

🛡️❌ Restiopha- Backend Assessment

Game System Documentation

1. Domain Model Design

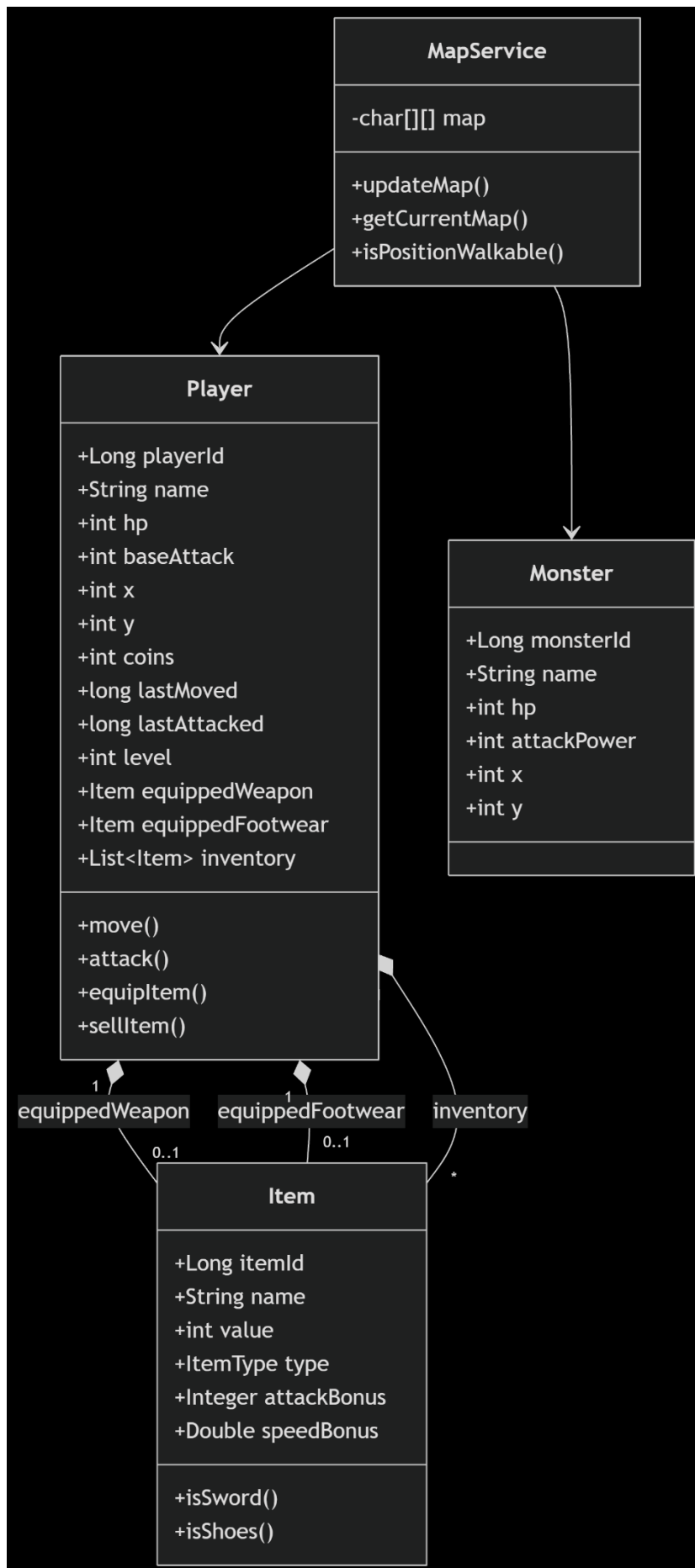
Key Entities

1. Player: Main character with stats, inventory, and position
2. Monster: Enemy entities with combat attributes
3. Item: Equipment/consumables (swords/shoes) with bonuses
4. Map: 20x20 grid tracking player/monster positions

Relationships

- Player has one-to-many relationship with Items (inventory)
- Player has optional one-to-one relationships with equipped items
- MapService maintains references to all Players and Monsters

UML Class Diagram



2. Gameplay Logic

Core Mechanics

1. Movement System:

- Cooldown based on equipped footwear
- Position validation via MapService
- Directions: UP/DOWN/LEFT/RIGHT

2. Combat System:

- Adjacency check (1 tile radius)
- Damage calculation: $\text{baseAttack} + \text{weaponBonus}$
- Fixed 1s attack cooldown

