1115200600110_project1

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Question 1

Things the function take into consideration are:
distance to closest food: 1 / this distance is added to the return price

distance to closest capsule if there are capsules on the map: add +50 for eating a capsule or 15∗ the distance if a capsule is close (distance < 2).

distance to a ghost if this distance is ≤ 1 : if that ghost is scared return score + 150 points else if the ghost is a threat return -infinity since we are going to lose.

Penalty of 10 points if the action to take is stop since stopping costs points.

The child game state get score score is returned along with the above values that are taken into consideration.

Question 2

Minimax algorithm full recursive implementation.

base case :
if we reached full depth , won or lost.

Pacman is the maximizer and ghosts are minimizers. Depth is increased when pacman and a full round of ghosts have played.

Question 3

Same as minimax only with alpha beta pruning. Keeping track of a and b to do so.

Question 4

Same as minimax only on minimizers their avg evaluation is returned.

Question 5

Things the function takes into consideration:

If we are at a win state a huge positive score is returned

If we are at a lost state a huge negative score is returned

If there is a scared ghost nearby give a 150 points since eating it will score a lot of points.

If there is a capsule nearby give 50 points since it scores nice.

Minimum distance to a food with a factor of 11 / that distance

How many foods are left are substracted with a factor of 0.5 since we need to give better score for few foods.

A ghost position is taken into consideration only if that ghost is close and not scared. If so the 21 / that minimum distance is substracted from the score to be returned.

Finally the current game state score is returned along with the factors from above.

Notes: some factors were chosen after multiple tests only because pacman performed better.

Pacman will wait near a capsule many times for the ghosts so he can eat them and score high.