Feedback — Exercise 7.2

You submitted this quiz on **Thu 28 Nov 2013 4:00 PM PST**. You got a score of **10.00** out of **10.00**.

Click here to see a sample game tree. Use this tree to answer the following questions. The values on the max nodes are actual goal values for the associated states as given in the game description, not state utilities determined by game tree search.

Question 1

What is the state utility of the top of the tree (as determined, for example, by Minimax)?

You entered:

60

Your Answer		Score	Explanation
60	✔	3.00	Here is the completed game tree, after running minimax.
Total		3.00 / 3.00	

Question Explanation

You should disregard the goal values for intermediary states that are not terminal, these can be used by heuristics but have no "real" impact on gameplay (and thus are disregarded by minimax).

Question 2

Now consider a player using fixed-depth heuristic search with depth limit 1. How many max nodes are searched in evaluating the top node in this tree (i.e. how many times is maxscore called)?

You entered:

5

Your Answer		Score	Explanation
5	✔	3.00	The player will examine 5 max nodes: the root and the 4 max nodes one move away from it.
Total		3.00 / 3.00	

Question Explanation

Remember to only count the MAX nodes.
The MIN nodes are not actual states of the game, they are just modelling opponents taking their actions after you committed to yours at every round (which is the right way to model the worst case outcome for the player). When both the player and the opponents select an action at a (MAX) node, you jump to the corresponding MAX node.

Question 3

Suppose that same player (fixed-depth heuristic search with depth limit 1) uses a goal proximity heuristic with state reward as the heuristic value for non-terminal states. What is the minimum final reward for this player in this game?

You entered:

60

Your Answer		Score	Explanation
60	✔	4.00	First move: worst outcome according to the heuristic is 10 left, 30 right => player goes right. The worst case is if he actually ends up in the "30" state (rather than the "40"). Second move: goes right for a guaranteed reward of 60 (at depth 1).
Total		4.00 / 4.00	

Question Explanation

Determine what decision the player makes on his first move given his heuristic estimation of the intermediate states at depth 1, and the worst (for the player) possible intermediate state that can result of that decision. Then repeat that process for the second move of the player.