6.034: Introduction to Artificial Intelligence

Adversarial search & games

Lecture 5 Handout

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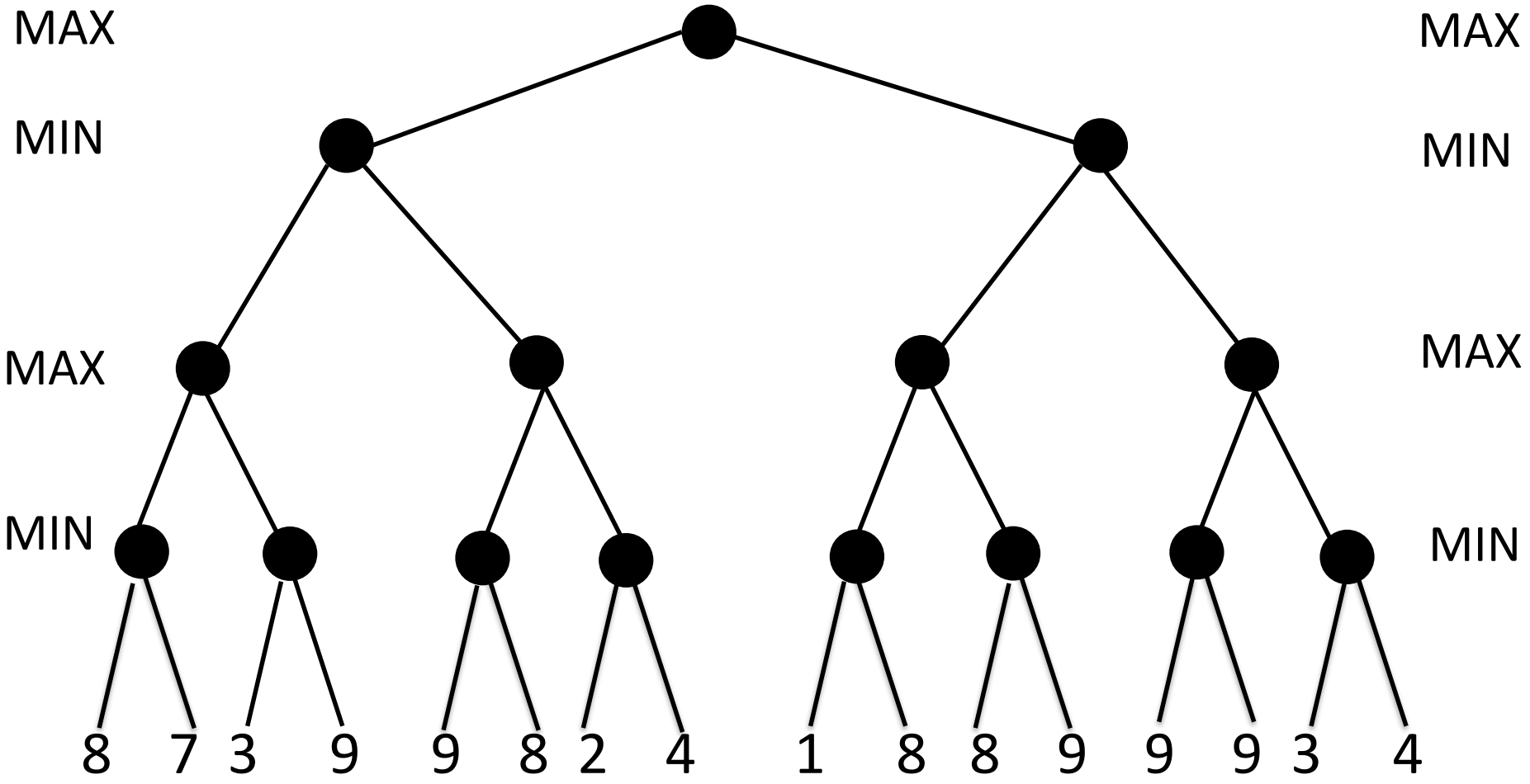
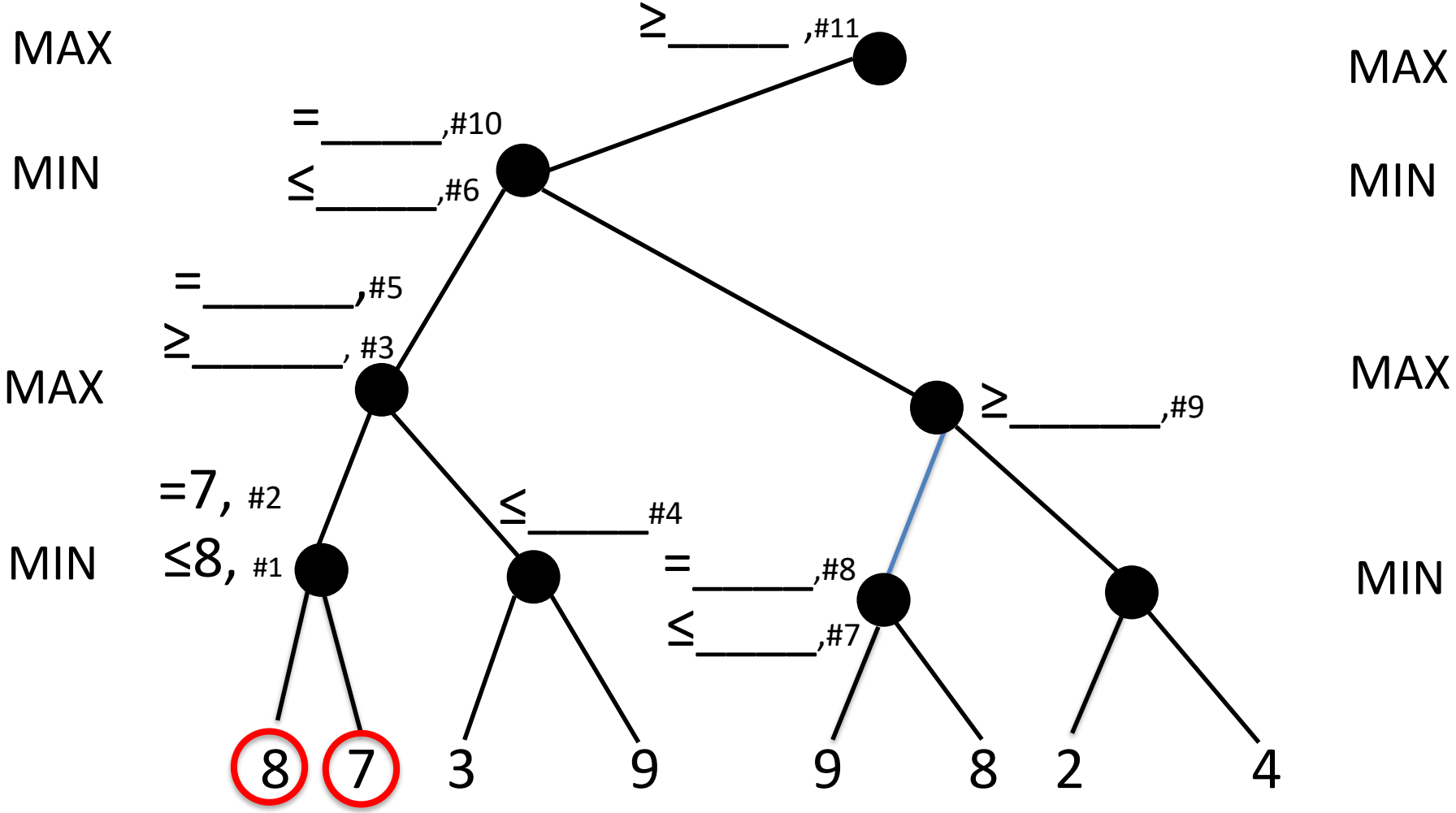
