STUDIO
SHODWE

# LINE ADVENTUR
# GAME

TEAM 3:

- TRẦN NAM ANH
- NGUYỄN ĐỨC HẢI
- NGÔ THỊ ÁNH DƯƠNG
- ĐẶNG MINH PHÁT

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# INTRODUCTION

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# INTRODUCTION

- **About the Game:**
  - **Genre**: Adventure, player as a discoverer.
  - **Gameplay**: Combines interactive scenarios & narrative-driven elements.
  - **Experience**: Mentally stimulating and emotionally relaxing.
- **Development Objectives (for Team):**
  - **Apply OOP Concepts:** Inheritance, Encapsulation, Polymorphism.
  - Learn & Adhere to **SOLID** Principles.
  - Practice **Common Design Patterns**.
  - Strengthen **theoretical knowledge** & practical **software engineering skills**.

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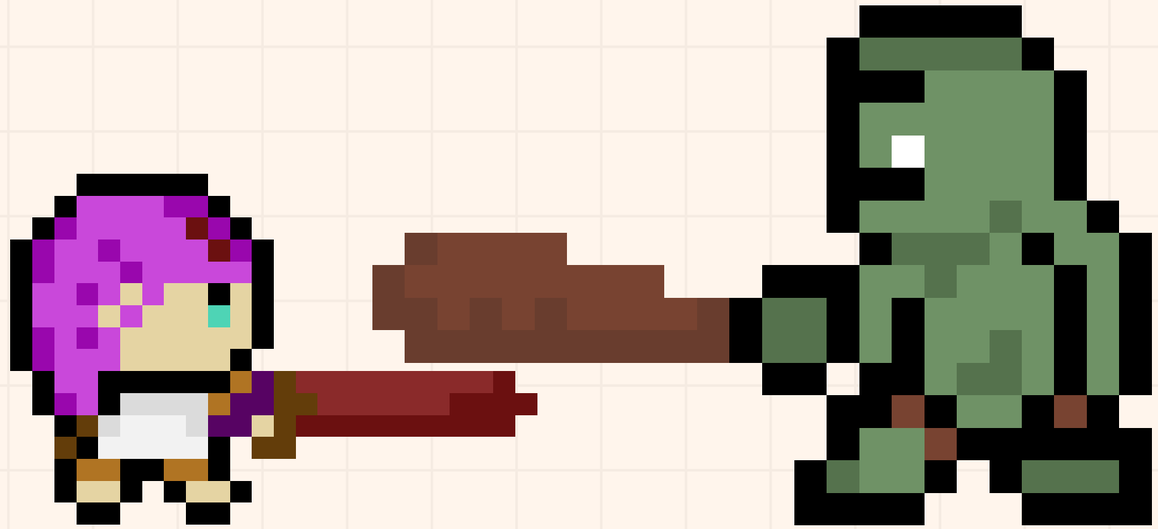
# **PROJECT**
# OBJECTIVES

- A creative, thought-provoking and interesting game
- The Object-Oriented Programming course to the real-life scenarios
- Program collaboration



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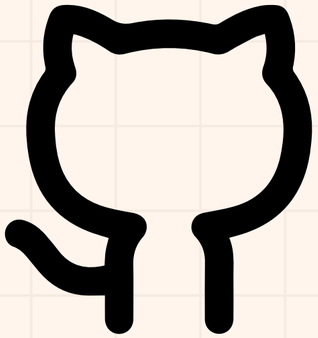
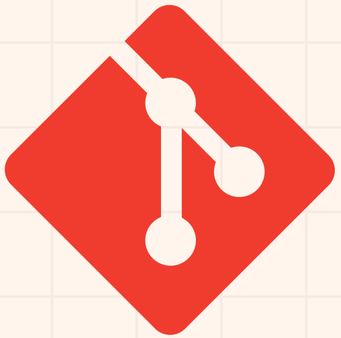
# **TECHNIQUES** & TOOLS USED

- Programming Language: **Java**
- Integrated Development Environment (IDE): **IntelliJ**, **VSCode**.
- Version control and collaboration: **Git** and **GitHub**
  - Git: used to track all versions of change.
  - GitHub: used for creating, storing, managing and sharing code.
- **Piskel**: draw pixel images.



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# GAME DESCIPTION

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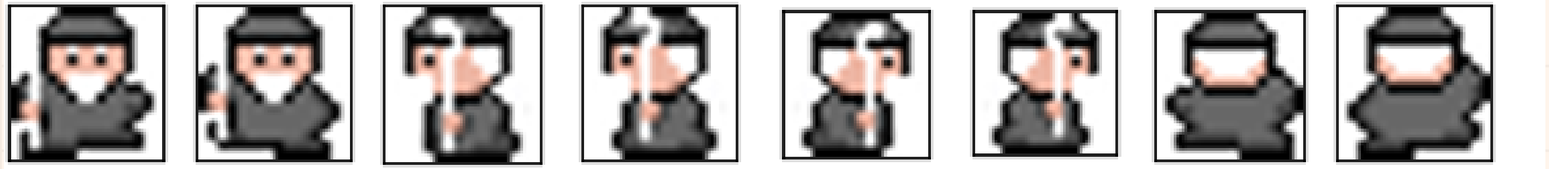
# DESIGN

