

Taps

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• 01 •

Introduction



Taps

This is a *maze game* where warriors try to navigate a maze.



In this process, the warrior needs to avoid as many attacks from the enemy as possible, kill the monster to get the reward, and finally rescue the princess.

Keyboard control



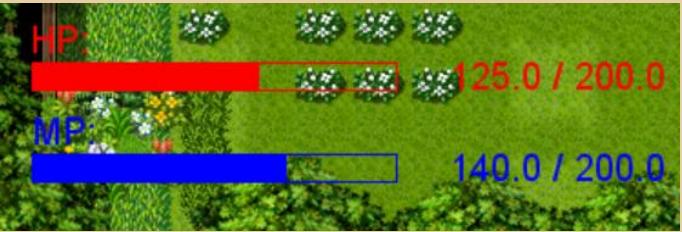
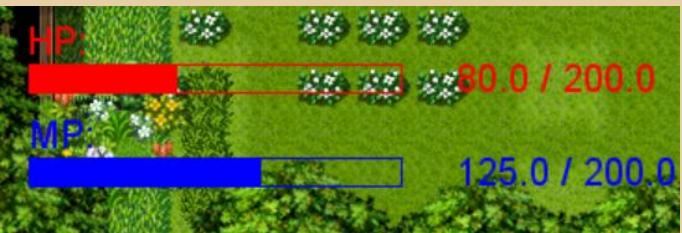
The "Left", "Right", "Up", "Dwon" keys: move the role

The "space" key: uses the common attack

The "1", "2", "3" keys: use special skills

The "4", "5", "6" keys: consume items

HP & MP



When a character is attacked by a monster, the character's HP decreases;

When the character releases special abilities, the character's MP value decreases.

Items increase a character's MP and HP.

The Key

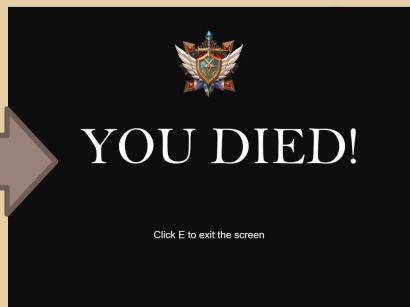


The character can only move in a certain area at first, and when all the monsters in that area are destroyed, the key drops.

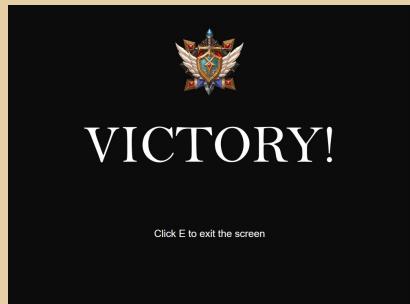
After picking up the key, the character opens the next active area until the last active area is opened, and the BOSS is knocked down to win the game.

Victory and Failure

When the character's HP is 0, the game fails.



When the character successfully rescues the princess, the game wins.





