CS-171, Intro to A.I. — Quiz#2 — Fall Quarter, 2012 — 20 minutes

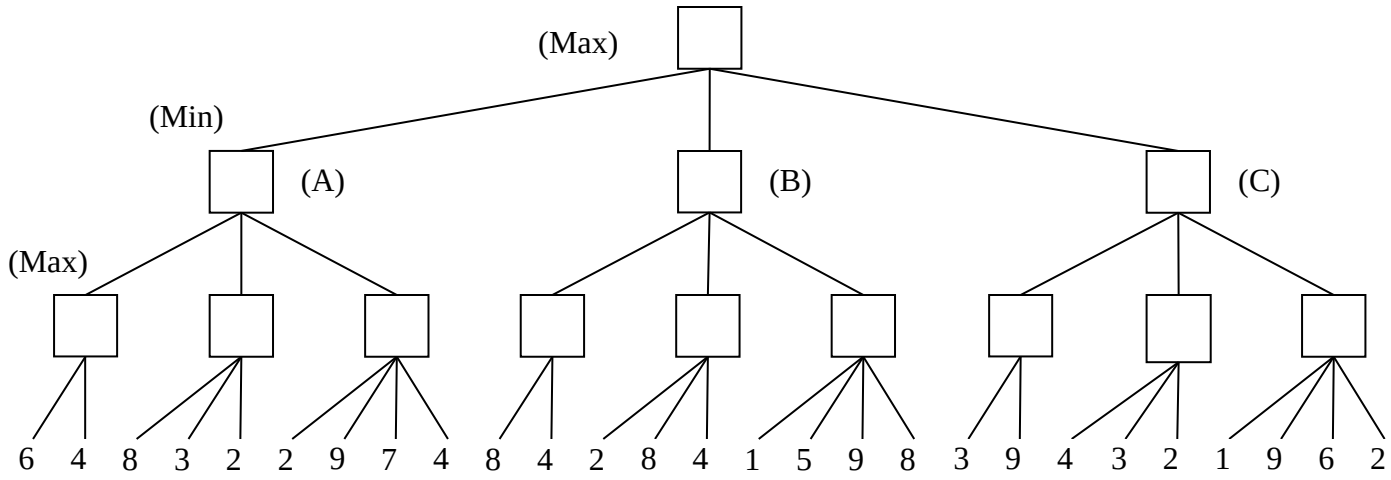
YOUR NAME AND EMAIL ADDRESS: _____

YOUR ID: _____ ID TO RIGHT:_____ ROW:_____ NO. FROM RIGHT:_____

1. (25 pts total, -5 pts for each error, but not negative) MINI-MAX SEARCH IN GAME TREES.
The game tree below illustrates a position reached in the game. Process the tree left-to-right. It is **Max**'s turn to move. At each leaf node is the estimated score returned by the heuristic static evaluator.

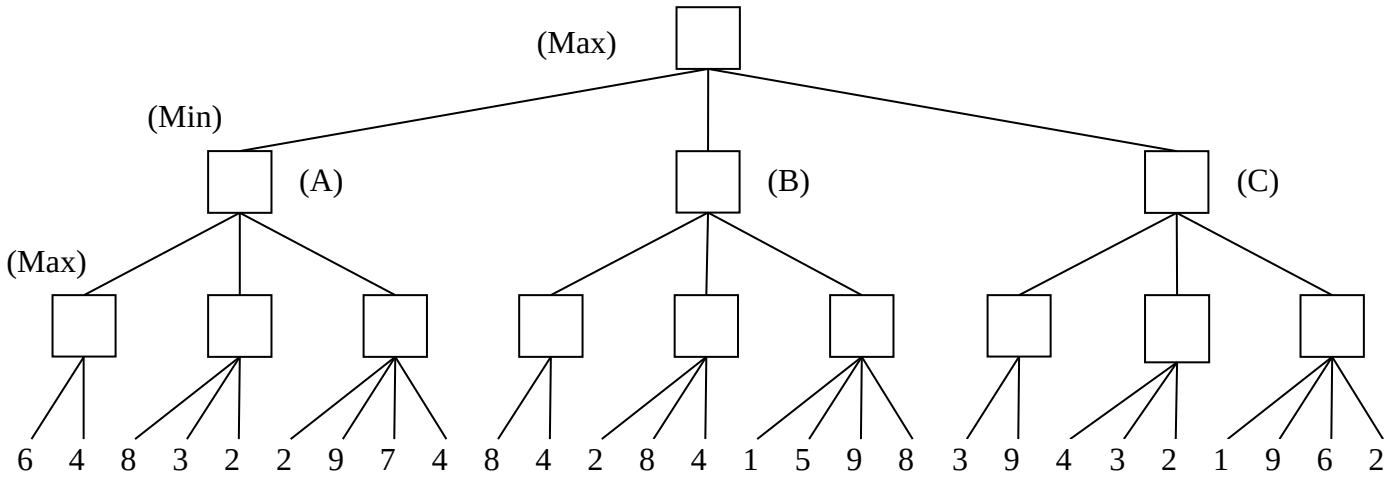
1.a. Fill in each blank square with the proper mini-max search value.