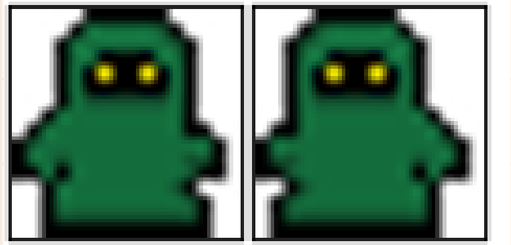
## 1, Character

MAIN
CHARACTER

NPC
OLD MAN



NPC
MERCHANT



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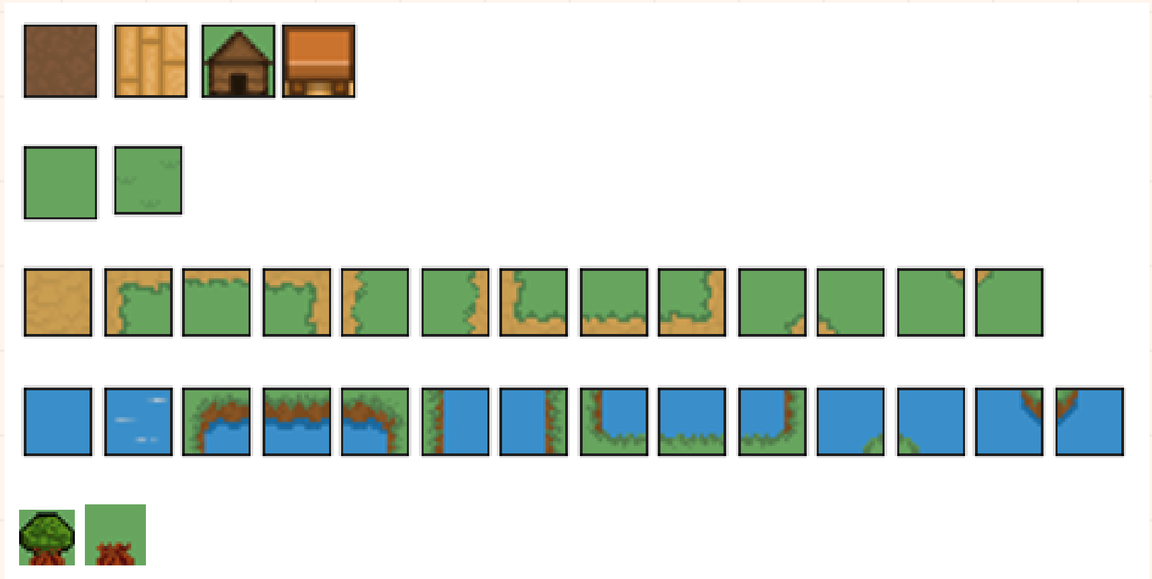
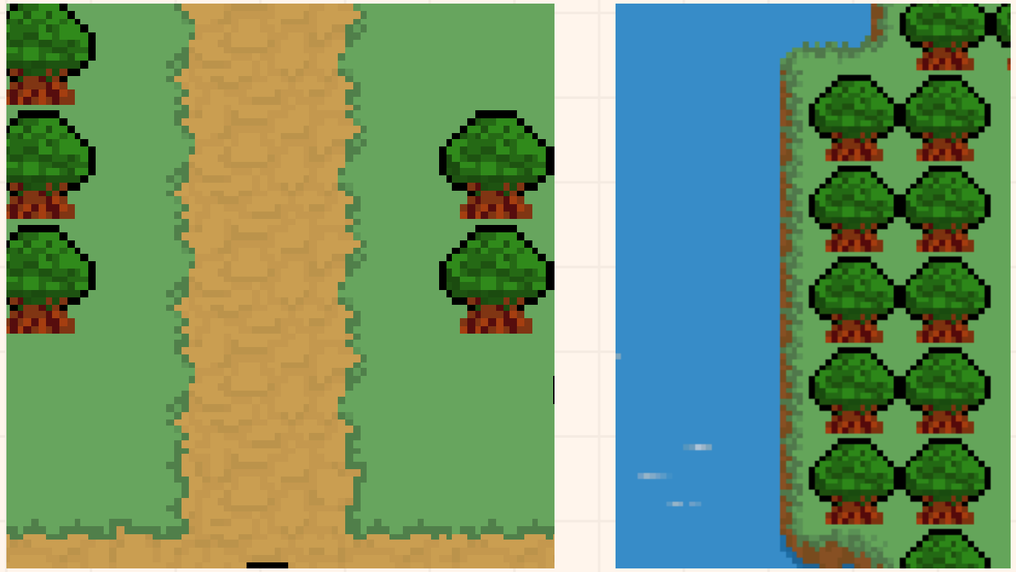
# DESIGN

## 2, Background design



TILES



MAPS

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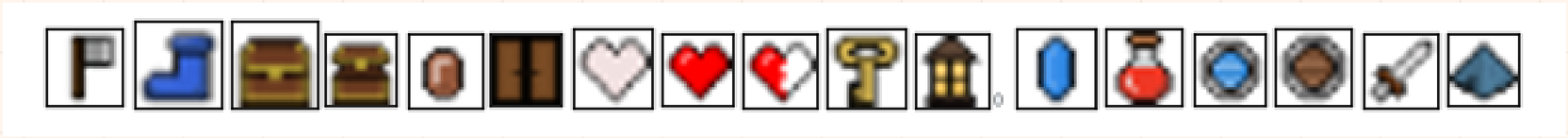
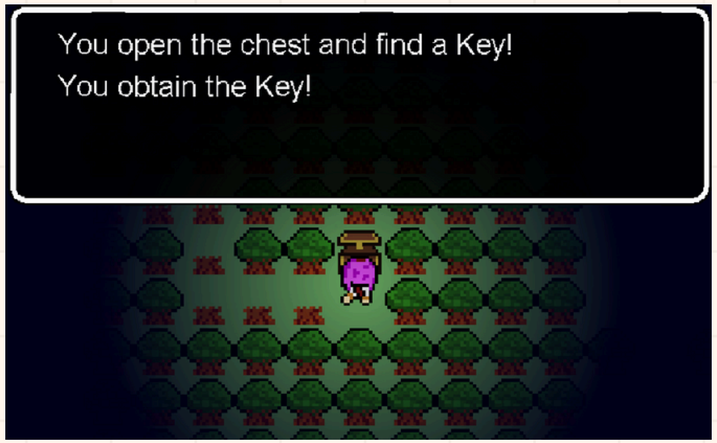
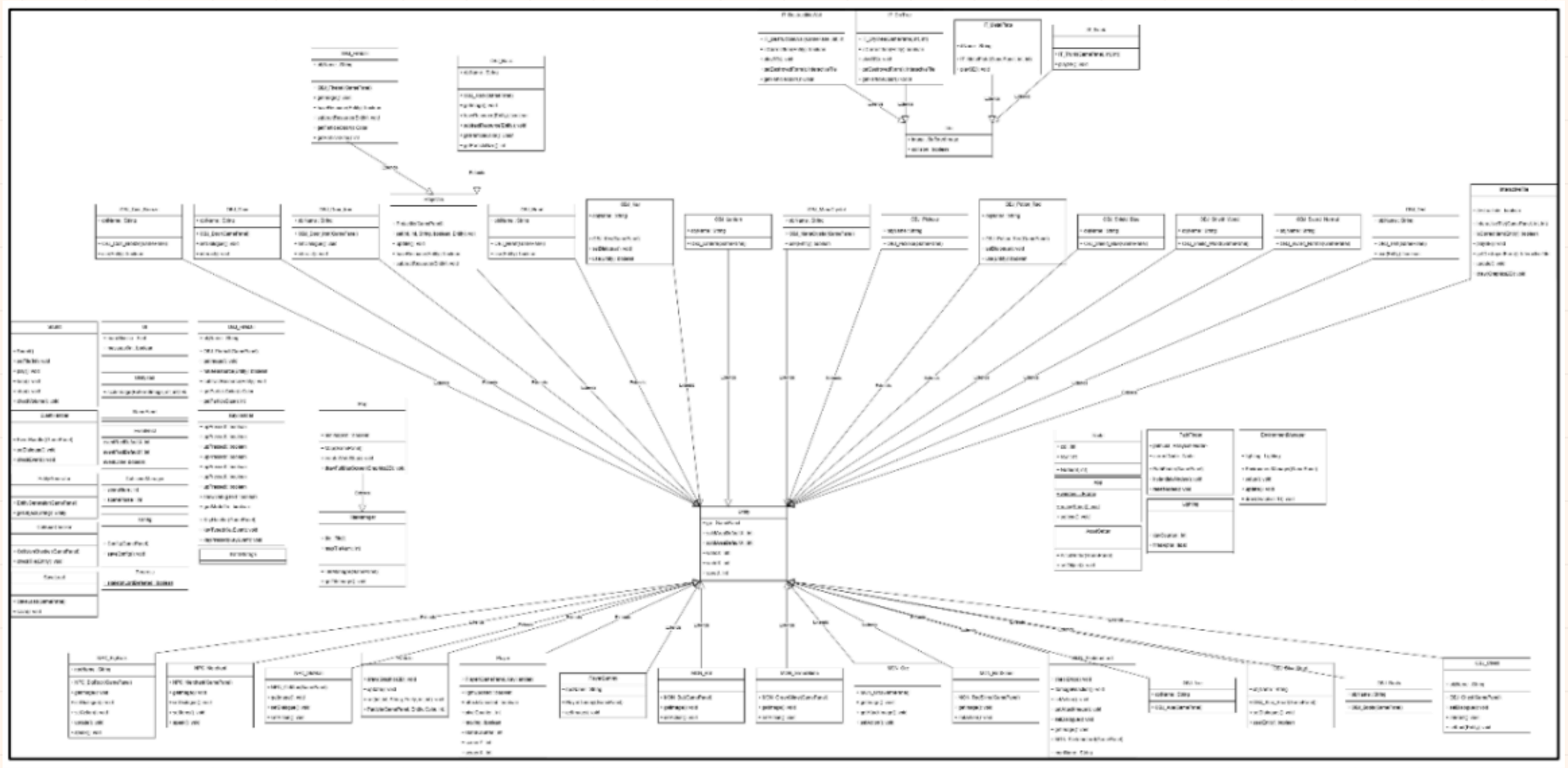
# 2, Background design



