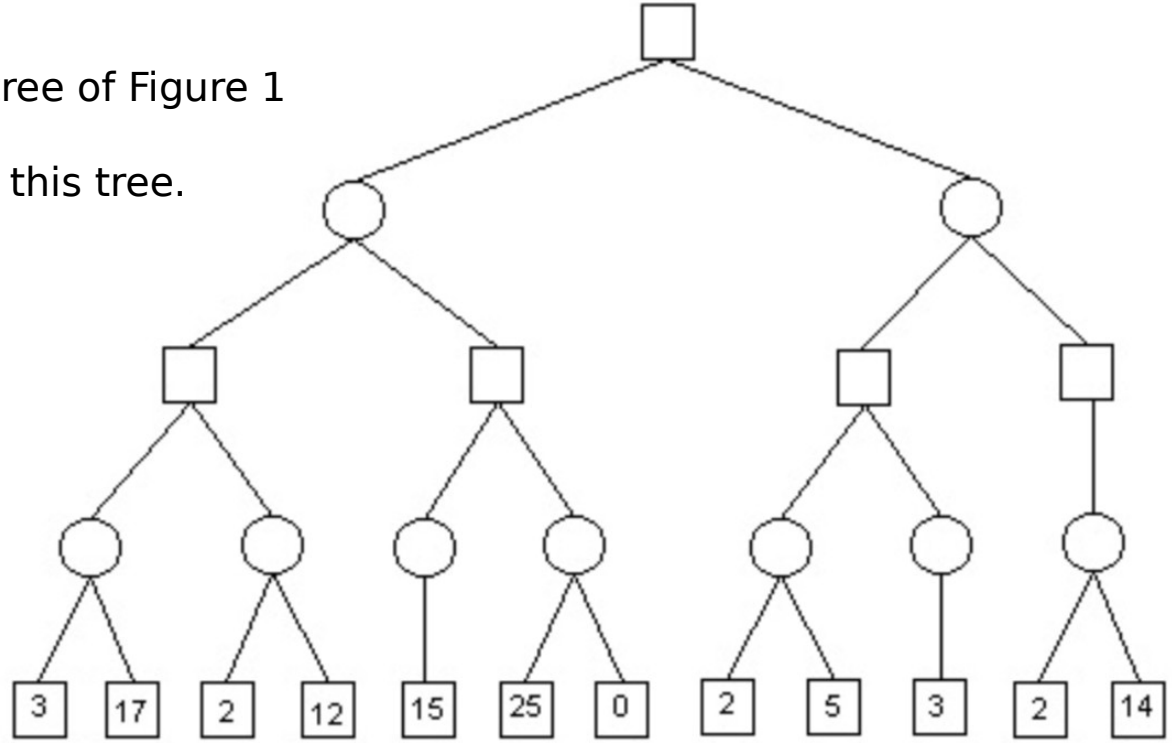
Artificial Intelligence
CSC 361

Tutorial#6

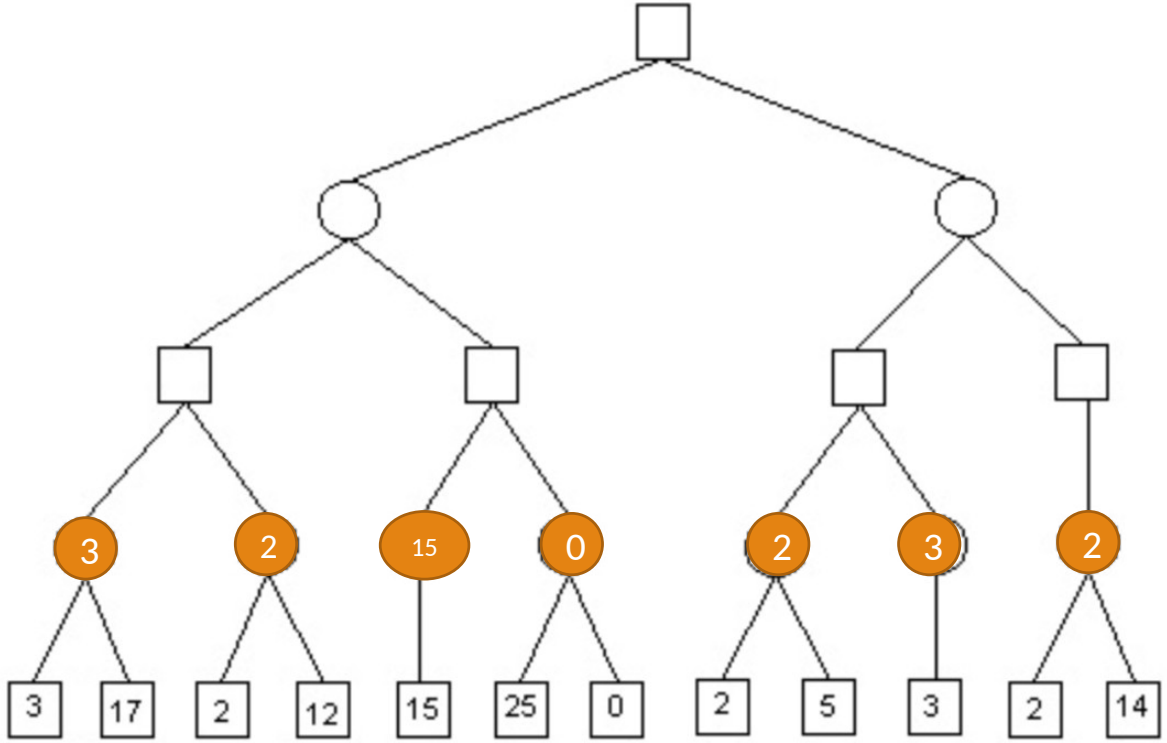
Consider the game tree of Figure 1

