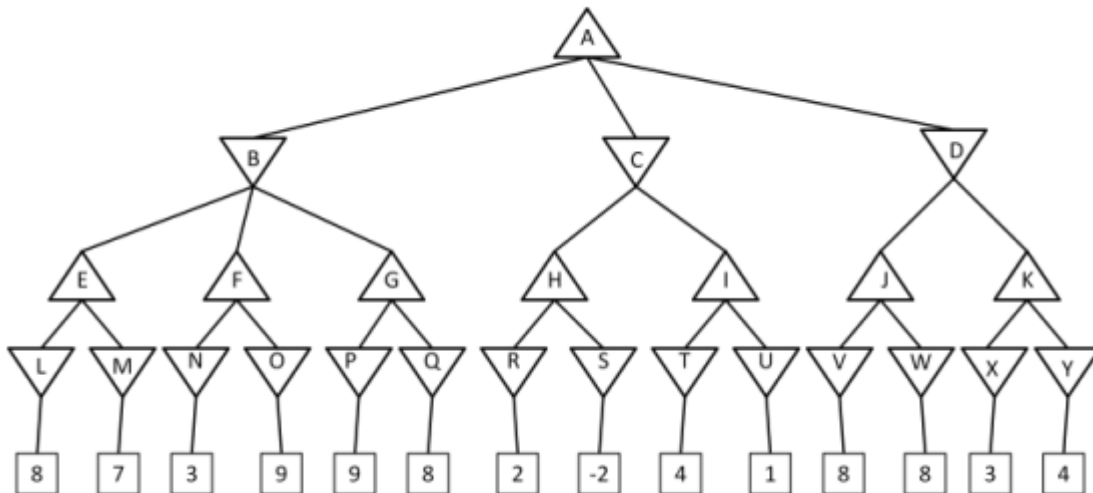
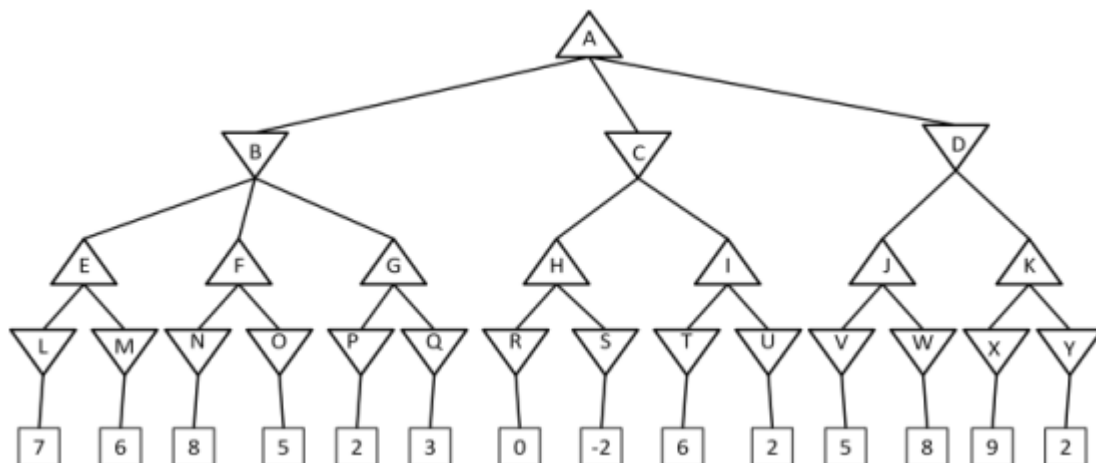


Practice Question for Module-3

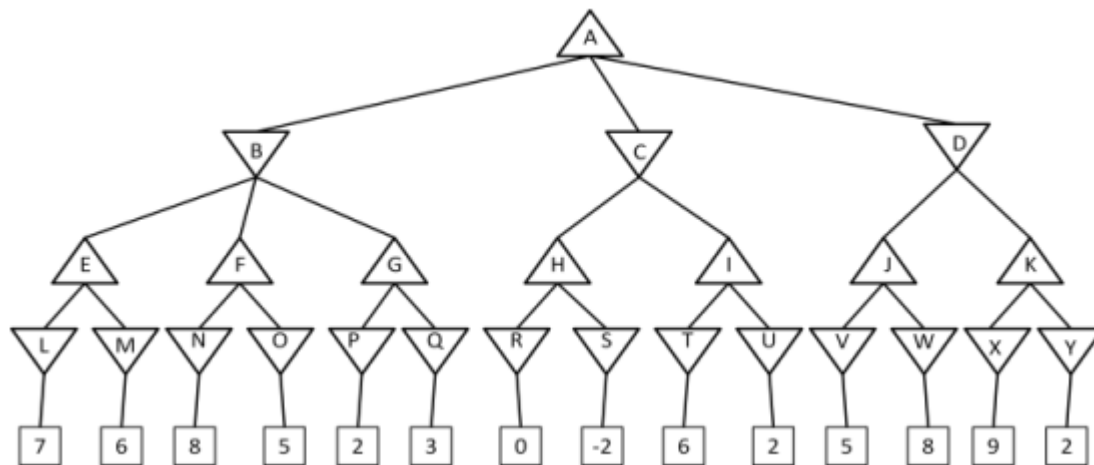
Q1. Consider the following two-person game. Apply the alpha-beta algorithm on it and demonstrate the corresponding search tree built by this algorithm. Clearly show the pruned nodes or branches of the tree. Justify that the pruned nodes do not have any impact on the outcome of the game. [10 Marks]