OBJECTS THAT THE PLAYER WILL INTERACT WITH

# UML



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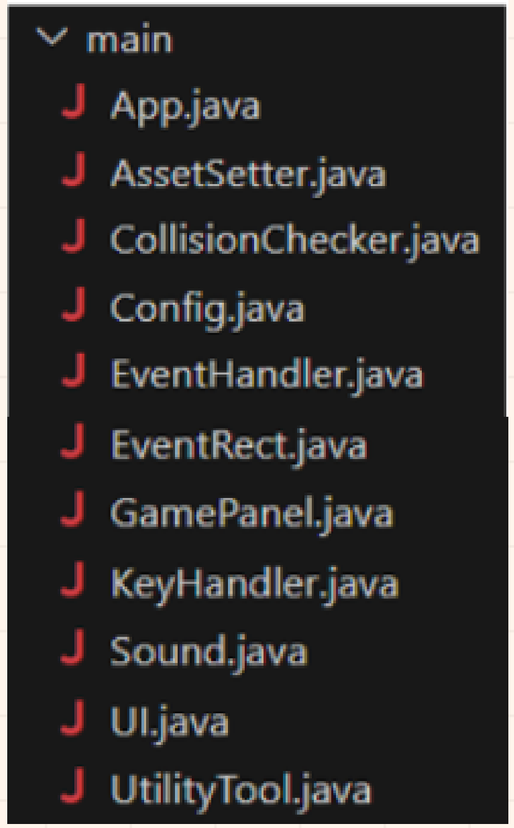
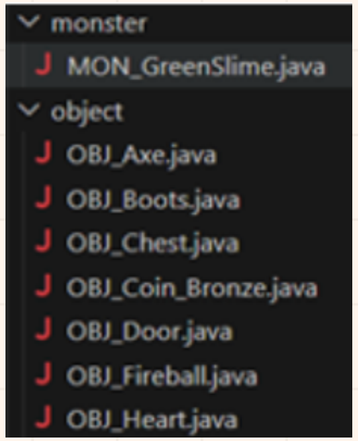
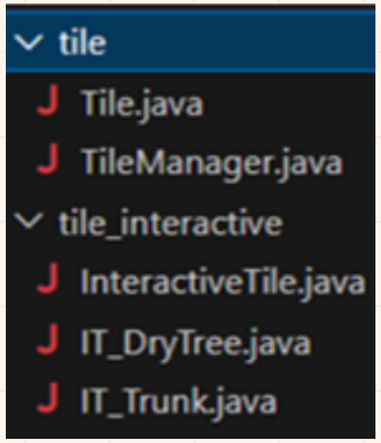
# CORE GAME

## 1. GAME DESIGN






- Package: **9 folder**
- Class: **60 file**
- **13 main class** → control and combine others
- App.java is the **main run** of this game

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# CORE GAME

## 1. GAME DESIGN

```
window = new JFrame();
window.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
window.setResizable(resizable:false);
window.setTitle(title:"2D Adventure");
```

Window Setup

```
GamePanel gamePanel = new GamePanel();
window.add(gamePanel);
gamePanel.config.loadConfig();
if (gamePanel.fullScreenOn == true){ ···

window.pack();
window.setLocationRelativeTo(c:null);
window.setVisible(b:true);
```

