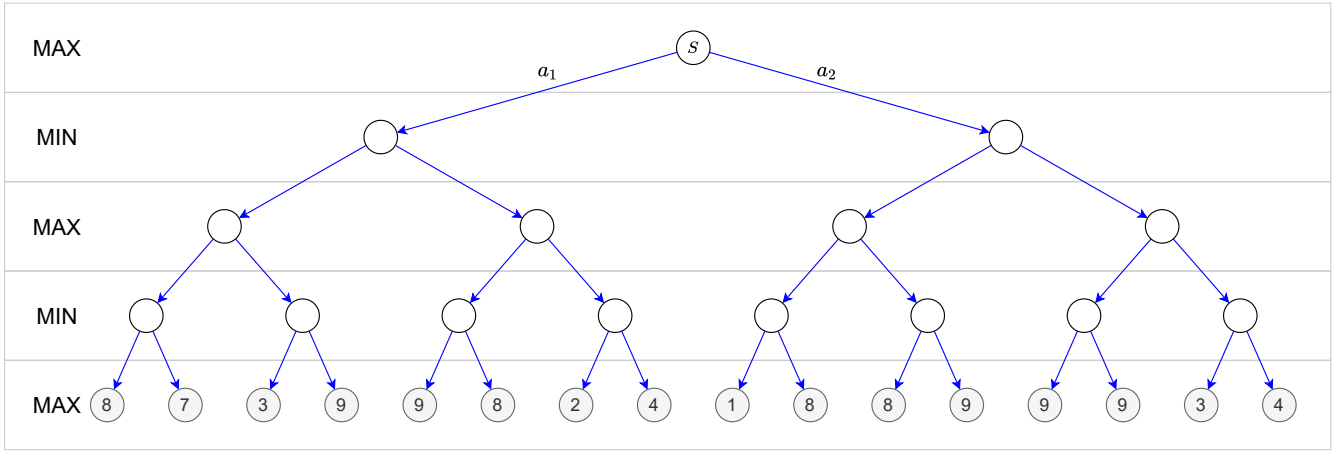
HOMEWORK 4

1. Answer the following questions about hill climbing algorithm

   (a) Which places in the state space make regular hill climbing fail to the optimal solution?

   (b) Are variations of hill climbing (such as Random-restart hill-climbing, local beam search, etc.) guarantee complete and/or optimal? Briefly explain.

2. Given the following game tree of zero-sum game, each leaf node has a utility value. Now, it is MAX's turn. Assume that both MAX and MIN agents use MINIMAX strategy to find utility values and make decision.

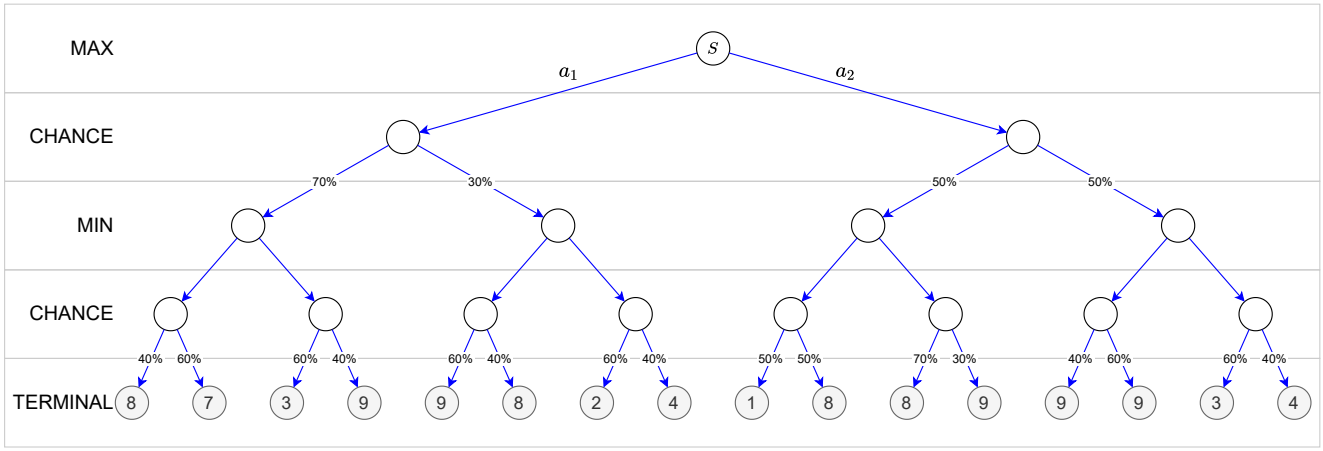


   (a) Fill in each blank circle with utility values.

   (b) What is the best action for MAX?

   (c) Cross out branches that will be pruned by Alpha-Beta Pruning (process the tree left-to-right)

3. Given the following game tree of stochastic zero-sum game, each leaf node has a utility value. Now, it is MAX's turn. Assume that both MAX and MIN agents use the optimal strategy to find utility values and make decision.



(a) Fill in each blank circle with utility values.

(b) What is the best action for MAX?