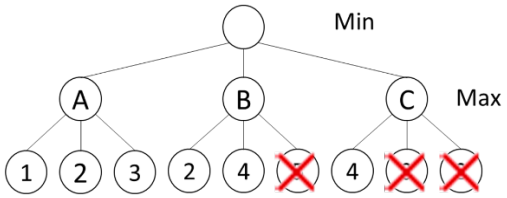
Units 19, 20, 21
Artificial Intelligence and Theory of Computation

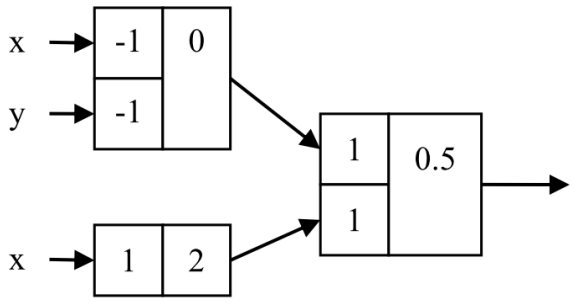
1.

(a) Ans: A, B, and C would be evaluated as 3, 5, and 4, respectively, and hence Min chooses A.

(b) Ans: The first 3 leaves need to be explored to fix the value of A, which is 3. Then we know Min is looking for some move which is evaluated as at most 3. Then the traversal keeps going, when it explores B's child 4, we know B is at least 4 and would not be chosen (as A is better for Min), and hence B's next child (5) can be pruned. Same logic goes with C, resulting in the following pruned tree.



2. Ans:



3. Ans:

NP stands for nondeterministic polynomial time, which refers to a class of **decision** problems that can be **decided** in polynomial time by a **nondeterministic** Turing machine, or, equivalently, for which a solution can be **verified** in polynomial time by a **deterministic** Turing machine.

A problem is NP-complete if

(a) It is in NP, and

(b) Every other problem in NP can be reduced to it in polynomial time.