Add GamePanel

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# CORE GAME

## 1. GAME DESIGN

```
window = new JFrame();
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Add GamePanel

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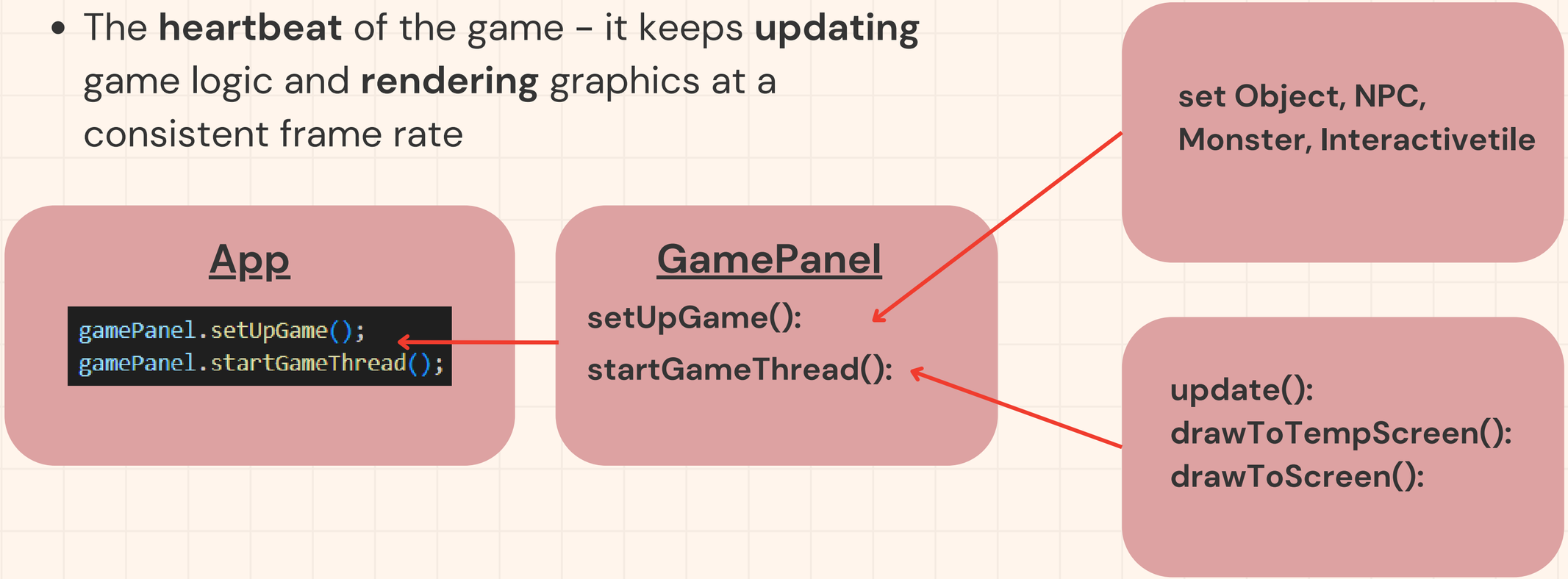
# CORE GAME

## 1. GAME DESIGN

- The **heartbeat** of the game – it keeps **updating** game logic and **rendering** graphics at a consistent frame rate



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# CORE GAME

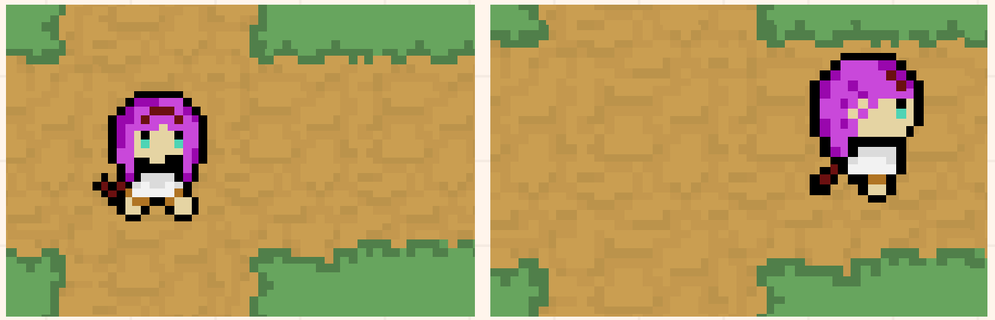
## 2.ENTITY AND PLAYER

### 2.1 Entity: A. Update

```
// CHECK ENTITY COLLISION
    if (collisionOn == false) {
        switch(direction) {
            case "up": worldY -= speed; break;
            case "down": worldY += speed; break;
            case "left": worldX -= speed; break;
            case "right": worldX += speed; break;
        }
    }
```

False

Entity can go through



True

Entity can’t go through

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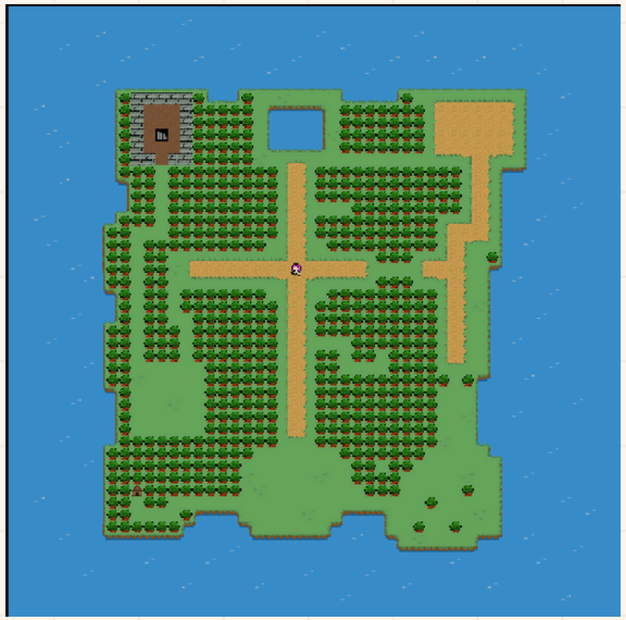
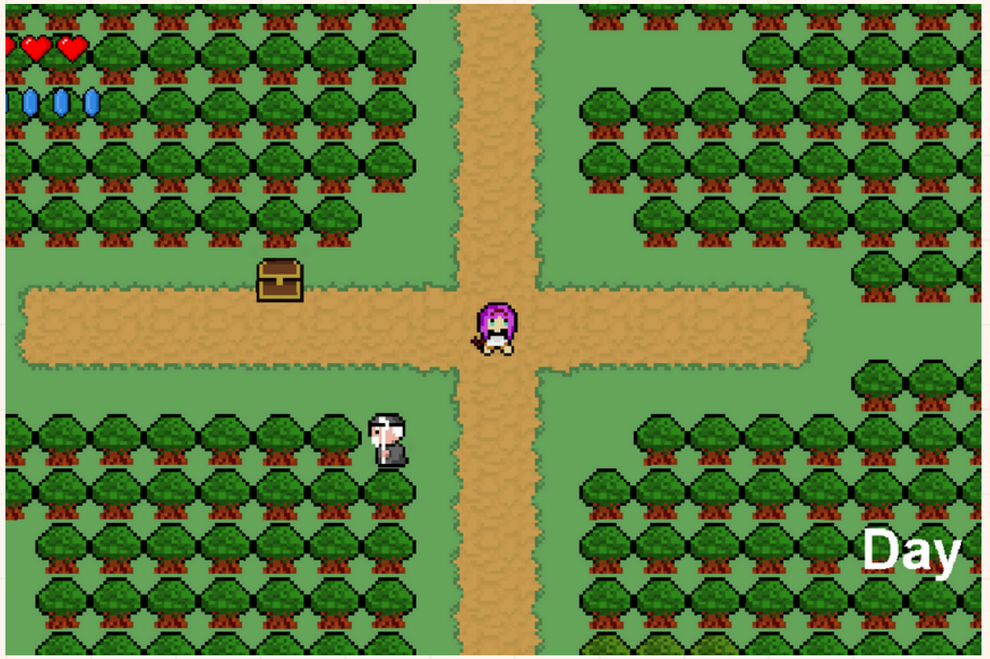
# CORE GAME

## 2.ENTITY AND PLAYER

### 2.1 Entity: B.Draw (step 1: draw the map)



Instead of showing a whole map




show only 5 tiles from player

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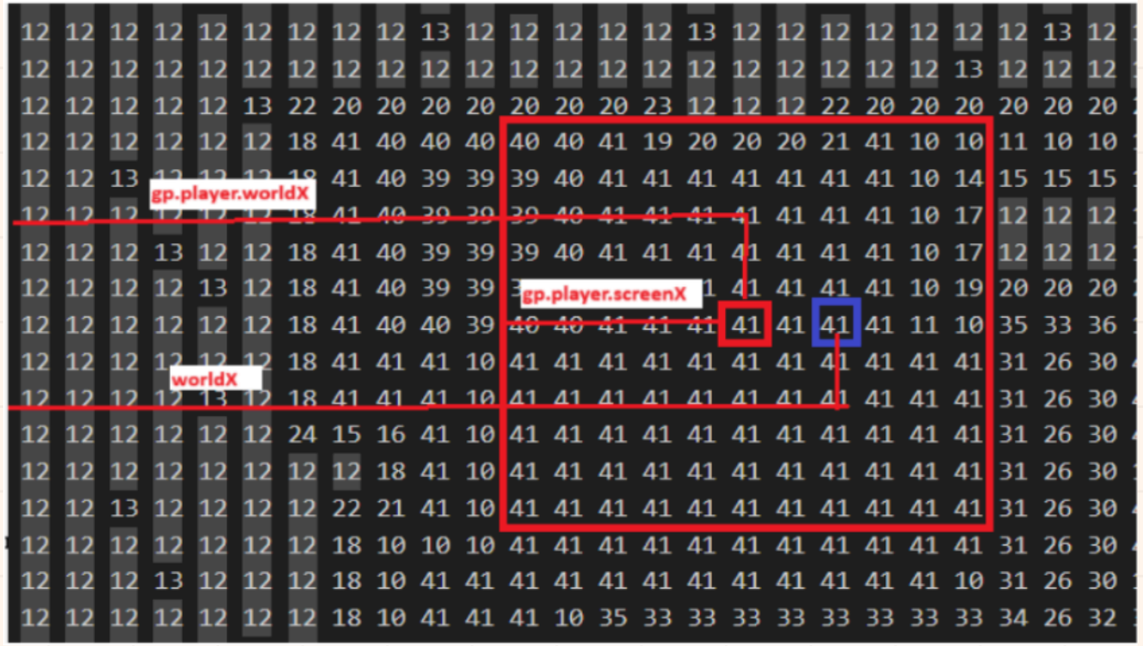
# CORE GAME

## 2.ENTITY AND PLAYER

### 2.1 Entity:

B.Draw (step 2: set default position)

