Project Title: Blue Boy Adventure Game

1. Introduction

Blue Boy Adventure is a 2D action role-playing game (RPG) developed by using Java and the Java2D graphics library. The game offers a short adventure where the player controls "Blue Boy," explores maps, interacts with NPCs, collects and trades items, and engages in combat including a boss fight. The project is designed as an educational resource, teaching Java game development, object-oriented programming concepts, and game mechanics implementation without any external engine.

2. Objectives

- To develop a retro-style 2D RPG using pure Java.
- To demonstrate fundamental game development concepts such as player movement, collision, combat, and map rendering.
- To implement interactive systems including dialogue, quests, inventory, and merchant trading.
- To help students and developers learn game programming through practical, hands-on coding.
- To create a fun and playable adventure game for retro game enthusiasts.

3. Features

- Smooth **player movement** and attack system.
- **Combat mechanics**: Guard, parry, projectile cutting, enemy AI, boss fight.
- **NPC interaction**: Dialogue system, quests, story progression.
- **Inventory & Merchant system**: Collect, buy, sell items.
- **Tile-based world**: Multiple maps with transitions.
- **Day & Night cycle**: Dynamic environment changes.
- **Audio & Visuals**: Pixel-art graphics, retro background music, sound effects.

4. Tools and Technology

- **Programming Language:** Java
- **Graphics Library:** Java2D
- **Development Environment (IDE):** Eclipse
- **Version Control:** GitHub
- **Game Assets:** Pixel art sprites, tilesets

5. Target Users

- **Students & Developers**: To learn Java-based game programming.

- **Educators & Trainers**: Teaching OOP and game mechanics.
- **Retro Game Enthusiasts**: Short, pixel-art adventure RPG players

6. Detailed Requirement Specification (DRS)

Functional Requirements:

1. Player movement with arrow keys/WASD.
2. Combat system with guard, parry, projectile cutting, and boss fights.
3. NPC dialogues and quest system.
4. Inventory management: collect, use, equip, drop items; merchant trading.
5. Tile-based world with map transitions and dungeons.
6. Background music and sound effects.
7. Save and load game progress.
8. Day/Night cycle with dynamic lighting.

Non-Functional Requirements:

1. Cross-platform desktop support .
2. Smooth performance and memory optimization.
3. Retro-style pixel graphics and sound effects.
4. Intuitive and user-friendly interface.

7. Optimal Feature Set

Feature	Priority	Description
Player Movement	High	Arrow keys/WASD for character movement.
Combat System	High	Guard, Parry, Projectile Cutting, Enemy AI, Boss Fight.
NPC Interaction	Medium	Dialogue System, Quests, Story Progression.
Inventory System	High	Item Collection, Use, Equip, Drop, Merchant Interaction.
Inventory System	High	Item Collection, Use, Equip, Drop, Merchant Interaction.
Map System	High	Tile-based World, Map Transitions, Dungeon Exploration.
Audio	Medium	Background Music, Sound Effects (Attack, Pickup, Collision).
Save/Load System	High	Game Progress Save, Load Functionality.

Day/Night Cycle	Low	Dynamic Lighting, Lantern Mechanism.

8. Sprint Backlog Report

Sprint 1: Project Setup & Basic Mechanics

- **Duration:** week 1
- **Backlogs items:**
    - Backlog 1: Set up project structure in Eclipse
    - Backlog 2: Configure version control (GitHub)
    - Backlog 3: Implement basic player movement (Arrow keys / WASD)
    - Backlog 4: Implement basic attack/guard system
- **Deliverables:** Functional movement and basic combat mechanics

Sprint 2: Advanced Combat & NPC Interaction

- **Duration:** week 2
- **Backlogs items:**
    - Backlog 1: Implement parry and projectile cutting mechanics
    - Backlog 2: Develop Enemy AI for basic combat
    - Backlog 3: Implement NPC dialogue system
    - Backlog 4: Implement basic quest system
- **Deliverables:** Advanced combat system and NPC interaction ready

Sprint 3: Inventory System & Map Design

- **Duration:** week 3
- **Backlogs items:**
    - Backlog 1: Implement item collection, use, equip, and drop functionalities
    - Backlog 2: Implement merchant NPC trading system
    - Backlog 3: Design tile-based maps and map transitions
- **Deliverables:** Functional inventory and merchant system; basic maps completed

Sprint 4: Audio Integration & Save/Load System

- **Duration:** week 4
- **Backlogs items:**
    - Backlog 1: Integrate background music and sound effects (attack, pickup, collision)
    - Backlog 2: Implement game save and load functionalities
- **Deliverables:** Audio integrated; save/load system operational

Sprint 5: Day/Night Cycle & Final Testing

- **Duration:** week 5
- **Backlogs items :**
    - Backlog 1: Implement day/night cycle with dynamic lighting
    - Backlog 2: Perform testing and debugging of all systems
    - Backlog 3: Optimize performance for smooth 60 FPS gameplay
- **Deliverables:** Fully functional, optimized, and polished game.

9. Conclusion

Blue Boy Adventure is a compact 2D RPG serving as both a playable game and a learning resource for Java developers. It demonstrates key aspects of game development including movement, combat, NPC interaction, inventory management, map design, and audio integration.

The inclusion of Detailed Requirements, Optimal Feature Set, Sprint Backlog, and Project Timeline ensures a well-structured development proce**ss**, making it ideal for students, educators, and retro game enthusiasts.