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Subject - ISLAB

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min-max Algorithm :

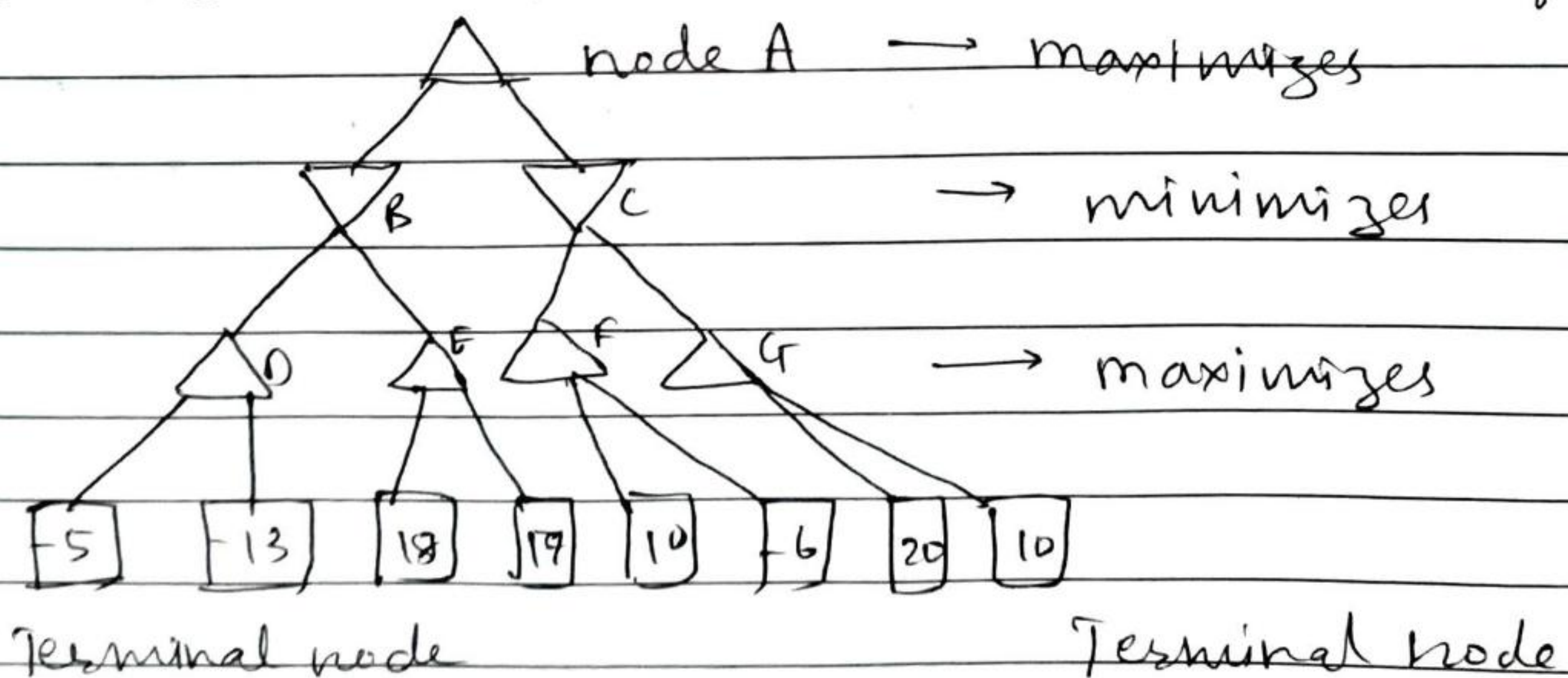
→ min-max Algorithm is a recursive or back-tracking also which is used in decision making and game theory. It provides an optimal move for the player assuming that opponents is also playing optimally.

- Min-max algo uses recursive to search through gametres

In this algo two players plays the game, one is called max and other is called min

- MIN-MAX algo is mostly used for playing game.
- STEP 1.

