Supplementary Specification

Introduction

This document captures all nonfunctional requirements and additional details for the RokueLike game project, Phase 1. It complements the functional requirements and use cases by detailing usability, performance, reliability, and supportability aspects of the system.

Functionality

The system facilitates realtime interactions during gameplay, such as moving the hero, interacting with objects, and managing monsters. Specific functionality includes:

Spawning monsters and enchantments at random intervals.

Enabling the hero to search for runes and collect enchantments.

Restricting hero movement to navigable tiles within the hall grid.

Managing the hero's inventory of collected enchantments.

Usability

Human Factors

The player should easily see the hero, monsters, and objects on the gridbased map.

The UI will use clearly differentiated colors to make all game elements visually distinct.

Contextual hints or messages will guide players when they attempt invalid actions (e.g., clicking on unreachable objects).

Controls for navigation and interaction are intuitive and responsive.

Reliability

Recoverability

If the game unexpectedly crashes, the player can restart the game without losing major progress. Progress within a hall resets if the failure occurs during gameplay.

Performance

The game should respond to player actions (movement, clicks, etc.) with minimal lag.

Monster and enchantment spawns should occur smoothly without disrupting gameplay.

The system should maintain consistent performance even as more objects (e.g., monsters, enchantments) appear in later levels.

Supportability

Adaptability

The game design allows for easy integration of additional halls, monsters, or enchantments.

Game difficulty settings (e.g., time limits, monster frequency) are configurable.

Configurability

Players can customize hall designs in Build Mode, including object placement and layouts.

Default configurations ensure the game remains functional if no customizations are made.

Implementation Constraints

The RokueLike project will be developed in Java using standard libraries and frameworks. No external game development tools (e.g., libGDX) will be used.

Here's a detailed rewrite of the Application-Specific Domain Rules for the Rokue-Like game, organized into appropriate subtitles with detailed explanations, inspired by the structure of the sample document:

Application-Specific Domain Rules

General Game Rules

1. Map and Movement

- The game map is a grid-based layout, where each tile corresponds to a fixed unit size (`L`).

- The hero moves across the grid using arrow keys, restricted to navigable tiles (i.e., no walking through walls).

- Monsters, objects, and walls occupy one tile each, and no two entities can overlap.

2. Time Limits

  - Each hall has a specific time limit based on the number of interactive objects placed in the hall during Build Mode.

    - Time is calculated as `5 seconds x number of objects`. For example:

      - Hall of Earth with 6 objects = 30 seconds.

      - Hall of Fire with 17 objects = 85 seconds.

    - Extra time enchantments add 5 seconds to the timer immediately upon collection.

3. Runes and Hall Completion

    - Each hall contains one hidden rune.

    - Players must find the rune to unlock the hall's exit door and progress to the next hall.

    - Clicking on objects near the hero reveals the rune, if it is hidden under the clicked object.

    - The game ends when:

      - The player finds all runes and exits the final hall (Victory).

      - The timer runs out, or the player loses all lives (Defeat).

Building Mode Rules

1. Customizing Halls

    - Players can design each hall by placing objects, walls, and potential hiding spots for runes.

    - Minimum object placement requirements per hall:

      - Hall of Earth: At least 6 objects.

      - Hall of Air: At least 9 objects.

      - Hall of Water: At least 13 objects.

      - Hall of Fire: At least 17 objects.

2. Difficulty Levels

    - Players choose between three difficulty levels:

      - Easy: Longer time limits and fewer monsters.

      - Medium: Moderate time limits and monster spawn rates.

      - Hard: Shorter time limits and frequent monster appearances.

3. Responsive Design

   - The grid size and object dimensions adjust to fit the player's screen resolution.

   - Players can preview and adjust hall layouts before starting gameplay.

Gameplay Rules

1. Hero Actions

   - Movement:

     - The hero moves in cardinal directions (North, South, East, West) using arrow keys.

     - Movement is restricted to empty tiles; walls and objects block the path.

   - Searching:

     - The player clicks on objects next to the hero to search for the hidden rune.

   - Collecting:

     - Enchantments are collected by clicking on them within their active duration (6 seconds).

2. Monsters

   - Archer Monster:

     - Spawns randomly and shoots arrows every second.

     - If the hero is within 4 tiles of the archer, they lose 1 life unless protected by the Cloak of Protection.

   - Fighter Monster:

     - Patrols the hall randomly and attacks the hero if adjacent.

     - Can be distracted using the Luring Gem enchantment.

   - Wizard Monster:

     - Teleports the rune every 5 seconds to a random location.

     - Does not attack the hero directly.

3. Enchantments

   - Types:

     - Extra Time: Adds 5 seconds to the timer immediately upon collection.

     - Extra Life: Grants 1 additional life upon collection.

     - Cloak of Protection: Protects the hero from Archer Monsters for 20 seconds.

- Reveal: Highlights a 4x4 grid area containing the rune for 10 seconds.

- Luring Gem: Distracts Fighter Monsters by throwing the gem in a specified direction.

- Activation:

- Stored enchantments are used by pressing specific keys (e.g., `R` for Reveal, `P` for Cloak of Protection).

Combat Rules

1. Losing Lives

- The hero starts with 3 lives.

- Contact with Archer Monster arrows or Fighter Monsters reduces life count.

- Losing all lives ends the game.

2. Avoiding Damage

- Enchantments like the Cloak of Protection can shield the hero temporarily.

- Strategic use of Luring Gems can redirect Fighter Monsters away from the hero.

UI and Feedback Rules

1. HUD Elements

- The screen displays:

  - Timer: Remaining time in the current hall.

  - Lives: Number of lives left.

  - Current Hall: Name of the active hall.

  - Inventory: List of collected enchantments.

2. Interactive Elements

- The game pauses when the Pause button is clicked, and resumes upon clicking again.

- Context-sensitive warnings guide players when invalid actions are attempted (e.g., clicking on unreachable objects).