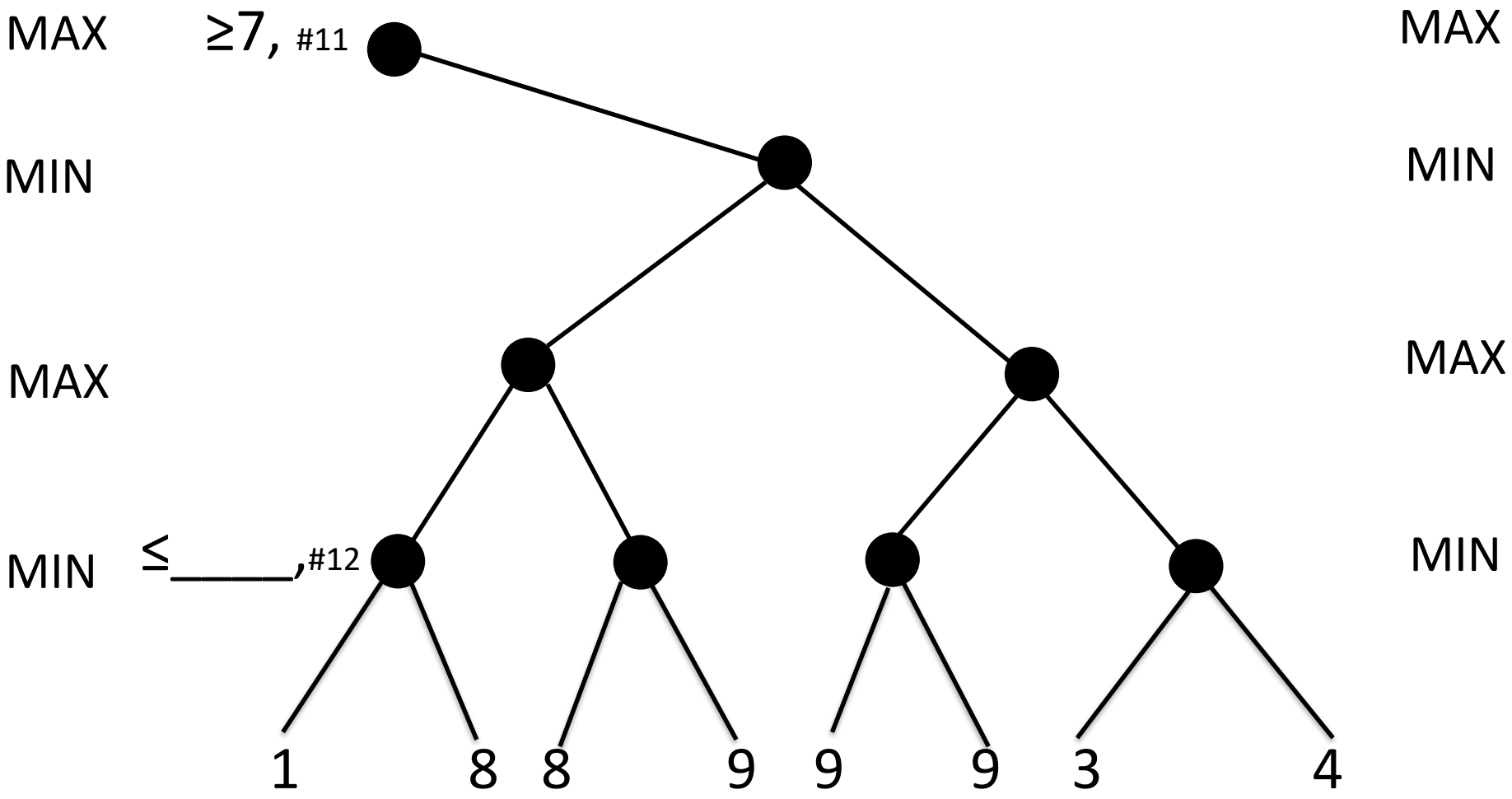
A deeper game tree illustrates how much pruning alpha-beta can do (b = ?, d= ?)



