Tutorial Week 5 – Adversarial Games

Aim

- Review definitions.
- Game trees and alpha-beta pruning.
- Explore the minimax and alpha-beta pruning algorithms.

1) **Define in your own words the following terms: zero sum game, game tree, pruning, terminal state, strategy, minimax value, utility function.**

2) **Examine the following game tree description and answer the questions below.**

For the following game tree, each player maximizes their respective utility. Let x, y respectively denote the top and bottom values in a node. Player 1 uses the utility function $U_1(x, y) = x$.
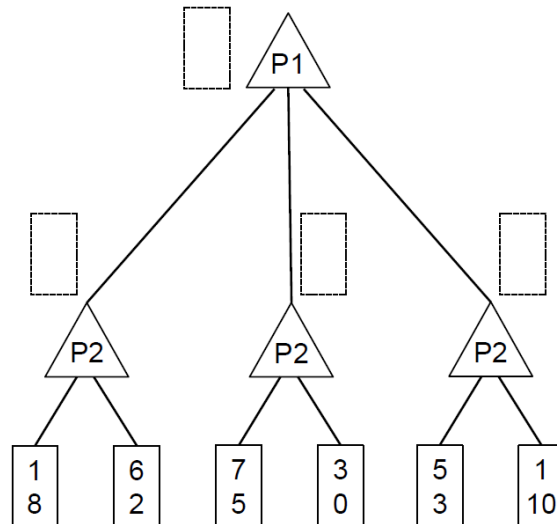
Both players know that Player 2 uses the utility function $U_2(x, y) = x - y$.

a) **Fill in the rectangles in the figure with the pair of values returned by each max node.**

b) **On the game tree above, put an 'X' on branches that do not need to be explored or write 'None'. Assume the branches are explored from left to right.**

3) **Download the Tut5search.ipynb file and move it into your aima-python directory. Start jupyter lab and work through the notebook.**

End