CS221 Homework 5 - Pacman

Name: Vinod Kumar Senthil Kumar
SUNET ID: vinodkum
Contributors: Xun Fang, Joe Fan

1a) Let $a_0, a_1, \ldots, a_n$ be the agents in the game.
Let a_0 be the pacman
Let $a_1, \ldots, a_n$ be the n opponents

$$V_{opt}(s,d) = \begin{cases} Utility(s) & \text{, if } IsEnd(s) \\ Eval(s) & \text{, if } d = 0 \\ \max_{a \in actions(s)} V_{opt}(Succ(s,a), d) & \text{, if } Player(s) = Pacman \text{ (i.e. } a_0) \\ \min_{a \in actions(s)} V_{opt}(Succ(s,a), d-1) & \text{, if } Player(s) = n^{th} \text{ opponent (i.e } a_n) \\ \min_{a \in actions(s)} V_{opt}(succ(s,a), d) & \text{, otherwise} \end{cases}$$

3a) Let $a_0, a_1, \ldots, a_n$ be the agents in the game.
Let a_0 be the pacman
Let $a_1, \ldots, a_n$ be the n opponents

$$V_{opt,\pi}(s,d) = \begin{cases} Utility(s) & \text{, if } IsEnd(s) \\ Eval(s) & \text{, if } d = 0 \\ \max_{a \in actions(s)} V_{opt,\pi}(Succ(s,a), d) & \text{, if } Player(s) = \text{pacman (i.e } a_0) \\ \sum_{a \in actions(s)} \pi_{opp}(s,a) V_{opt,\pi}(Succ(s,a), d-1) & \text{, if } player(s) = n^{th} \text{ opponent (i.e } a_n) \\ \sum_{a \in actions(s)} \pi_{opp}(s,a) V_{opt,\pi}(Succ(s,a), d) & \text{, if otherwise} \end{cases}$$