Let's take A in initial state of the tree. Suppose maximise takes just turn (when 0) which has worst case initial value = infinity, and maximize will take next turn which has worst case initial value =  $-\infty$





Step 2:-

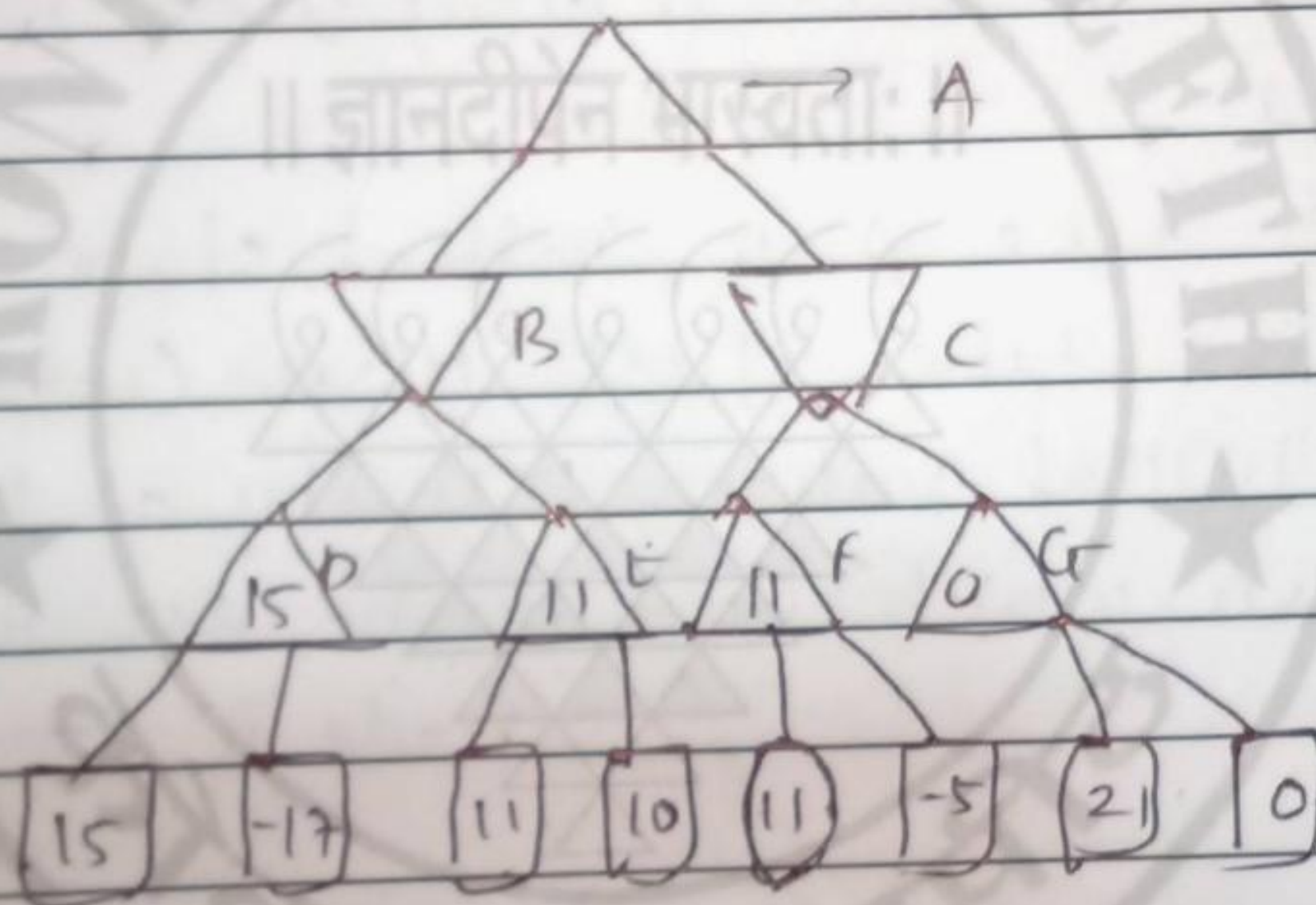
First we find the utilities value for the maximizes, its initial value is  $-\infty$ , so we will compare each value in terminal state with initial value of maximizes & determines its higher value of maximizes.

for node D:-  $\max(15, -\infty) \Rightarrow \max(15, -17) = 15$

for node E:-  $\max(11, -\infty) \rightarrow \max(11, 10) = 11$

for node F:-  $\max(11, -\infty) \rightarrow \max(11, -5) = 11$

for node G:-  $\max(-2, \infty) = \max(-2, 0) = 0$ .



