

Homework 2

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Q1)

I used the successors score, I removed from it the sum of the distance/s from ghost/s from ghostStates, and I either used the number of food eaten or minimum distance from food depending on a condition. And yes, using negatives of the ghost distance, food eaten, and minimum distance from food is good since we penalize wrong moves that the pacman is considering and we're guiding it to get closer to food points. (the distance from ghosts is set to 9999 if a ghost is close to pacman by 1 or less units and its set to 0 otherwise)

Q2)

After running each command for 20 seconds the minimax version achieved 116 points while the alpha-beta version achieved 746 points. Both the minimax and the alpha-beta versions take time when they are close to multiple ghosts, but the alpha-beta version was faster than the minimax in getting through this part.

Q3)

Yes it behaved the same way in both tests, since we're pruning the actions according to a logic where the outcome of the root in alpha-beta will be the same as the one in minimax, the pruning only ensures that we finish the analysis in less or the same number of steps.

Q4)

Expectimax was as fast as minimax, and of course slower than alpha-beta. But at some point it started behaving differently from minimax or alpha-beta.

Q5)

The only difference in features is that I don't use food eaten but I use the food left feature from foodList. It's supposed to apply the same logic but this time we don't have a condition. We penalize the score according to the sum of minimum distance from food, food left, and distance from ghosts. (the distance from ghosts is set to 9999 if a ghost is close to pacman by 3 or less units and its set to 0 otherwise)

Q6)

I didn't use any weights in my code