3. Loot System:

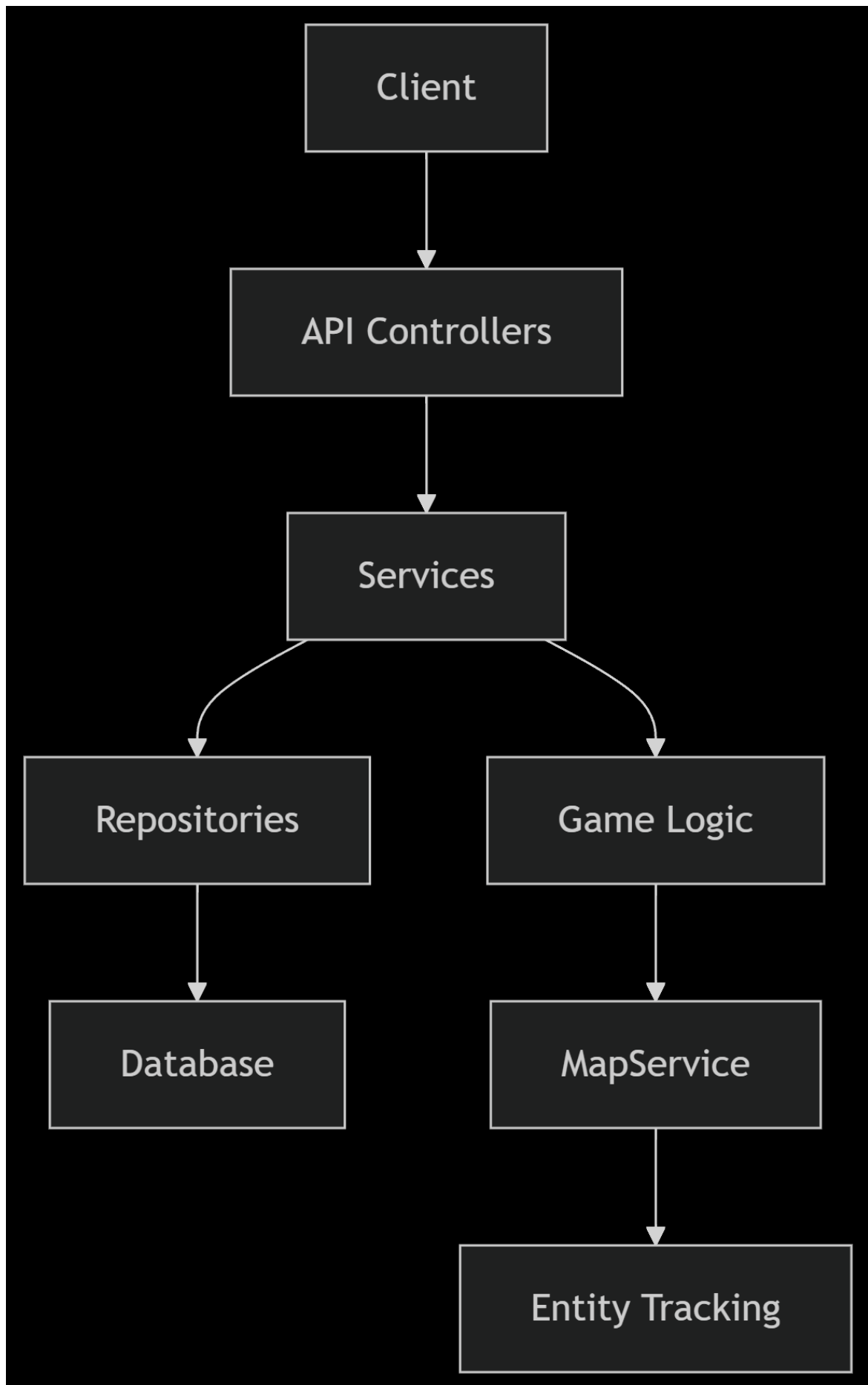
- Monsters drop random items on defeat
- Predefined items with tiered bonuses

4. Progression:

- Level up costs increase exponentially
- Each level increases stats

3. Architecture & Design

High-Level Architecture



Key Components

1. Scheduled Tasks:

- Monster spawning every 30s
- Map updates every 1s

2. Exception Handling:

- Custom exceptions for game rules
- HTTP status codes for client feedback

3. State Management:

- Player cooldowns (movement/attack)
- Equipment effects (speed/damage)