Consider the game tree of Figure 1

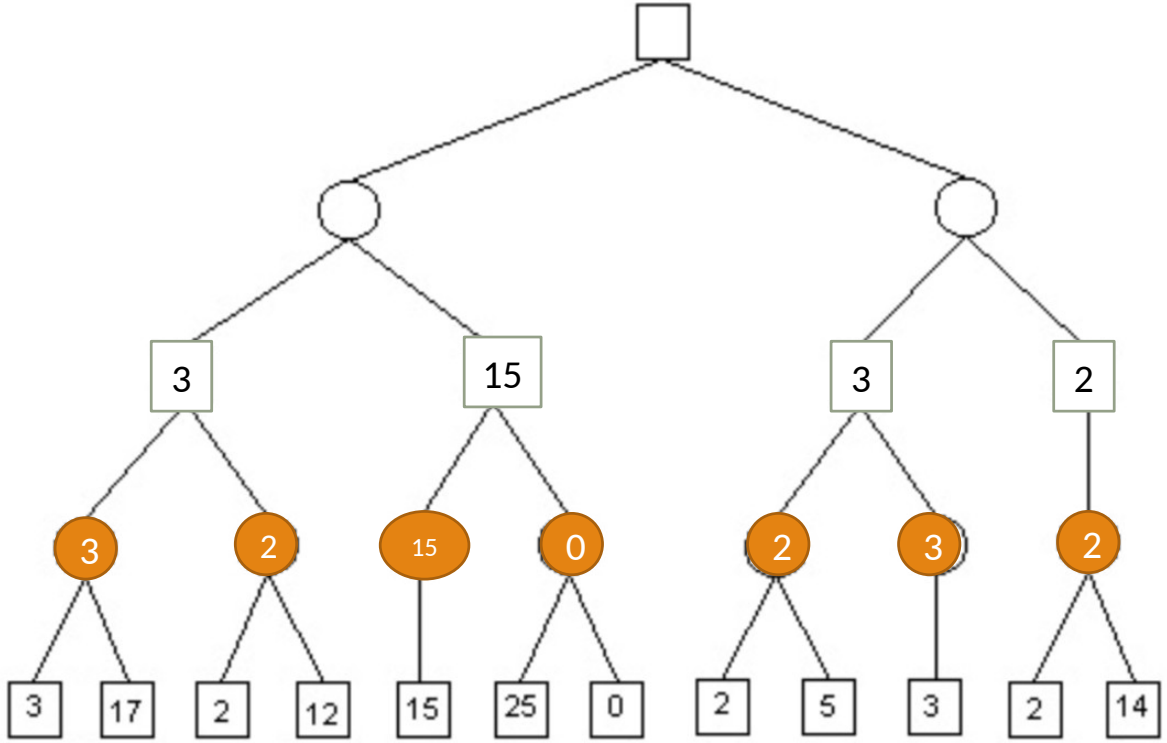
a) Apply minimax to this tree.
b) Apply $\alpha - \beta$.