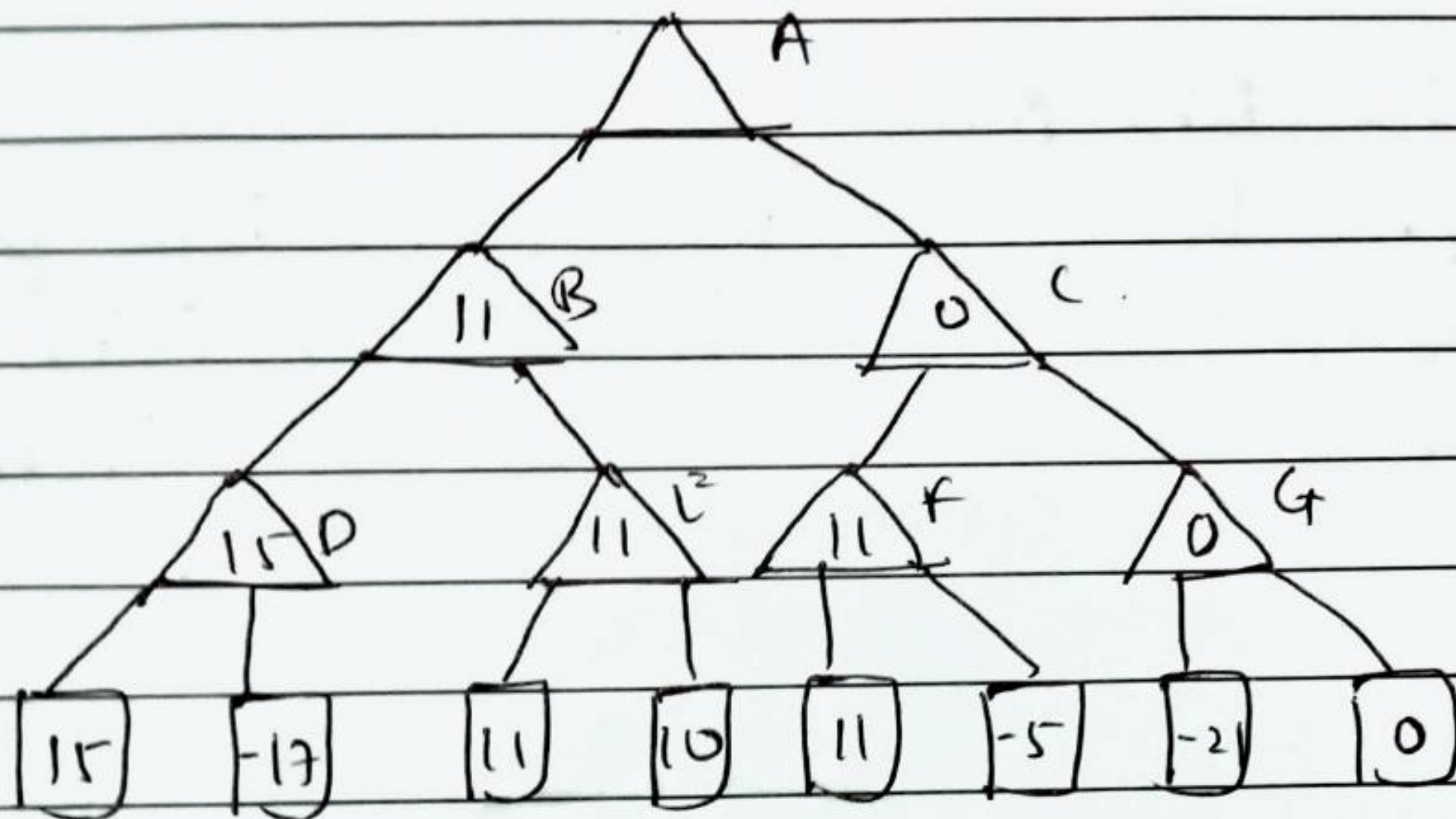
Step 3:-

In this step, it's turn for minimizes, so we will compare all nodes value with two, so it will compare the minimum values.