```
int screenX = worldX - gp.player.worldX + gp.player.screenX;
int screenY = worldY - gp.player.worldY + gp.player.screenY;
```




Choosing place to display objects

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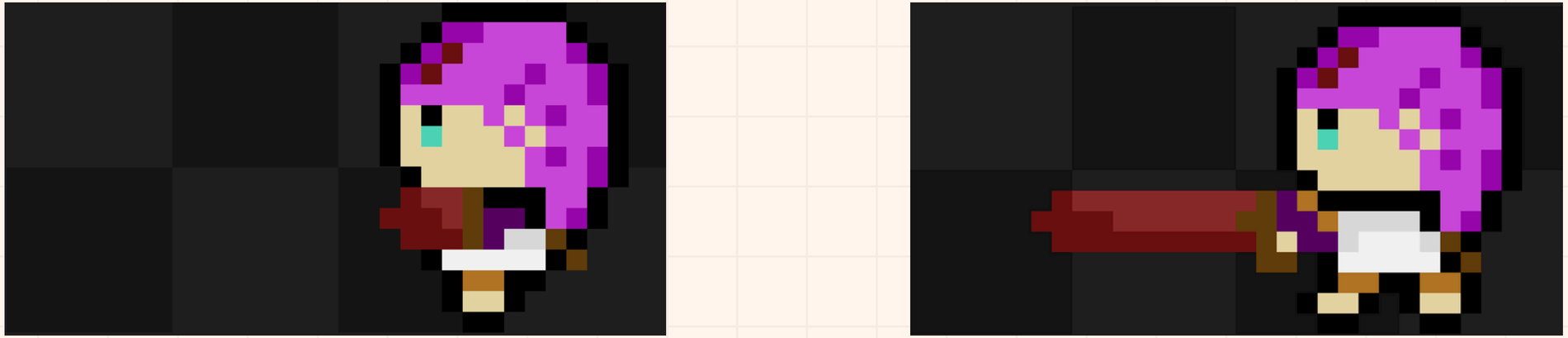
# CORE GAME

## 2.ENTITY AND PLAYER

### 2.1 Entity: B.Draw (step 3: draw player)



Draw player action

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# CORE GAME

## 2.ENTITY AND PLAYER

### 2.1 Entity:

### B.Draw (step 3: draw player)

```
if (worldX > gp.player.worldX - gp.player.screenX - gp.tileSize
    && worldX < gp.player.screenX + gp.player.worldX + gp.tileSize
    && worldY > gp.player.worldY - gp.player.screenY - gp.tileSize
    && worldY < gp.player.worldY + gp.player.worldY + gp.tileSize) {

        switch(direction) {
            case "up" -> {
                if (spriteNum == 1) {image = up1;}
                if (spriteNum == 2) {image = up2;}
                }
            case "down" -> {
                if (spriteNum == 1) {image = down1;}
                if (spriteNum == 2) {image = down2;}
                }
            case "left" -> {
                if (spriteNum == 1) {image = left1;}
                if (spriteNum == 2) {image = left2;}
                }
            case "right" -> {
                if (spriteNum == 1) {image = right1;}
                if (spriteNum == 2) {image = right2;}
                }
        }
```

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# CORE GAME

## 2.ENTITY AND PLAYER

### 2.2 Player:

**A. Unattacking Mode**

- Check collision
- Check interaction with the objects