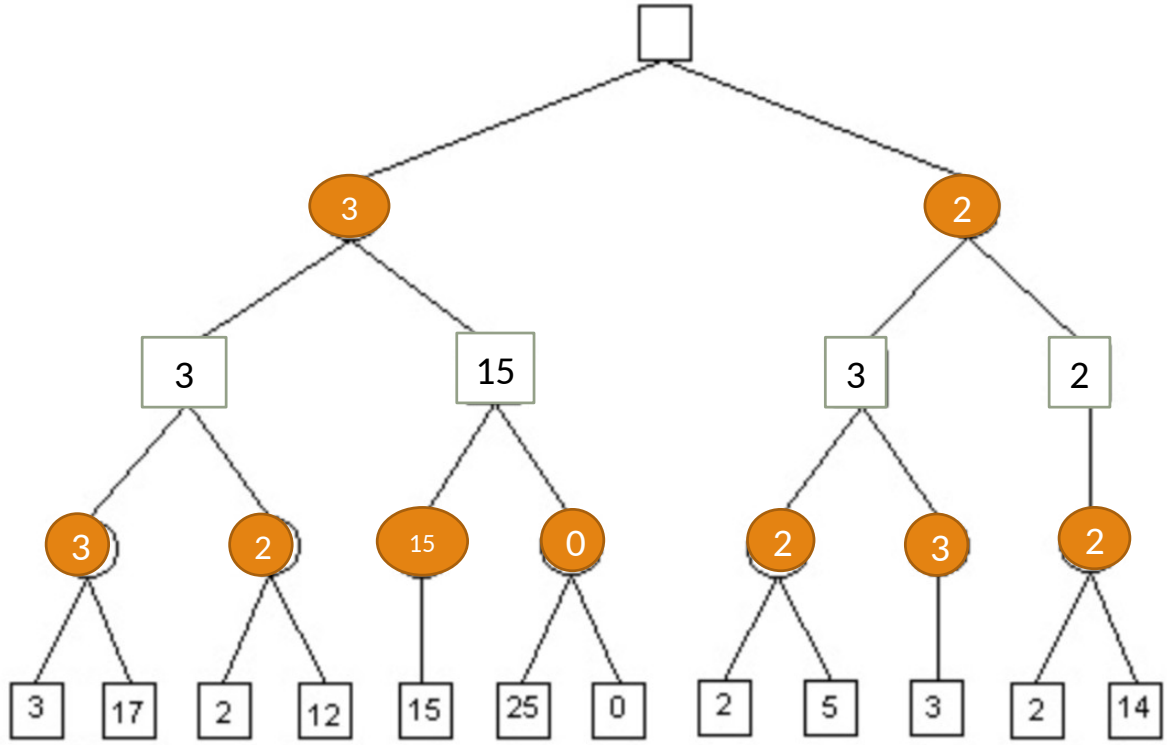
minimax



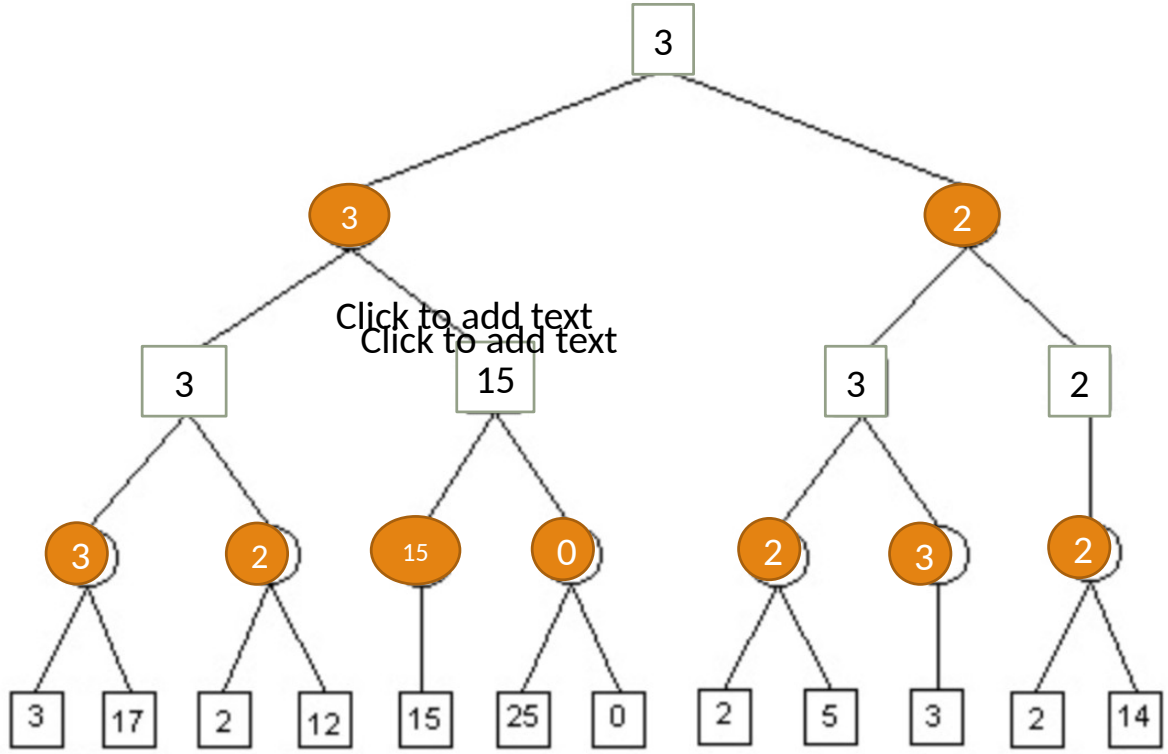
minimax



minimax



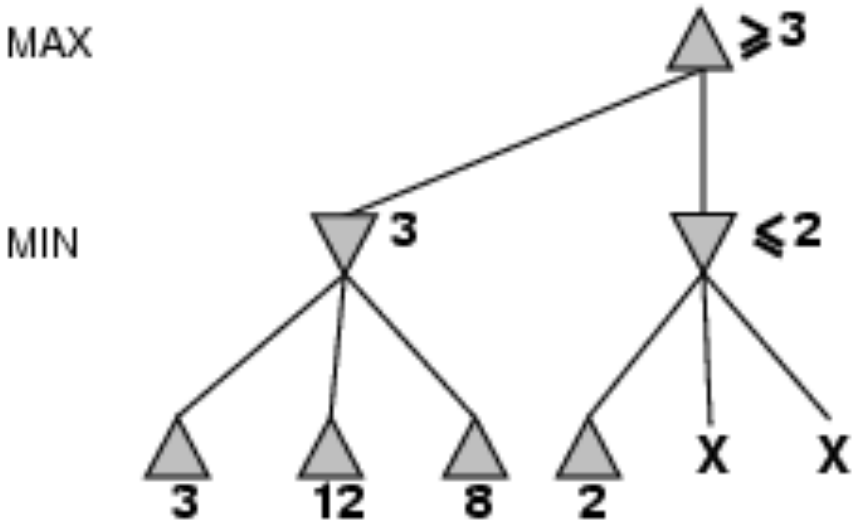
minimax

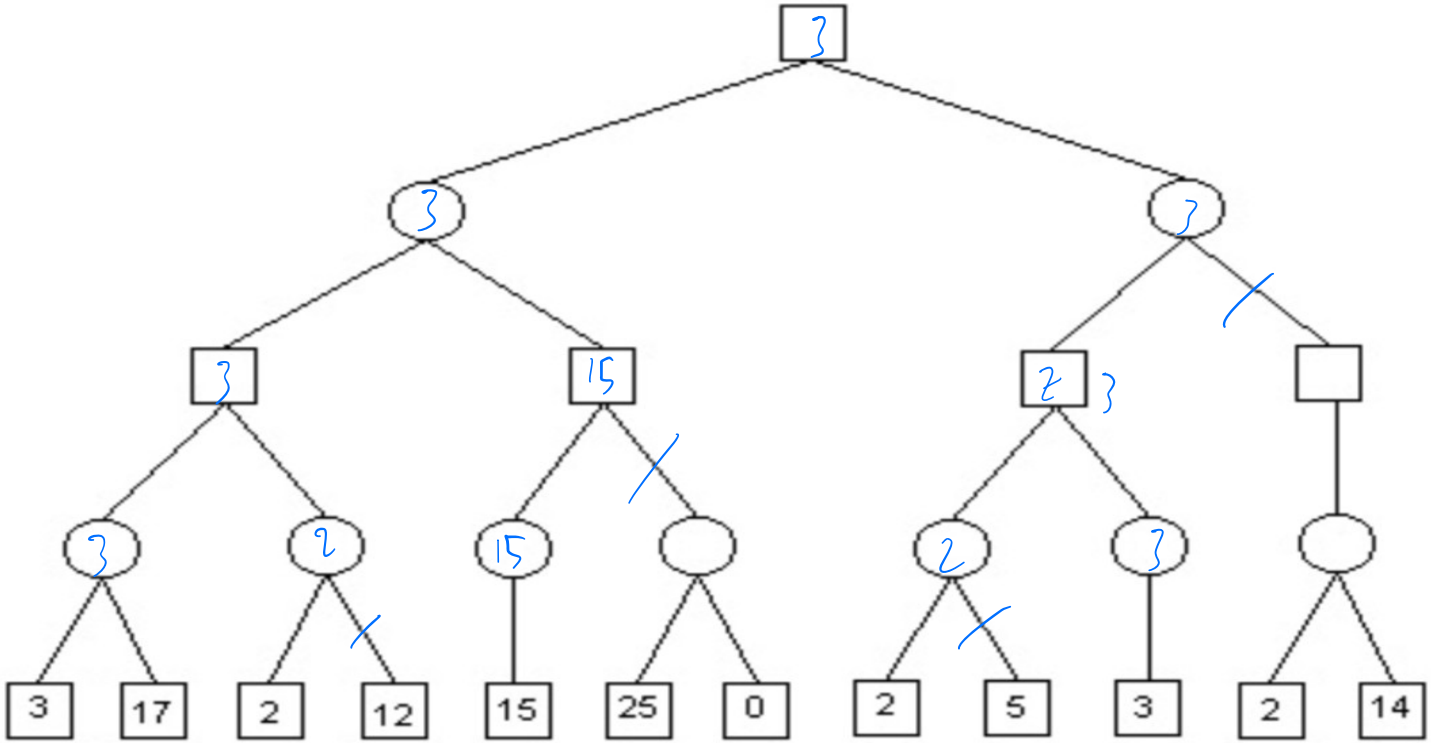


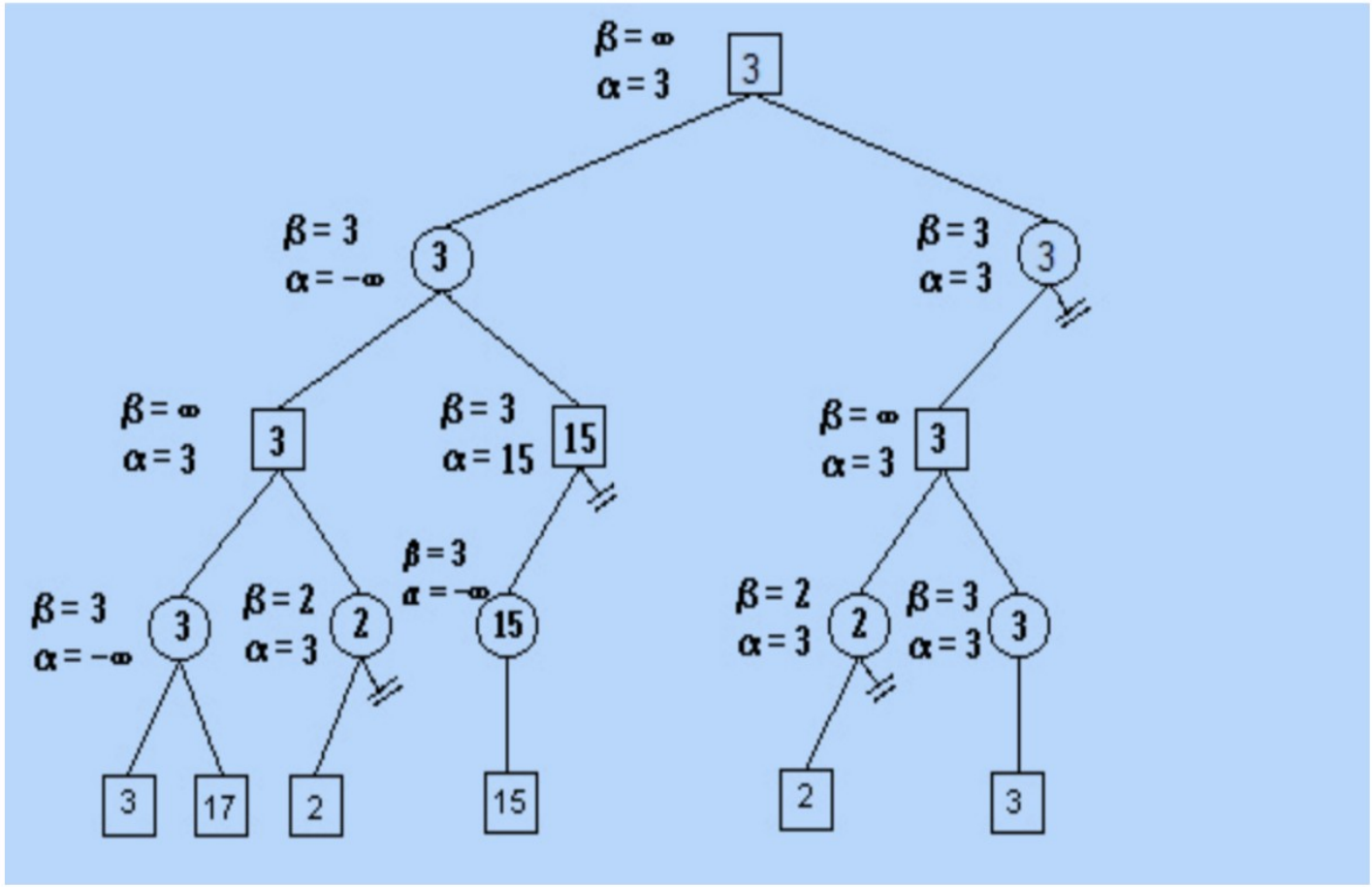
Alpha-Beta

- α is the value of the best (i.e., highest-value) choice found so far at any choice point along the path for *max*.
- β is the value of the best (i.e., lowest-value) choice found so far at any choice point along the path for *min*.

- Basic Idea : If you have an idea that is surely bad, don't take the time to see how truly awful it is
- Some branches will never be played by rational players since they include sub-optimal decision


MAX
MIN
≥3
3
≤2
3
12
8
2
X
X


3
3
3
3
15
2
3
3
2
15
2
3
3
2
12
15
25
0
2
5
3
2
14


β = ∞
α = 3
3
β = 3
α = −∞
3
β = 3
α = 3
3
β = ∞
α = 3
3
β = 3
α = 15
15
β = ∞
α = 3
3
β = 3
α = −∞
3
β = 2
α = 3
2
β = 3
α = −∞
15
β = 2
α = 3
2
β = 3
α = 3
3
3
17
2
15
2
3