4. Testing Approach

Local Setup

1. Requirements:

- Java 17+
- Maven
- PostgreSQL

2. Steps:

```
git clone https://github.com/kaan9898/Restiopha.git  
mvn spring-boot:run
```

Test Cases

1. Player Movement:

POST /api/players/1/move?direction=RIGHT

2. Combat Scenario:

POST /api/players/1/attack/3

3. Item Management:

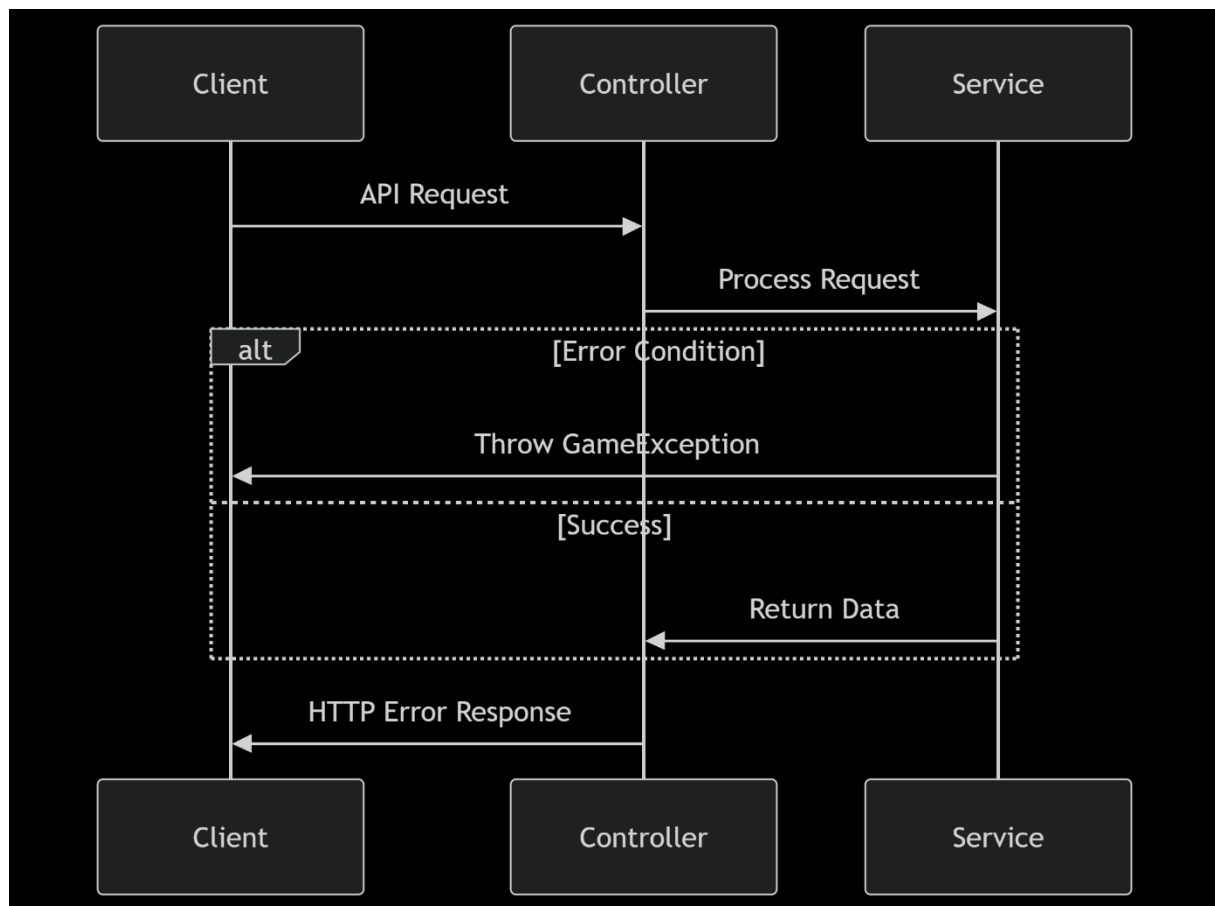
POST /api/players/1/equip?itemId=5&itemType=SWORD

5. Exception Handling

Exception Type	Trigger Condition	HTTP Status	Description
PlayerNotFoundException	When the requested player is not found in the database	404 Not Found	The player with the specified ID does not exist.
MonsterNotFoundException	When the requested monster is not found in the database	404 Not Found	The monster with the specified ID does not exist.
ItemNotFoundException	When the requested item is not found in the database	404 Not Found	The item with the specified ID does not exist.
CooldownException	When an ability or action is attempted before its cooldown period has expired	400 Bad Request	The cooldown period is still active; remaining time is shown.
CombatException	When an invalid or erroneous combat action is performed	400 Bad Request	Used for general combat-related errors.
NotEnoughCoinsException	When the player does not have enough coins to complete an action	400 Bad Request	Player lacks sufficient coins for the requested action.
InvalidItemTypeException	When an item of an unsupported or invalid type is used or processed	400 Bad Request	The item type is invalid or unsupported.

Exception Type	Trigger Condition	HTTP Status	Description
InvalidMovementException	When the player attempts to perform an invalid or unauthorized movement	400 Bad Request	The movement attempted is invalid or not allowed.

6. Exception Handling Flow



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