```
// COLLISION CHECK
collisionOn = false;
gp.cChecker.checkTile(this);

int objIndex = gp.cChecker.checkObject(this, player:true);
pickUpObject(objIndex);

int npcIndex = gp.cChecker.checkEntity(this, gp.npc);
interactNPC(npcIndex);

int monsterIndex = gp.cChecker.checkEntity(this, gp.monster);
contactMonster(monsterIndex);

// CHECK INTERACTIVE TILE
gp.cChecker.checkEntity(this, gp.iTile);
gp.eHandler.checkEvent();
```

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# CORE GAME

## 2.ENTITY AND PLAYER

### 2.2 Player: A. Unattacking Mode

```
// MOVE IF NO COLLISION
if (!collisionOn) {
    switch(direction) {
        case "up" -> worldY -= speed;
        case "down" -> worldY += speed;
        case "left" -> worldX -= speed;
        case "right" -> worldX += speed;
    }
}
```

After interactions

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# CORE GAME

## 2.ENTITY AND PLAYER

### 2.2 Player:

B. Attacking Mode

```
// Save the current worldX, worldY, solidArea
int currentWorldX = worldX;
int currentWorldY = worldY;
int solidAreaWidth = solidArea.width;
int solidAreaHeight = solidArea.height;

//Adjust player's worldX/Y for the attackArea
switch(direction) {
    case "up" -> worldY -= attackArea.height;
    case "down" -> worldY += attackArea.height;
    case "left" -> worldX -= attackArea.width;
    case "right" -> worldX += attackArea.width;
}
```

Before interaction

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# CORE GAME

## 2.ENTITY AND PLAYER

### 2.2 Player: B. Attacking Mode

```
int monsterIndex = gp.cChecker.checkEntity(this, gp.monster);
damageMonster(monsterIndex,attack, currentWeapon.knockBackPower);
int iTileIndex = gp.cChecker.checkEntity(this, gp.iTile);
damageInteractiveTile(iTileIndex);
int projectileIndex = gp.cChecker.checkEntity(this, gp.projectile);
damageProJectile(projectileIndex);
```

While interaction

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# CORE GAME

## 2.ENTITY AND PLAYER

**2.2 Player:** B. Attacking Mode

