2
		11	Belligerent:	AD +2 Range +1 Rage cost 8->7
		18	Cannibalize	AD +3 Range +1 Rage cost 7->6 Drain
		26	Defender:	Max HP +15 DF +4 Range +1 Rage cost 6->4 Protection
		35	Unstoppable Power	DF +5 AD +5 Rage cost 4->2

Mage	This character has a mana token and he can make [magic](#), when his mana status is full. It has skills related to the level of magic that can be obtained.	5	Mana Flow	Mana regen 0->1 Mana cost 15->14
		18	Mana Emission	AD +2 Range +2 Mana regen 1->2 Mana cost 14->12
		25	Mana Reductio	Max HP +4 DF +3 Mana regen 2->3 Mana cost 12->9
		45	Mana Explosion:	AD +3 Range +5 Mana cost 9->5 Unlimited Magic
Thief	This character moves many times. For example, if the number of dice is 4 and the player uses a move token, The player can move it four times, one space at a time, and do different actions in the desired position. It has skills in money and movement that a player acquires.	5	Quick Hand Movement	Max HP +2 DF +1 AD +2 Range +1 Dodge 0%->10% Lockpicking
		11	Alacrity Training	Max HP +1 DF +2 AD +1 Range +1 Dodge 10%->20%
		18	Poisoning	Max HP +2 DF +1 AD +2 Poison Attack
		26	Backstep	Dodge 20%->33 Back Move Token
		35	Poisoning2	Max HP +1 DF +1 AD +3 Dodge 33% -> 50% Enhanced Poison Attack
Archer	This character has a high maximum range and high attack status. It has skills related to maximum range.	5	Focus	AD +2 Range +2
		11	Agility Training	Max HP +2 DF +1 AD +3 Range +2
		18	Focus2	AD +4

			Range +2
	26	Agility Training 2	Max HP +3 DF +2 AD +5 Range +2
	35	Penetration Shot	Range +24 2% damage of enemy's current HP
	45	Towering	Two attack toke 5% damage of enemy's current HP

- **NPC**

Class	feature
Tower of magic	It is located on the upper right side of the board. It sells low level magics.
Peddler	It moves around the board. It sells higher level magic than a magic tower.

- **Object**

Class	feature
Box	It gives something random such as a trap, reward box, material box...
Gold box	It gives many golds. It disappears after 3 to 7 turns.

- **Enemy**

Monster

Three kinds of monsters appear according to the concept of the chapter.
When killed, it gives experience value and little money or material items.
At the end of the player's turn, the monster damages the character in the same column as much as the monster's remaining strength.

Boss

The final stage of each chapter is the Boss Stage.
For example, if the player clear the 9th in chapter1, he can go to the next stage.
Boss is spawned on the upper middle side of the board.
It can attack at the same location and attack at other specific locations.

Chapter	Common monster	Boss
1	Slime, Wolf, Fairy	Ent
2	Mummy, Scorpion, Cactus	Genie
3	Steel Alloy Guard, Steel Auto Turret	Titan
4	Sea Snake, Soul of a shipwreck, Himantolophus	Kraken
5	Imp, Mimic, Hound of Hell	Black dragon
6	Efreet, Devil, Basilisk	Devil King

Game Resources

- **Gold**

  Gold is easy to obtain, and the player can purchase basic equipment with just gold.

- **Materials**

  There are about 50 kinds of material.

Chapter	Material
1	Fairy Wing, Fire Wood, Mandragora, Marble, Sapling, Stone, Wolf Skin
2	Cactus Flower, Cactus Throne, Genie Lamp, Mummy Bandage, Oasis Water, Scorpion Claw, Scorpion Sting
3	algorithm Cpu, Auto Gun Barrel, Battery, Lubricant, Robot Screw, Titan Alloy, Titan Engine
4	Esca, Fragment of Soul, Fragment of Wreck, Hydra Teeth, Kraken ink, Pearl, Treasure of Wreck
5	Diamond, Dragon Fire, Hell Ore, Imp Skull, Mimic Map, Mimic Ring, Soul
6	Basilisk Eye, Devil King Wish, Devil Nail, Efreet Lamp, Hell Fire, Sinner Blood, Sulfur

- **Level and EXP**

  In the main game, there are the main game level and the main game EXP. The main game level will maintain the in-game level on stage.

  In the stage, there are the in-game level and the ingame EXP.
  The player can up the in-game level via making that ingame EXP satisfying to ingame Max EXP.

  After winning the stage, the main EXP will be increased by how much in-game level was Increasing. EXP system

  When the player reaches enough levels, the player will get new job skills.

- ## Magics

  Magic is a resource that can only be maintained and used in-game. It has a rating, only the mage can use high rating magics.

  Magic is a resource that can only be maintained and used in-game. It has a rating, only the mage can use high rating magics.