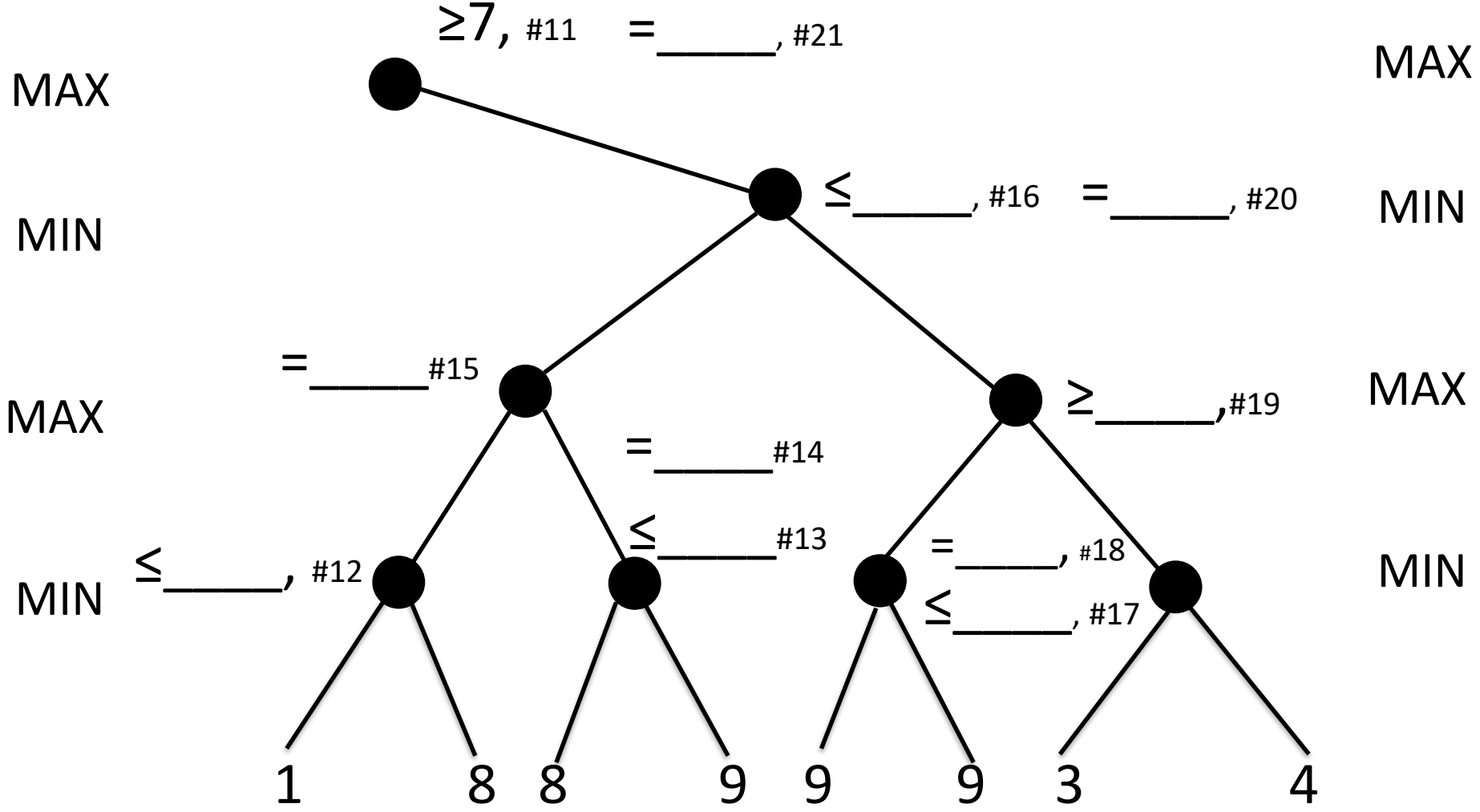
A deeper game tree illustrates how much pruning alpha-beta can do first half of tree



Second half of tree



Second half of tree



Ordering of static values can greatly affect alpha-beta pruning

- If the most favorable successor nodes for both MAX and MIN are on the _____ so we explore them _____, then this leads to maximal pruning
- If the most favorable successor nodes for both MAX and MIN are on the _____ so they are explored_____, then there is less pruning, possibly none at all
- Maximal pruning (in terms of branching factor b and tree depth d is approximately: _____

Gold star ideas from today

- Dead horse principle, aka “AWP”: α-β search
- Martial arts principle – use adversary’s strength against them: progressive deepening
- Anytime algorithms: progressive deepening
- Simple ≠ Trivial: sometimes, bulldozer computing works