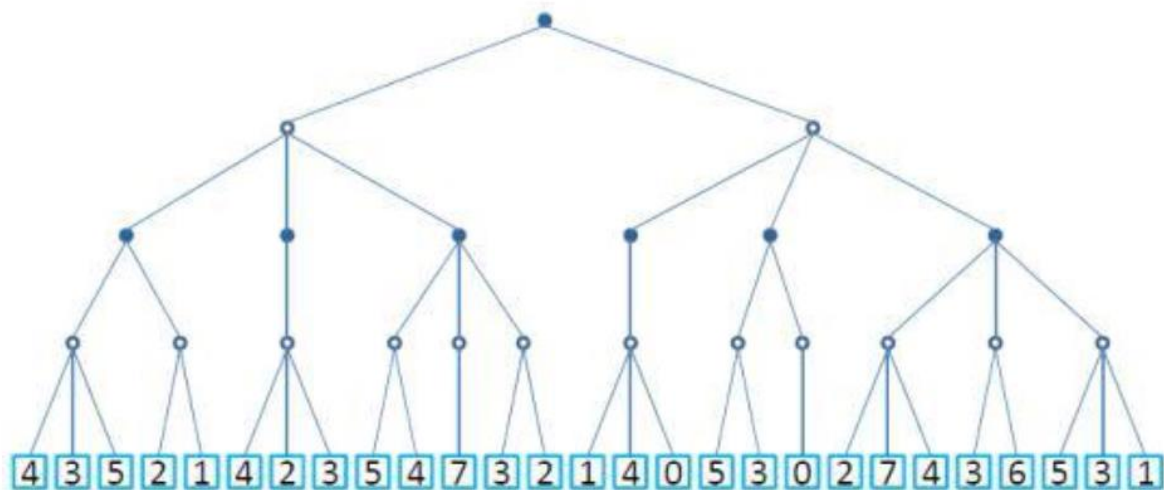
Q2. Consider the following two-person game. Apply the alpha-beta algorithm on it and demonstrate the corresponding search tree built by this algorithm. Clearly show the pruned nodes or branches of the tree. Justify that the pruned nodes do not have any impact on the outcome of the game. [10 Marks]



Q3. Consider the game tree in which the static scores are from first player's point of view. Suppose the first player is maximizing player. Applying mini max search, show the backed-up values in the tree. What move will the MAX choose? If the nodes are expanded from left to right, what nodes would not be visited using alpha-beta pruning? Also explain limitations of Mini-Max search. How to overcome them? [10 Marks]

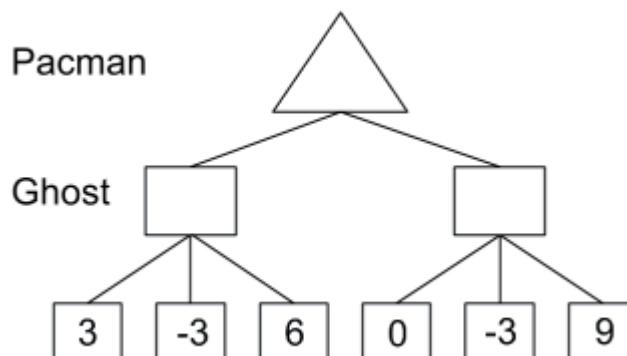


Q4. Identify the nodes that are pruned using the alpha-beta pruning algorithm.



Q5. Pacman is going to play against a careless ghost, which makes a move that is optimal for Pacman 1/3 of the time and makes a move that minimizes Pacman's utility the other 2/3 of the time.

- (i) [2 pts] Fill in the correct utility values in the game tree below where Pacman is the maximizer:



- (ii) [2 pts] Draw a complete game tree for the game above that contains only max nodes, min nodes, and chance nodes.

Q6. Draw the game tree of tic toe game and show the utility function. [5 Marks]

Q7. Draw the game tree for 8 puzzle game with starting state as follows: [5 Marks]

1	2	3
8		4
7	6	5

Initial state

	1	2
3	4	5
6	7	8

Goal State

Hint:

<https://viterbiweb.usc.edu/~adamchik/15121/lectures/Game%20Trees/Game%20Trees.html>