  There are various magics -Attack, Healing, Move, Buff, Debuff- and players can get these via getting enough mana or a pedler or magic tower.

- ## Essences

  There are essences that relate the characteristics of each chapter. The players can get from certain materials in the forge. An essence is required to obtain new equipment.

  These are many themes, which are forest, sky, deep ocean. etc. Each theme has a representative color, such as green in the forest, blue in the sea, and dark red in hell.

- ## Weapons & Armor

Each character uses different types of weapons and uses the same type of armor. Each equipment is divided into four levels -Weak, Normal, Good, Perfect-. per theme. The equipment can be made with the essence of each theme at each level in a forge.

Characters	Warrior	Mage	Archer	Thief
Weapons	**Sword** with *Chapter concept item rating* power	**Wand** with *Chapter concept item rating* wisdom	**Bow** with *Chapter concept item rating* concentration	**Knuckle** with *Chapter concept item rating* sleek
Armor	**Armor** with *Chapter concept item rating* energy			

Game Environment

- **Chapter: 6 chapters and 10 stages**

Chapter	Concept
1	Forest
2	Desert
3	Island of Sky
4	Deep ocean
5	Underground(Hell Gate)
6	Hell

The player can play a different concept of the chapter.
Because, there are different materials and monsters for each chapter.
For example, the first chapter is 'forest'.

So, the player can collect sapling and finally, fight with the boss related to forest.
Also, there are gold quests in all chapters. The player should collect required gold. And if the player clears this quest, they get each EXP on the main screen.

- **Forge System**

Then, the key point of the 'Dice Hero' is the forge system. The main progression is dice. So, dice eyes are very important to play this game. Not only do we use this in a board game, but also in the combination system. If a player wants a high rating weapon, they must combine certain materials. And weapons can be purchased in the forge with the essence obtained from the combination of materials. After rolling the dice, different quality essences can be obtained according to the formula, and the level of the weapon that can be purchased depends on the level of the essence. And weapons are classified by occupation, and armor is common for all four characters.

Game Controls: Mouse Control
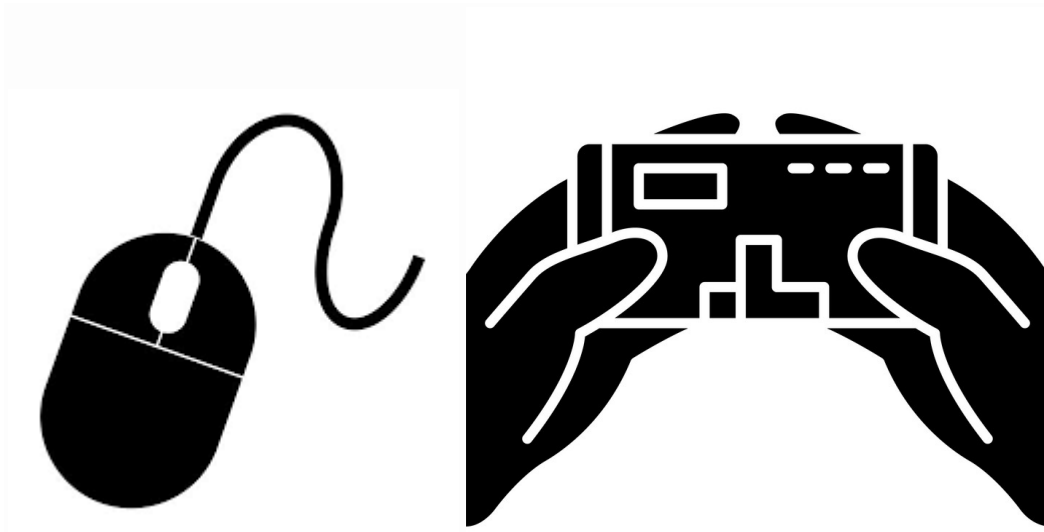
The player can control this game with only a mouse. Because the game style is a mobile game. So, the player can press the various buttons and scene changes and the requested action will be implemented. Behavior

Visual Design

In Game design

- **Tile design**

  This is tile design in Ingame Scene. The tiles gather together to create a square map with an empty center. The empty part in the middle of the map, contains information about the characters's hp, and the player puts the mouse on the character's name in a circle, the information is appeared, and the player . Each tile contains a random monster or box.
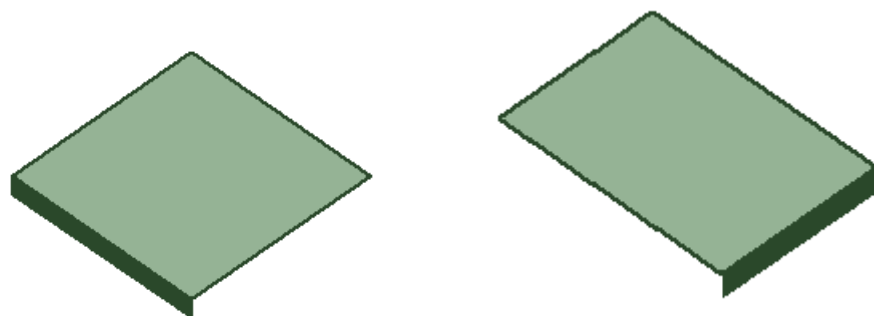
- **Token design**

