

Video Game AI, Spring 2013
HW #5
Due May 16 at 12 midnight

This assignment is to be done individually. You can talk to other students to understand the provided code, and to get ideas, but all new code should be your own.

In this assignment you will implement behaviors for the PacMan ghosts in scheme. **Please read all instructions carefully to make sure you fully complete the assignment.**

1. Understand how the provided code (in AI.scm) works.
 - a. A location is a pair, with the `car` being the x coordinate, and the `cdr` being the y coordinate.
 - b. The `succ` function returns a list containing the 4 possible moves from each location. Functions are then used to filter the legal moves out of this list.
 - c. The `GetGhostMove` function makes corridor moves automatically, but otherwise asks each ghost to make its own move.
 - d. Call the function `SetAIMove` to set the next action that the AI will take.
 - e. The `GetSeekLocation` function will find the first action on a path to the target, avoiding the last location. If there is no path, it will return the best possible move.
 - f. The chase behavior for Blinky and Clyde is already implemented. The Scatter behavior for Inky and Pinky is also implemented.
2. Implement the following features:
 - a. Implement the proper scatter / frightened / chase behaviors for all ghosts.
 - b. Enhance the `GetGhostMove` function to cause all the ghosts to turn around when the game state changes. To do this, you can compare the current mode and the last mode. You can get the last action of a ghost using the function `GetLastGhostAction`. Write a new function in scheme which will take an action and return the reverse direction. Then implement ghost reversal behavior.
 - c. Implement the red regions from the Pac Man dossier where the ghosts are not allowed to turn upwards. Also prevent ghosts from returning into the home area. Do this by modifying the `IsIntersection` code in `duViewController.mm`.
 - d. Implement the proper behavior when ghosts have been eaten. It is probably easiest to do this inside `GetGhostMove`. Add a scheme binding to the function `IsEaten` which checks whether a ghost has been eaten. If a ghost has been eaten, on every step it should path directly back to the home location (14, 14).

Turn your final code into your SVN repository.