```
worldX = currentWorldX;
worldY = currentWorldY;
solidArea.width = solidAreaWidth;
solidArea.height = solidAreaHeight;
```

After interaction

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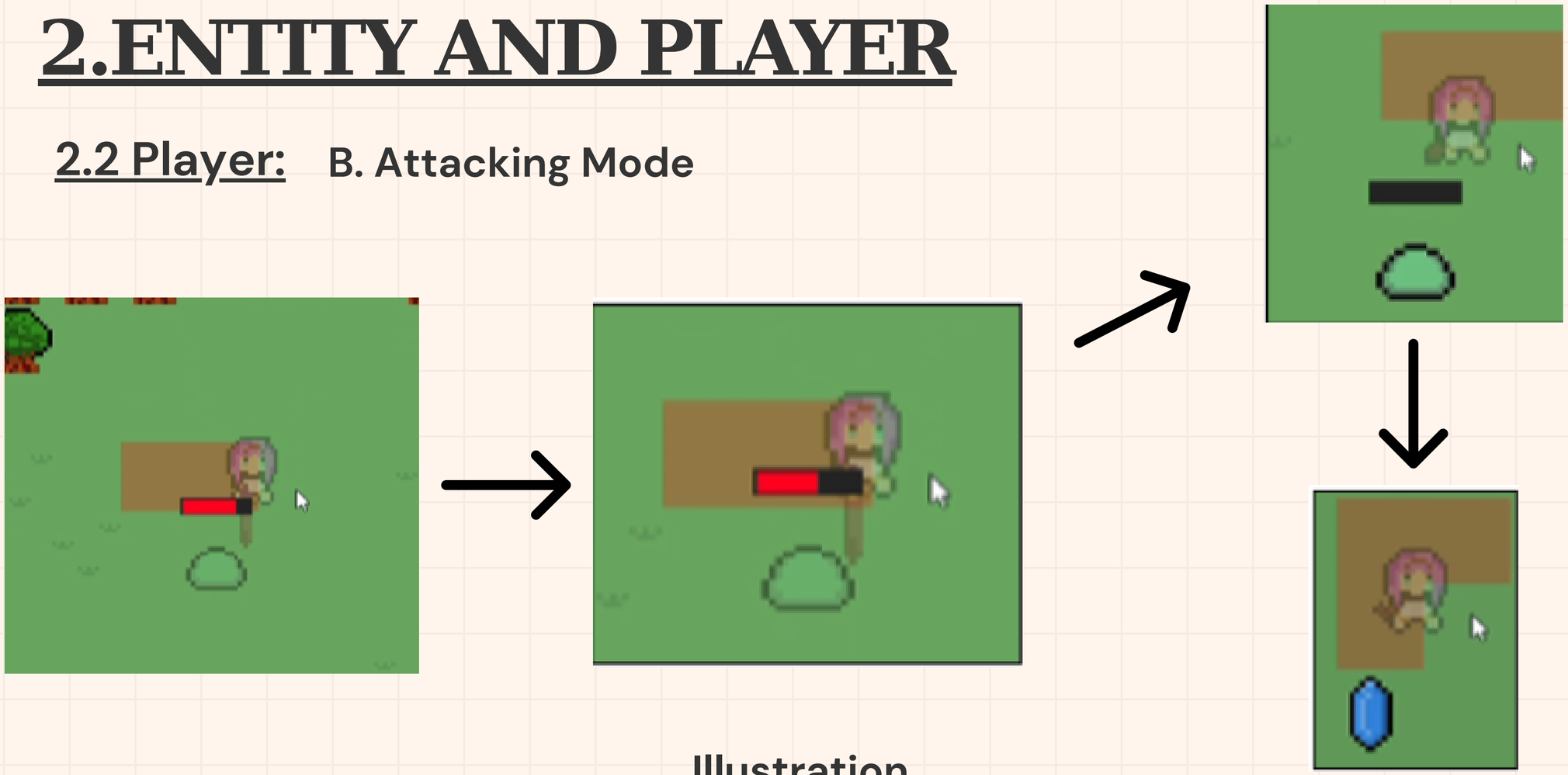
# CORE GAME

## 2.ENTITY AND PLAYER

### 2.2 Player: B. Attacking Mode



Illustration

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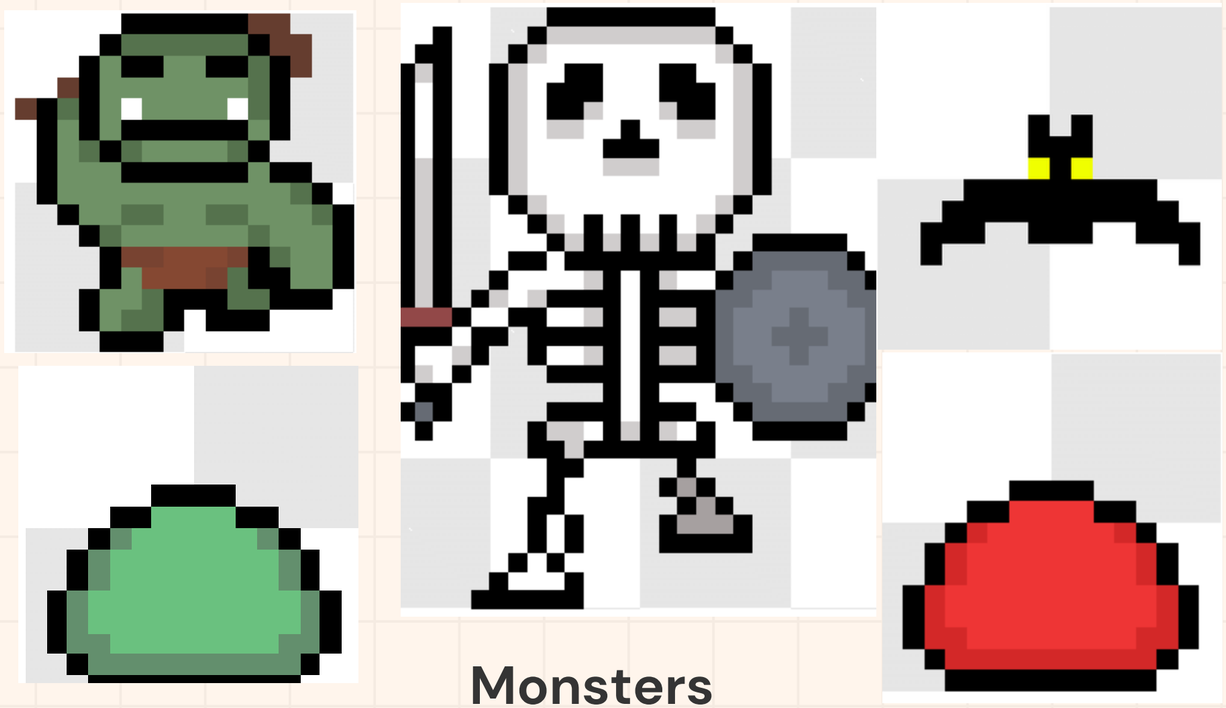
# CORE GAME

## 2.ENTITY AND PLAYER

**2.3 Features:** A* algorithm - pathFinding features



Monsters

NPC Old Man

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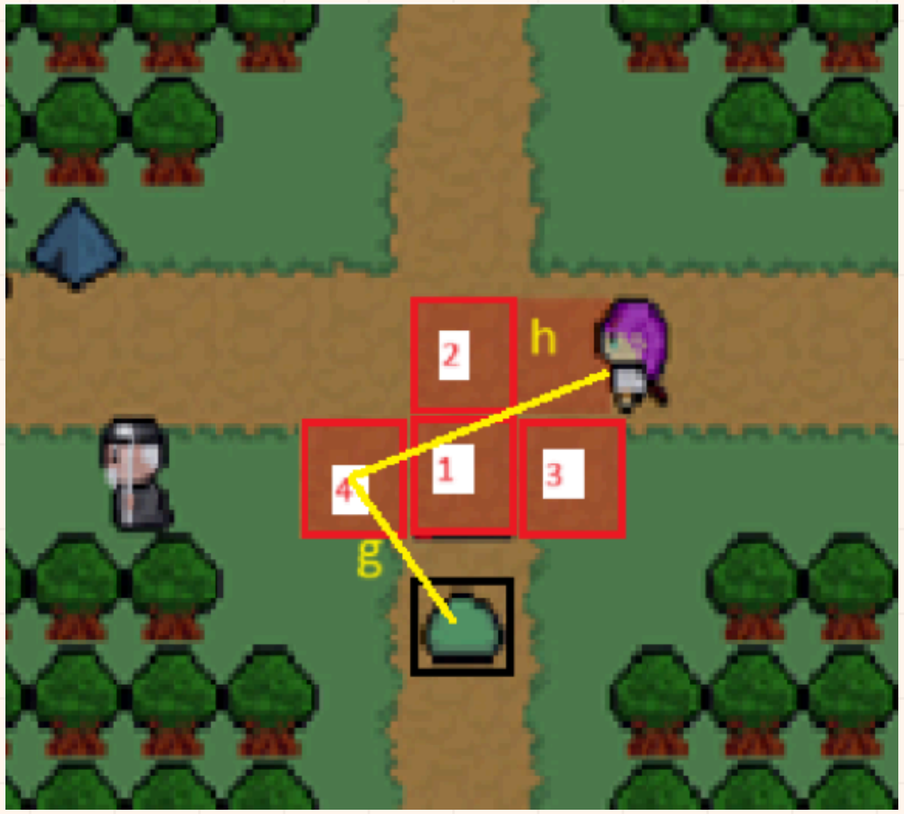
# CORE GAME

## 2.ENTITY AND PLAYER

### 2.3 Features:

**A* illustration**




**H cost**: distance from the gold node to the checking cell

**G cost:** distance from the starting node to the checking cell

→ Set **F cost = H cost + G cost**

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# GAME RULE

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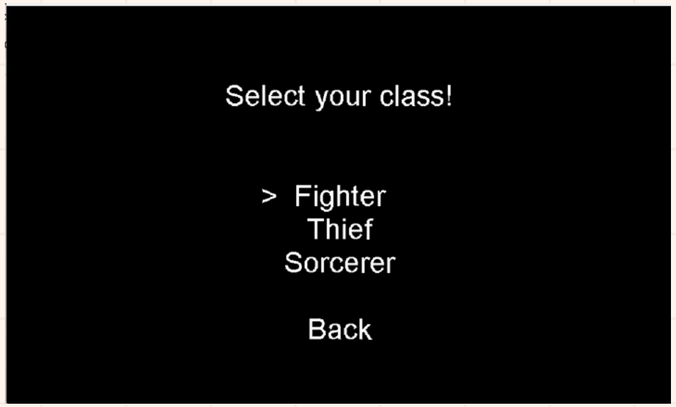
# Basic guide and rules of the game

- **Game Concept**: In this **monster hunting game**, players take the role of **an adorable girl** who embarks on a journey to **train**, **collect** useful items, and **defeat** monsters to gain **experience** and **grow stronger**.

- **Starting Point**: The game begins **at the center of the map**. Players must **explore** the world, **level up** by defeating monsters, and ultimately **defeat** the **final Boss** to **complete the game**. Before starting, players **choose** one of three character **classes**: Fighter, Thief, or Sorcerer.




# MONSTER HUNGTING SYSTEM

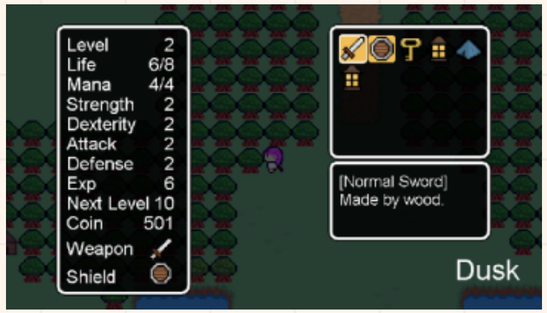
+ Players **control** character by using **WASD** to **move** around the map and **push** the giant rock.

# LEVELING AND EXP SYSTEM

- Once the **character** gains **experience** by **defeating monsters**, the character's level will **level up automatically**.

- When **leveling up**, the player will have **higher character stats**

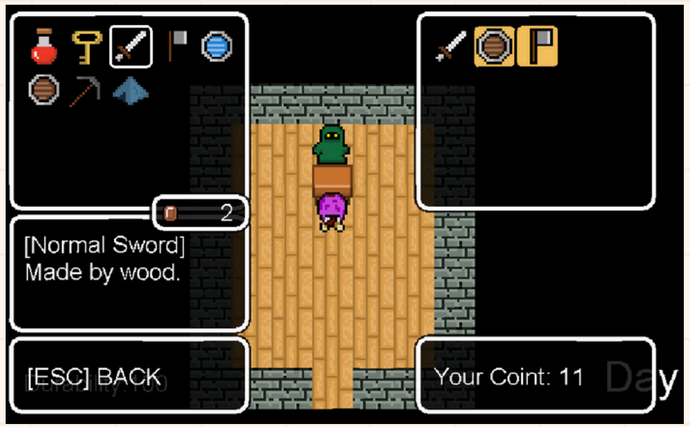


# ITEM EXCHANGE SYSTEM

- Players can **sell** received items to NPC to get **coins** and **buy** valuable **items** at a list price in the system.

