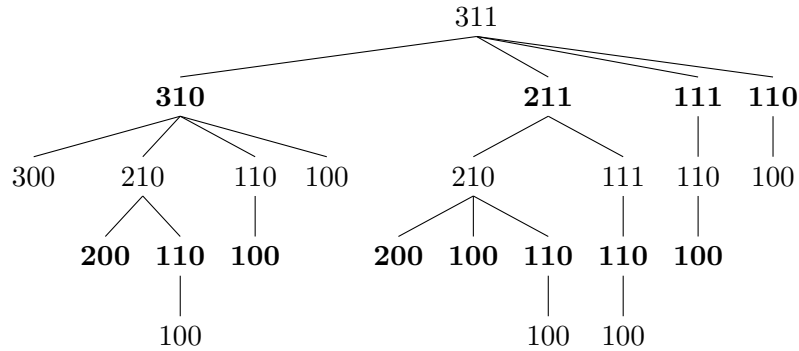


Algorithms Worksheet 3

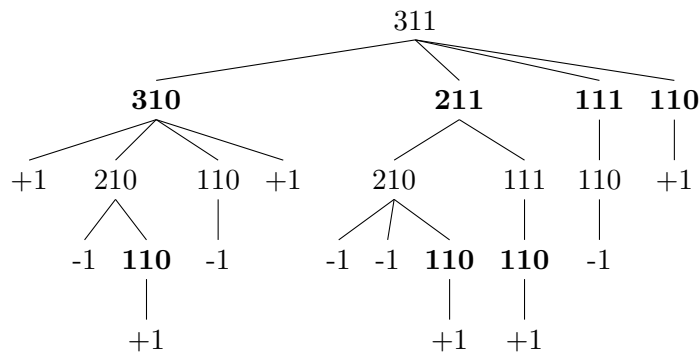
This week there is only one question worth eight marks, there are two marks for attendance.

1. Draw the tree for the $(3, 1, 1)$ game of nim and use minimax to decide which move the first player should play.

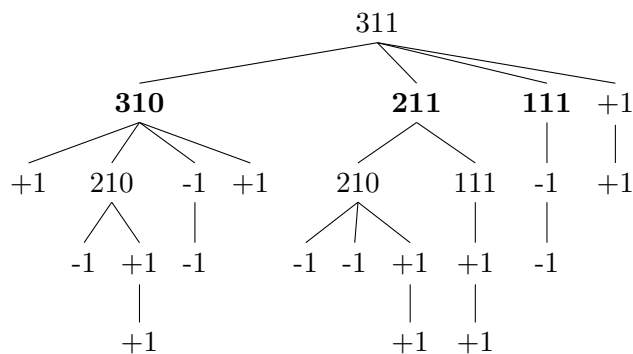
Solution: So first of all we draw the tree, unbold marks the first player.



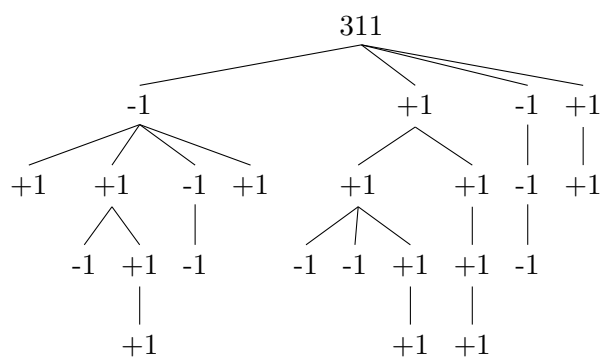
Now, mark the wins for unbold at $+1$ and for bold as -1 .



and now we propagate those scores upwards, assuming unbold chooses the $+1$ and -1 the -1.



and



so the first player can win if they go to $(2, 1, 1)$ or $(1, 1, 0)$.