Position

Token	Image	Explanation
Attack		This is the Attack Token of Ingame Scene. Roll the dice allows the player to move the tokens over the dice. The player can attack the monster by the number of dice.
Move		This is the Move token of Ingame Scene.
Mana		This is the Mana token of Ingame Scene. Mana only can use Mage.
Back		It's a token that can move backwards. Only Thief can be used.

- **Dice design**
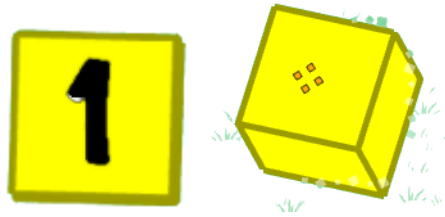
Dice has 6 eyes. The dice are three-dimensional. If player clicked dice, dice is roll like pictures. After rolling, the player can see the number of dice.

● **Chamber Design**

● **Monster design**

Chapter	Monster	Image	Explanation
1 (1.3x HP per stage)	Slime		HP : 4 EXP : 1 GOLD : 1
	Wolf		HP : 4 EXP : 2 GOLD : 2

	Fairy		**HP : 5** **EXP : 1** **GOLD : 1**
	Ent		**HP : 350** **EXP : 200** **GOLD : 500**
2 **(1.3x HP** **per** **stage)**	**Mummy**		**HP : 90** **EXP : 18** **GOLD : 18**
	Scorpion		**HP : 60** **EXP : 12** **GOLD : 12**
	Cactus		**HP : 55** **EXP : 10** **GOLD : 10**
	Genie		**HP : 6000** **EXP : 1500** **GOLD : 2000**
3 **(2x HP** **per** **stage)**	**Steel Alloy** **Guard**		**HP : 1000** **EXP : 200** **GOLD : 200**
	Steel Auto **Turret**		**HP : 800** **EXP : 160** **GOLD : 160**
	Titan		**HP : 8000** **EXP : 12000** **GOLD : 16000**
4 **(1.5x HP** **per** **stage)**	**Sea Snake**		**HP : 5000** **EXP : 1000** **GOLD : 1000**
	Soul of a **ship wreck**		**HP : 7000** **EXP : 1400** **GOLD : 1400**

	Himantolophus		**HP : 11000** **EXP : 2200** **GOLD : 2200**
	Kraken		**HP :1500000** **EXP :200000** **GOLD : 300000**
5 **(1.8x HP** **per** **stage)**	**Imp**		**HP :210000** **EXP : 42000** **GOLD : 42000**
	Mimic		**HP :300000** **EXP : 60000** **GOLD : 200000**
	Hound of Hell		**HP :210000** **EXP :60000** **GOLD : 60000**
	Black Dragon		**HP : 100000000** **EXP :18000000** **GOLD : 20000000**
6 **(2.1x HP** **per** **stage)**	**Efreet**		**HP : 4000000** **EXP : 800000** **GOLD : 800000**
	Devil		**HP : 7000000** **EXP : 1400000** **GOLD : 1400000**
	Basilisk		**HP : 3000000** **EXP : 600000** **GOLD : 600000**
	Devil King		**HP : 4000000000** **EXP : 800000000** **GOLD : 800000000**

User Interface design

- **Quest design**

Chapter	Gold Quest	Material Quest	Boss Quest

1				
2				
3				
4				
5				
6				

●   **Forge design**

The forge has lots of items. Players have available a new using the gold items and other

items. The forge is divided into items that can be used by the character.

Audio Design

The overall atmosphere of the music feels bright, but as the chapter progresses, the BGM gets darker as it gets closer to the final boss.

Scene	Type	Sound
MainScreen	BGM	Music is change from chapter to chapter
	Effect	Usually for click
Ingame	BGM	Like nature sounds
	Effect	All player's behavior

Behavior Design

●   **Dice do**

Each character has two dice. If a player clicks a dice, the dice will have a random number between 1, 6 with a rolling motion.

- **Token do**

Token has 3 types which are attack, move, and mana. It can interact with dice. If a player drags this token on dice, the dice and the token will disappear and do the following line.

Token	Explanation
Attack	The character can attack an enemy or object which is in the character's range. The damage is related to the number of dice. Damage
Move	The character can move as many times as the number of dice.
Mana	This token is only given to mage. The maze can stack mana as many as the dice number. If the mana is stacked more than a certain number of times, you can obtain magic randomly.
Back Move	It's a token that can move backwards. Only Thief can be used.