1.b. What is the best move for Max? (write A, B, or C) _____



2. (25 pts max, -5 for each error, but not negative) ALPHA-BETA PRUNING. Process the tree left-to-right. This is the same tree as above (1.a). You do not need to indicate the branch node values again.

Cross out each leaf node that will be pruned by Alpha-Beta Pruning.



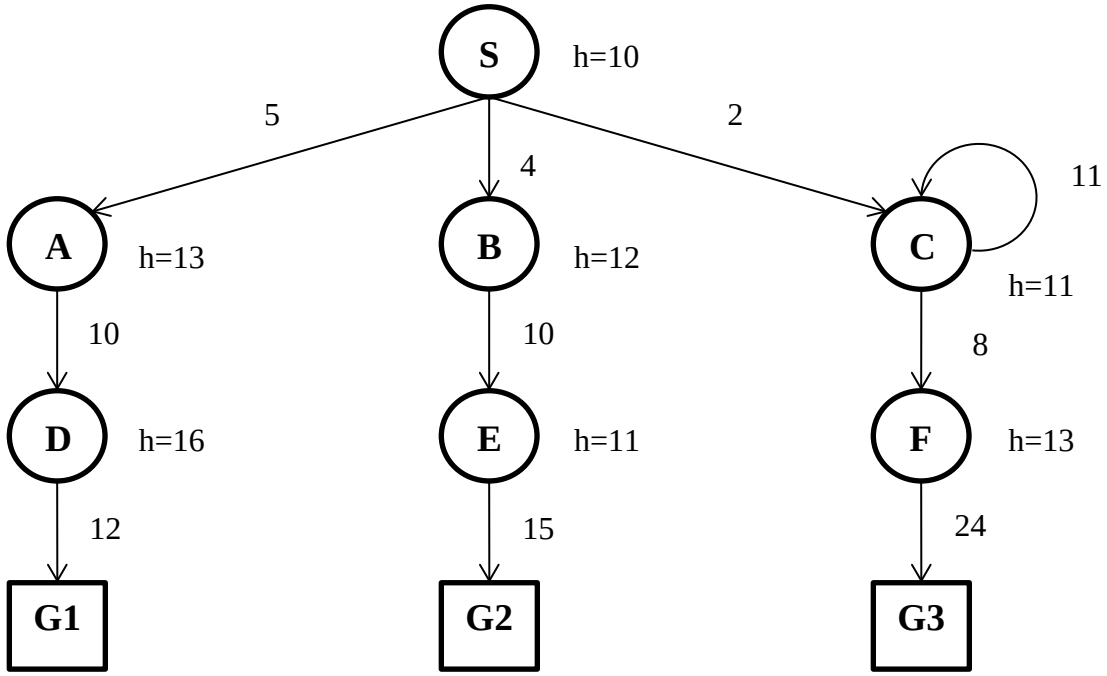
****** TURN PAGE OVER AND CONTINUE ON THE OTHER SIDE ******

3. (50 pts total, 10 pts each) Execute Tree Search through this graph (i.e., do not remember visited nodes, so repeated nodes are possible). It is not a tree, but pretend you don't know that.

Step costs are given next to each arc. Heuristic values are given next to each node (as h=x). The successors of each node are indicated by the arrows out of that node. Successors are returned in left-to-right order. **(Note: C is a successor of itself).**

For each search strategy below, indicate the order in which nodes are expanded (i.e., to expand a node means that its children are generated), ending with the goal node that is found.

The first one is done for you as an example.



3.a. DEPTH FIRST SEARCH.

S A D G1

3.b. (10 pts, -3 for each wrong answer, but not negative) **UNIFORM COST SEARCH.**

3.c. (10 pts, -3 for each wrong answer, but not negative) **GREEDY (BEST-FIRST) SEARCH.**

3.d. (10 pts, -3 for each wrong answer, but not negative) **ITERATED DEEPENING SEARCH.**

3.e. (10 pts, -3 for each wrong answer, but not negative) **A* SEARCH.**

3.f. (10 pts, -3 for each wrong answer, but not negative) **OPTIMALITY.**

Did Uniform Cost Search find the optimal goal?_____ Why or why not?_____

Did A* Search find the optimal goal?_____ Why or why not?_____