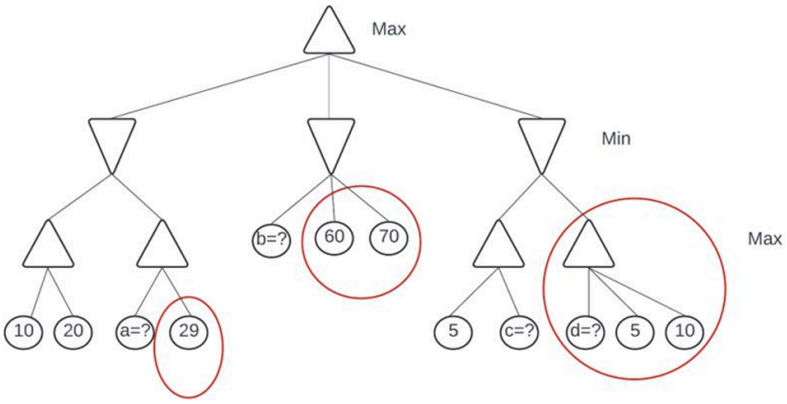
1. Consider the following table for Simulated Annealing on a maximization problem:

Neighbor Generation Sequence Number	E(Neighbor)	Value provided by Random Generator
1	4	0.55
2	9	0.95
3	5	0.5
4	12	0.1
5	6	0.35

The neighbors are generated sequentially according to their Sequence Number. If the energy/utility value of the current state, E(current) = 10, find which neighbor will be given the values of the Random Generator for each neighbor for the following temperature values. Show the calculation steps.

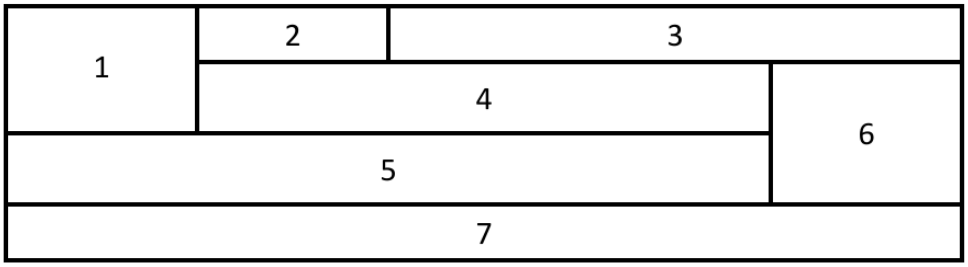
   a. For temperature, T = 8
   b. For temperature, T = 2
   c. For temperature, T = infinity

2. Consider the following tree:



   a. Find the range of values of a, b, c, and d so that the circled branches are pruned when the minimax algorithm with alpha-beta pruning is applied.
   b. Explain why those branches are pruned with your chosen values (explain for a single branch i.e., why your chosen value of **a** prunes the branch with a utility value of 29).

3. Consider the following 7 tiles. You need to fille each tile with one of the four colors: Red, Green, Blue, and White in such a way that all the 7 tiles are distinguishable after assigning the colors.



However, there are some additional constraints:

- Tile 1 must be colored Red.
- Tile 3 cannot be colored Green or Blue.
- Tile 7 cannot be colored Green.

Now formulate the problem as a CSP problem. You must apply both MRV and LCV while choosing and assigning a color to a tile. Show the steps.