- **Magic do**

The character can use one magic on their turn. The magic does the following line.

Magic	Explanation
Fire ball	The characters can attack an enemy and object in one tile. Damage
Teleport	The characters can teleport over tiles clicked by the player.
Bomb	The characters can attack enemies and objects in the attack range. Damage
Resurrection	The characters can revive another character.

High Level Bomb	Characters can attack enemies and objects with a wider range of attacks. Damage
High Level Teleport	The characters can teleport farther away
Hellfire	The characters can attack an enemy and object in one tile. Damage

● **Player**

The player can do three actions per character with two dice and one magic in an in-game game. The player can use dies and tokens to move, attack, and special actions. The player can use magic one time if they want in their turn. The player can collect materials and money while achieving the goals of the stage. With the money and materials, you can make or purchase equipment in the main scene. The player can challenge the higher stage with the equipment.

● **Monster turn**

When the player's turn is ended, The monster's turn starts. Monsters attack characters in monster's tiles. And if there is a boss monster on the map, the boss monster attacks with different patterns. Damage

Boss & Pattern	Ent	Genie	Titan	KraKen	Black Dragon	Devil King
Even Odd Attack	x	o 3 phase	x	o 2,3 phase	o 2,3 phase	o
Target Attack	x	x	x	o 1,3 phase	o 1,2 phase	o
One Random Attack	x	x	o 2,3 phase	x	o 1,2 phase	o 3,4 phase
Random Attack	o 1,2 phase	x	x	o 1,2 phase	o 1,2,3 phase	o 1,2 phase
Stun Attack	x	x	o 2,3 phase	x	x	o 1,3 phase
Peripheral Attack	o 2 phase	o 1,2,3	o 1,2,3	x	x	o 2 phase

		phase	phase			
Collapse Attack	x	x	o 1,2,3 phase	o 1,2,3 phase	x	o 2,3 phase
Push Attack	o 1,2 phase	o 1,2,3 phase	o 1,2 phase	x	x	o 1,2 phase
DoT Attack	x	o 2,3 phase	x	x	x	o 1,3 phase

- **Equipment**

  The player can wear equipment from the main menu. These equipments increase and decrease attack damage and defense damage depending on their status.

- **Portrait**

  When the player attacks, The portrait appears in the center of the board on behalf of the character's hp. The player needs to choose a target.
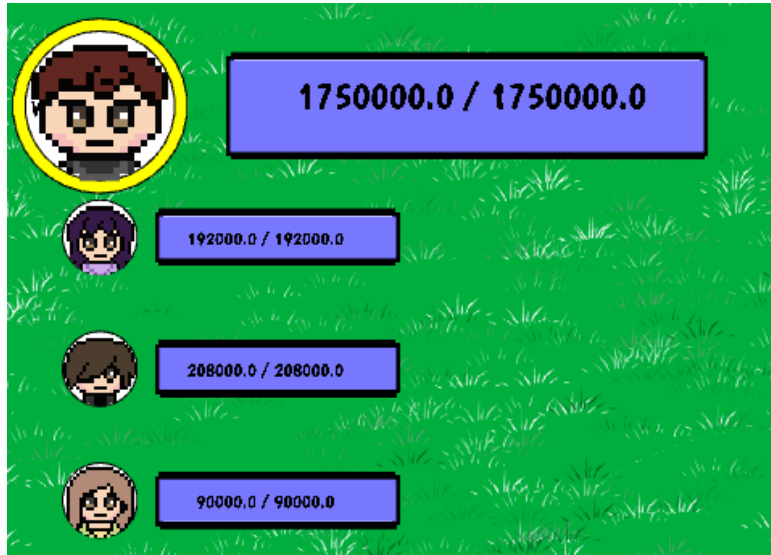
- **Information**

  When the player mouse over a portrait, character UI, monsters, and magic, Each information appears at the bottom right. Information has their status and details such as hp, mp, range...

Physics Design

- **Dice rolling**

  To implement the dice rolling, we create a 3d vector and an expression multiplied by the vector and rotation metrics.

- **Rect Area**

  To implement the rect object area, we create a rect area function.
  It was created for interaction with dice, button, magic, monster portrait, and tiles.

- **Circle Area**

  To implement the circle object area, we create a circle area function.
  Created for token, and some UIs interaction

Appendix B+: Miscellaneous

If there are aspects of your design that do not fit into any of the categories listed above, then create your own appendices for that material.

Cheat key
- Main

Cheat	How to use
God Mode	Bottom Right of Setting Only In-game

- In-game

Key	Cheats
Keyboard C	Get Stage Goal(Goal, Material)
Keyboard G	Random Magic
Keyboard H	Get Hellfire Magic
Keyboard Z	Level Up