for nodes B:-  $\min(15, 11) = 11$

for nodes C:-  $\min(11, 0) = 0$

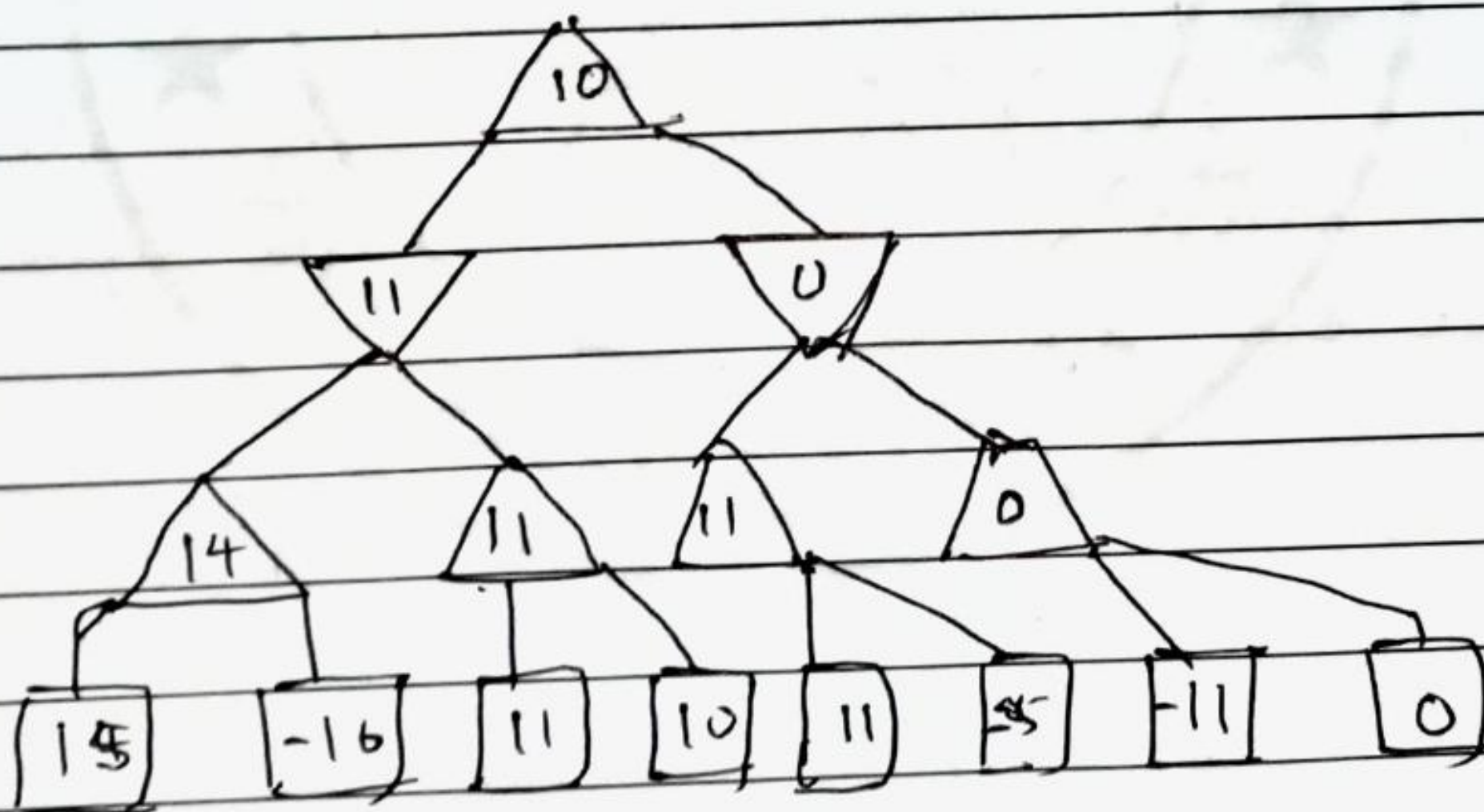




Step 4:-

Now it's turn for maximizes, and it will again choose the maximizes of all nodes value and find maximum value for the root node

for node A (10, 0) - 10



Hence, it was complete workflow of minimax algorithm with two players game