• 02 • Design Decisions

Start Menu



START



HELP



EXIT



Start Menu

► START

► HELP

► EXIT

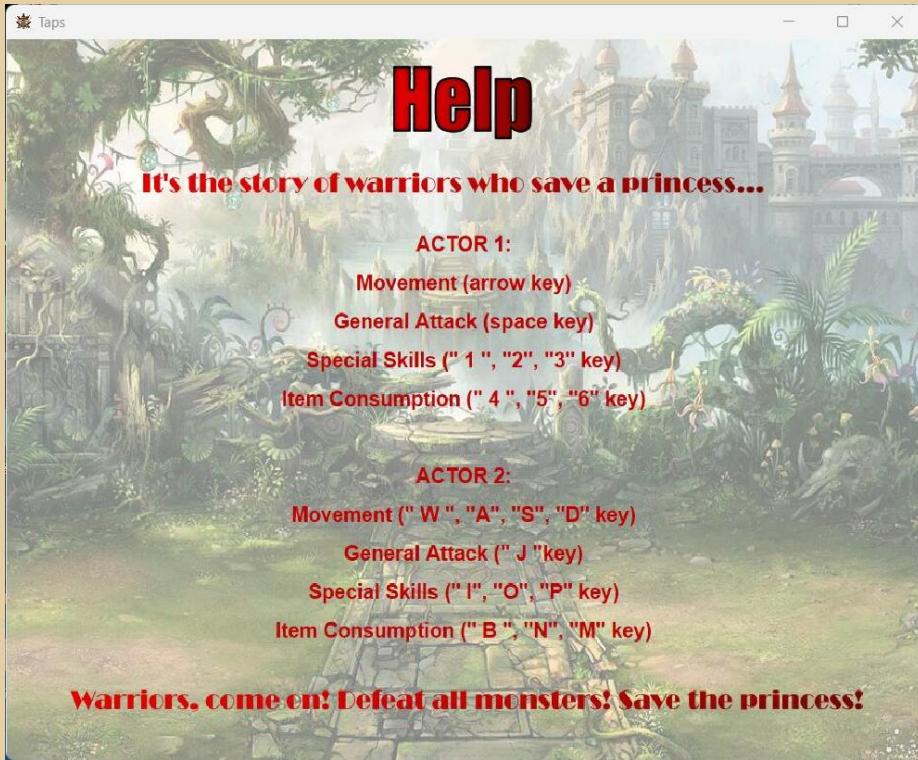


Start Menu

➤ START

➤ HELP

➤ EXIT



Mode

Easy Single	Hard Single	Double
Only one warrior	Only one warrior	Two warriors -- cooperation
Only one kind of enemy -- Monsters	Two kinds of enemies -- Monsters and Zombies	Two kinds of enemies -- Monsters and Zombies
Enemies appear in fewer numbers	Enemies are numerous and the health point is high	Enemies are numerous and the health point is high
	Big boss	Big boss
	Dark mode	Dark mode

Game Engine

The use of game engine improves the reuse rate of code and makes the code writing faster and more reliable.

```
public static void createGame(GameEngine game, int framerate);
public void init();
public abstract void paintComponent(Graphics graphics);
public abstract void update(double dt);
public void keyPressed(KeyEvent event);
public void mouseClicked(MouseEvent event);
public void changeColor(Color c);
void drawSolidRectangle(double x, double y, double w, double h);
public void drawText(double x, double y, String s, int size);
public Image loadImage(String filename);
public Image subImage(Image source, int x, int y, int w, int h);
public void drawImage(Image image, double x, double y);
public AudioClip(AudioInputStream stream);
public AudioClip loadAudio(String filename);
public void startAudioLoop(AudioClip audioClip);
public void stopAudioLoop(AudioClip audioClip);
```

Scoring System



For enemy:

Each time an enemy is attacked by a warrior, the health bar decreases to half. Enemies die when it reaches 0.



For warrior:

HP: Every time a warrior takes an enemy hit, his HP decreases by 15. When HP reaches 0, the warrior dies and the game ends.

MP: The use of special abilities decreases the MP value, and when the MP value is 0, the warrior can only attack the enemy with normal weapons. But Warriors can kill enemies to gain MP power packs.

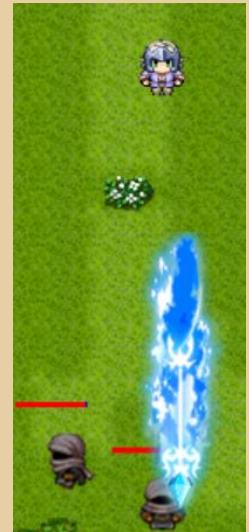
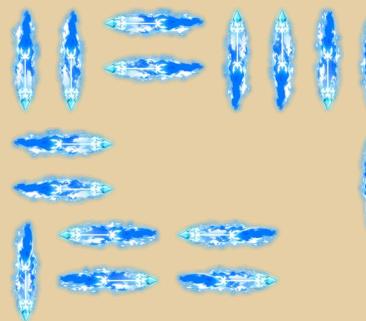


Sprites and Animation

*Actor and
Enemy*



Bullet



Sound Effects

- Background Music
- Click Sound Effect
- Victory Sound Effect
- Failure Sound Effect



Collision Detection



Between the **Warrior** and the **Monster**



Between the **Warrior** and the **wall**



Between the **Actors (Warriors and Monsters)**
and the **bullet**



Between the **bullet** and the **wall**

The Rolling of the Map



Horizontal direction



Vertical direction

As the characters move, the map rolls.

