Project 1: A\* and Jump Search Maze Proposal

CSC-568, Fall 2016

Group Members and Their Roles:

Jonathan McClanahan[implementor]

Tatum McGowin[coordinator]

Ryan Plunkett [documentor]

Overview:

For our project 1 our group has decided to create a dynamic maze game with multiple maze options to create a fun game that also teaches the concepts of A\* and jump search. Our game will feature multiple mazes that will vary in both size and number of obstacles. Each maze will consist of different paths that will take cost size into account along with length. Each maze will consist of two types of obstacles, passable and impassable. The impassable obstacles will force the user to go around the object while the passable is valid, though it will cost more to take the path. For example, we will represent obstacles that are passable with a blue square and the user will have to decide whether it is worth going a route that may be shorter but has a higher travel cost. The purpose of our maze game is to allow the user to attempt to navigate through the maze from start to finish while keeping in mind the length of the path that they are taking and the travel cost. Afterwards, to measure how efficient their path was through the maze was, there will be a compare option at the end that calculates the total cost from start to finish using both A\* and jump search that will calculate what it sees as the most efficient route. Our goal for the game is help users understand the concept of pathfinding using A\* and jump search and by doing the maze themselves and then comparing it to what path the computer chooses it can help to confirm whether or not they made the right choices.

Design and Technical Approach:

A\* will be used to create an algorithm that allows the computer to analyze the maze, take into account the obstacles, and then use both the heuristic and greedy algorithm to calculate the best path to take in the maze. To visualize this, we will be using Html, Javascript, and CSS to demonstrate how A\* works and also to allow the user to interact with the program. To help the user decide what path to take each time a “step” is taken it will display both the heuristic and greedy cost to move from point A to the next point B. We plan to create two to three mazes each different sizes and possible paths to demonstrate and test our algorithm. The program we plan to use to write this program is Dreamweaver and we will also be sharing our codes with each other through Github.

Documentation and Access:

We will be sharing our code with each other through Github and attaching documentation and necessary information through the readme. Since we will be creating the maze through Dreamweaver and using html our final project will be viewed through a website.

Plan for Deliverables:

Checkpoint:

For the checkpoint our team plans to have the basic outline of the mazes finished and the algorithm for the game tested and complete.

Final Report and Project:

The project will be tested multiple times by each of us and the outputs from both the user and the computer logged. The final report will compare the user results and the computer generated result.

Roles for the Team:

Jonathan McClanahan[implementor]

* Environment setup
* A\* implementation
* Evaluations

Tatum McGowin[coordinator]

* Deliverable reports
* Project report
* Evaluations

Ryan Plunkett [documentor]

* Testing
* Inline documentation
* Environment setup