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CS371 Final Project Proposal

Pac-Man

1. **Description**

Our project involves the creation of a user-controlled version of Pac-man in Mathematica. The project will contain nearly all features inherent to actual Pac-man. The user will be able to control Pac-man’s movement, the ghost will have an AI that controls their movements, score will be kept, and a two-player mode will be available.

1. **Final Product**

In our project, boards will appear as a maze of spaces that can, and cannot be moved into. Every open space will have a score point that will disappear after the players first passage, all closed spaces will appear as blue. Larger power dots will also appear on the board in a few locations, these power dots will briefly change the color of the ghost as well as switching them into frightened mode. Frightened mode changes the object of the game by allowing the player to chase the ghosts instead of the other way around. The ghosts will spawn in a central square, while Pac-man will begin the game below the center. The player will be able to control Pac-man’s direction of motion with the keyboard. By moving off one side of the screen the player will instantly be moved to the other side. Normally the player will attempt to stay away from the ghosts and pass over each square at least once, while in frightened mode the player will be able to eat the ghosts for extra score as well. Every time the player comes into contact with a non-frightened ghost a life will be lost and Pac-man’s position will be reset, each game the player will have three lives. In addition, multiple levels will exist with the player advancing a level after each dot has been eaten, every level the ghosts will become faster and the time of frightened mode will be shortened.



(Source: http://pacman.platzh1rsch.ch/)

1. **Increments**

1st Increment:

* The board will be visible.
* Ghosts appear in their home box, and Pac-Man appears below the home box. Ghosts appear as different colors, according to the original scheme of the game. The Pac-Men are yellow. However, the ghost and Pac-Man movement is not implemented.
* Walls appear as solid blue, rectangular regions, as shown in the image above. The background is blue.

2nd Increment:

* Up to two player Pac-Man movement is implemented.
* Movement off the screen results in a warp to the other side of the screen.
* Movement into a power dot results in the ghosts turning blue, as shown in the image above.

3rd Increment:

* Ghost movement is implemented.
* Movement follows an AI pattern. After a power dot is hit, the ghost movement changes to a different AI that aims to run away from the Pac-Men.

Other Features:

* Extra features are implemented.
* The number of dots eaten and the number of ghosts eaten under the influence of a power dot determine the score, shown on the board. Normal dots count for 10 points each, power dots are 50 points each, and each of the blue ghosts, in the order eaten, are 200, 400, 800, 1600, respectively.
* Pac-Man will have three lives, shown at the top of the board.
* Multiple levels are implemented. The level number will determine the ghosts’ speed and the length of their time in frightened mode.
* Graphics