The map screen the player sees is constantly changing.



• 03 •

Architecture of the Game

Start Menu(Start, Help, Exit)

Select Mode

Easy Single

Hard Single

Double

Victory

Defeat

◆Game Engine◆

Running

GameFrame

Help

Win

Lose

SelectMode

Easy_bg

Hard

Double

◆ Game Object ◆

Monster

Actor

Bullet

ItemDrop

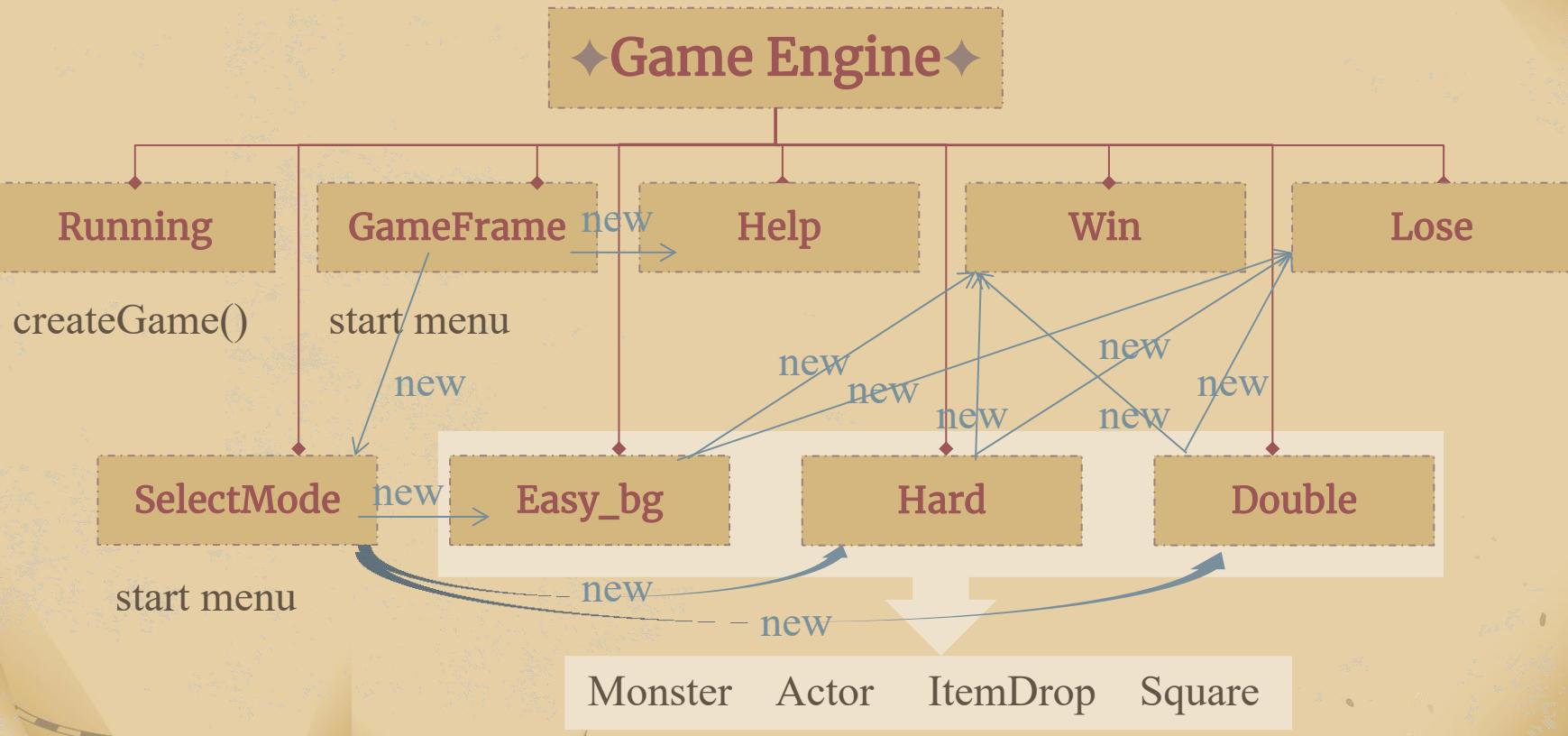
Square

Config

Direction

BulletPool

Map



◆ Game Object ◆

Monster

Actor

Bullet

ItemDrop

Square

Config

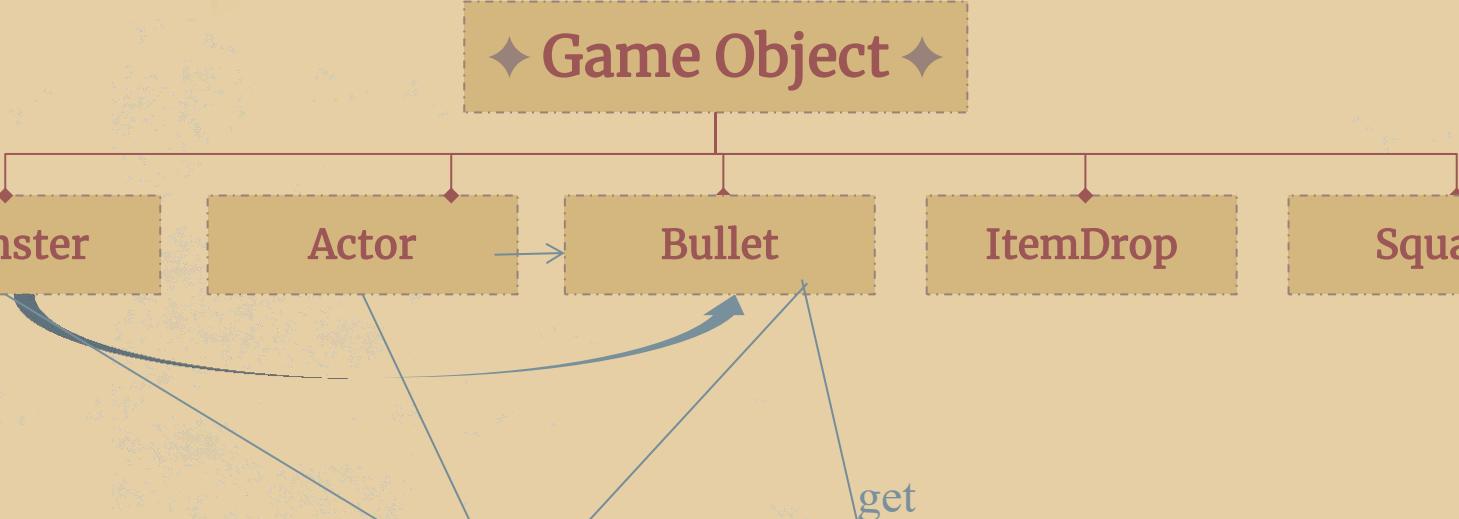
Direction

BulletPool

Map

initial value

get



04

Challenges



★ Challenges Faced During the Project ★



01. Wall painting

By importing the **map.txt** file to achieve this goal. In the map, **draw a square** at the value 1 in the map.txt file to block the character.



02. Strange phenomenon -- the warrior walks in the tree

This problem was solved by changing the order of the layers so that the tree layer was placed at the top.



03. Bullet drawing -- Perfect cutting of the image

Through drawing software to determine accurate coordinates, a lot of trial and adjustment.

05

Demo



[https://www.bilibili.com/video/BV1g8411Z7FP/?sp
m_id from=333.999.0.0](https://www.bilibili.com/video/BV1g8411Z7FP/?spm_id=333.999.0.0)

06

Improvement



How to Improve It in Future

◆ More Effects ◆

We wanted to add more special effects to the game to make it more lively and engaging.



◆ More Functions ◆

Stores where you can buy energy, armor that can withstand bullets, etc.

◆ Clumsy Monster ◆

Sometimes monsters can't turn around when they hit the wall. We will make the game more intelligent by making changes to the ai () function.

Thanks!