- The price of the item the **player sells** will be lower than that of the item the **player buys** from the NPC.

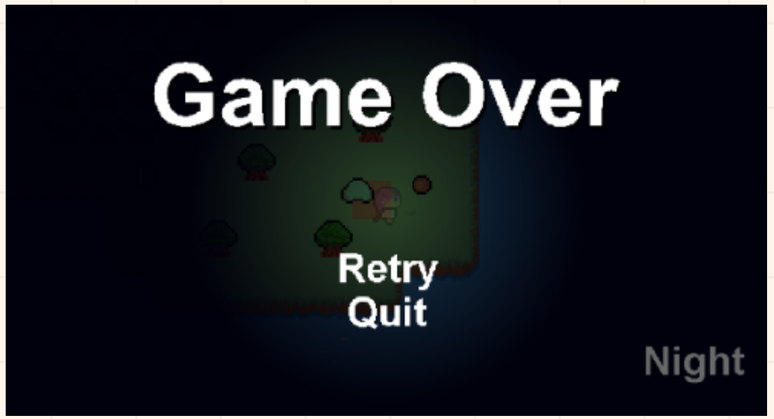



# HEALTH SYSTEM AND GAME OVER CONDITION

The character has a visible Health Bar (HP) displayed on the screen.


The character's HP will decrease when they take damage from monsters


If HP reaches zero, it's Game Over, and the player must restart from the beginning



# SETTING GAME SYSTEM

- Player can **adjust** the game's **volume**, **music** to fix with individual's interest
- The side of game's window can be **full screen** or **not**
- Players can **stop** the game and **save** it. one index and everything will be saved at the time the player saves the game

# THE TIME SYSTEM

THE TIME IS DIVEDED TO 4 PHASES

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# GAME DEMO

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# Link demo clip

**Scan here**

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# Future Work

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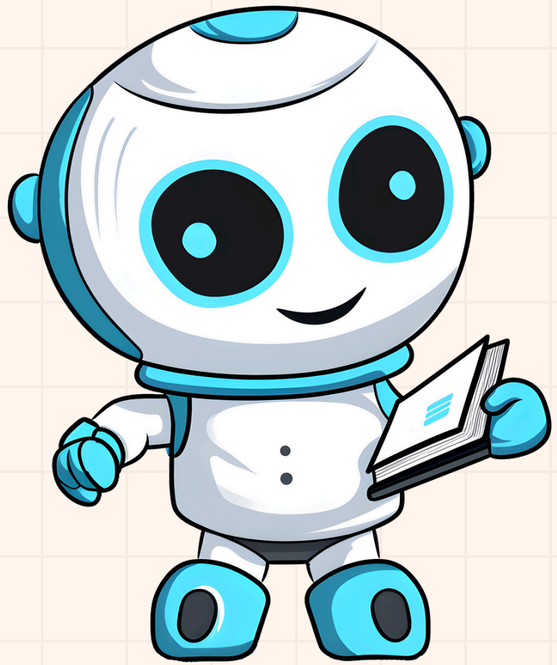
# Future Work

- **Content Expansion:** More maps, enemies, NPCs, quests & items.
- **Gameplay & AI:** Advanced skills, improved AI, deeper combat, boss battles.
- **Technical & UX:** Enhanced visuals & sound, UI/UX polish, optimization, robust save.
- **Advanced Features:** Multiplayer, procedural content, modding support.



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# CONCLUSION

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# CONCLUSION

- **Success**: effectively applying OOP principles (inheritance, polymorphism, encapsulation, abstraction).
- **Key Features:** Engaging gameplay, maintainable/scalable architecture, character interaction, combat, A* pathfinding.
- **Skills Gained**: Enhanced programming, fostered collaboration, understood software dev workflows.
- **Overall:** Blended creativity & technical skill, producing an educational & entertaining software grounded in modern programming.

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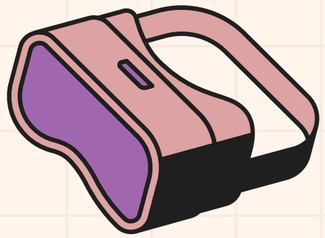

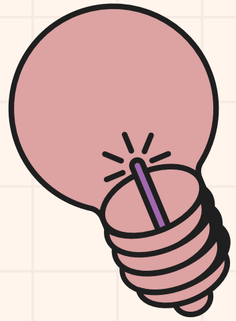

# THANK YOU