Written Questions

1.) What feature (or features) did you use for your evaluation function?
I used multiple features and because I thought this through a lot I got full credit on the last question.
   - **I rewarded Pacman for being for being closer to food (Food Distance)**
   - **I punished Pacman for being closer to ghosts (Ghost Distance)**
   - **I punished Pacman hard if his next position would put him in a position that a ghost was also located in (Pacman Death)**
   - **I rewarded or punished Pacman based on the state score (State Score)**
   - **I punished Pacman for remaining still (Pacman Movement)**
   - **I rewarded Pacman for increasing scared times (Ghost Scared Times)**

2.) When Pacman believes that his death is unavoidable, he will try to end the game as soon as possible because of the constant penalty for living. Give an explanation as to why the Pacman rushes to the closest ghost in this case?
Pacman is a maximizing agent. When his last option is to die he chooses the action that maximizes his reward. Him dying as soon as possible will maximize his reward which is why he takes this path.

3.) You should find that your ExpectimaxAgent wins about half the time while your AlphaBetaAgent always loses. Explain why the behavior here differs from the minimax case?
In our Expectimax case we are assuming a uniform distribution of actions. This is closer to the ghosts actual behavior (and may possibly be their behavior). In the AlphaBetaAgent we are assuming that the ghosts will make optimal decisions, this causes us to make choices that are actually worse for Pacman some of the time. The imperfect decisions aren't considered and so Pacman will make a choice assuming it to be good but it will actually kill him. We can prune a tree and lose information from that tree even if it could have possibly been helpful.

4.) What feature (or features) did you use for your evaluation function?
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Self Analysis

1.) What was the hardest part of the assignment for you?
I feel like the hardest part was expanding the general algorithms to work in the case where multiple agents can act.

2.) What was the easiest part of the assignment for you?
Question 1 and 5 were pretty easy for me.

3.) What problem(s) helped further your understanding of the course material?
I think that all problems were helpful
4.) Did you feel any problems were tedious and not helpful to your understanding of the material?
No
5.) What other feedback do you have about this homework?
None