CS/EE 120B Custom Laboratory Project Proposal

Rogue

Vinz Angelo Madrigal

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Introduction

Rogue is a top down procedurally generated dungeon crawler where the player traverses the same map again and again getting incrementally stronger on each iteration. The aim of the game is to keep going through the same area, slaying monsters, and dying until you can reach the final boss.

Hardware Components

- Computing
    - Elegoo UNO R3 microcontroller
- Input
    - Joystick (A0, A1, 2)
- Outputs
    - Nokia 5110 LCD screen (D3-D7)
        - Used to display the game
    - LCD1602 Module (D8-D11)
        - Used to show score and stats

Basic Functionality

The baseline version of Rogue will have the player traverse different procedurally generated rooms, killing monsters, leveling up, and navigating an ever changing map. The main goal of the game is to find the boss room and defeat the boss to win. The player starts at a random place in the map to explore where the final boss lies. Each room includes enemies of varying strength to defeat. Combat engages when the player approaches the monster and the game uses the player's stats to determine damage done and damage dealt. The layout of the map changes on each playthrough, but there is a limited number of rooms to choose on the map's generation. Each slain enemy will contribute to the player's score and experience, allowing the player to get stronger overtime. Death is permanent and the player must navigate a brand new map once they start over again. Once the player finds the boss room and slays the monster, they win. There is a

screen that shows up that prompts them to play again. Their high score gets saved and their stats are saved for the next playthrough.

Complexities

1. Using a Nokia 5110 LCD screen to display the game screen
2. Using the EEPROM to save high score and stats of player
3. Having AI for enemies to pathfind toward the player
4. Procedural generation of maps