Final Project Proposal: Maze Generation and Solving Kernel Module

Team

Group E3
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Project Idea

We are going to create a Kernel Module capable of performing the following functions:
- Generate a maze with exactly one entrance and exit
- Parsing a script detailing the dimensions of the maze.
- Solving (that is, finding a path through) any given maze
- Convert a maze to a format that is parseable for solving
- Displaying both solved and unsolved mazes in an easily readable fashion
- Extra Credit: The module will be able to alter mazes for factors such as complexity, openness/tightness, number of inter-maze paths, and other similar parameters which would be specified in the configuration file and parsed during creation.

Topics From Class

This project will include the following topics from class:
- Kernel Module
- File parsing
- Command line arguments

Timeline

Week 1:
- Parse script to generate and display a maze in a kernel module
- Convert maze from text to array and array to text

Week 2:
- Solve a given maze read in from a file
- Export maze to a text file

Week 3:
- Fix problems created in weeks 1 and 2
- Testing/Debugging
- Extra credit configuration parameters
- Present

Rubric

The project will be graded per the rubric below.

Part	Unsatisfactory	Satisfactory	Beyond Satisfactory
Maze Generation	The maze does not present a suitable challenge (too few obstacles, impossible maze) [0-25 pts]	The module creates mazes that are unique, solvable with settings (such as size) that are read in from a script [26-50]	Module presents real-time options for maze generation (such as a gui) rather than through a file [51-75 points]
Maze Export	No exportable or parseable format [0-10 pts]	Included a working export and import of maze [11-20 pts]	Allows parsing and storing in multiple file formats [21-40 pts]
Maze Solving	The module does not correctly solve mazes, or does not solve them quickly, or does not display the solution in an easily readable format [0-20 pts]	The module solves mazes in a reasonable time and displays the solution in a readable form. [21-50 pts]	The module can find the longest path through an unsolveable maze or displays the solution using non-text based graphics [51-75 pts]
Maze Display	Maze display is convoluted, incorrect, or missing [0-15]	Maze has simple, easy-to-understand GUI using ASCII characters to detail pathways [16-30 pts	Maze has actual, non-text graphics [31-50 pts]
Extra Credit	N/A	Maze allows for customization of parameters (10 pts/parameter)	Maze allows for specific customization (adding/removing of specific walls, etc) (10 pts)
Demo & Report	Boring presentation with little eye-contact or false information. [0-20 pts]	Good presentation and report [21-50 pts]	Amazing presentation with interactive demo[51-60pts]