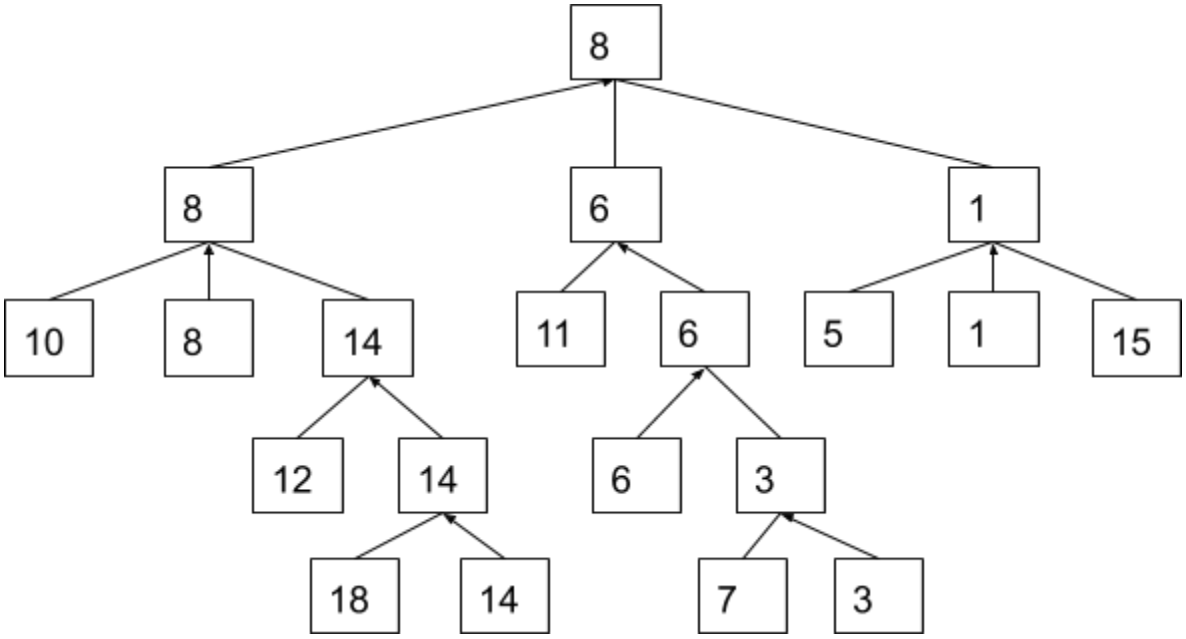
Jason Lawrence
A20381993

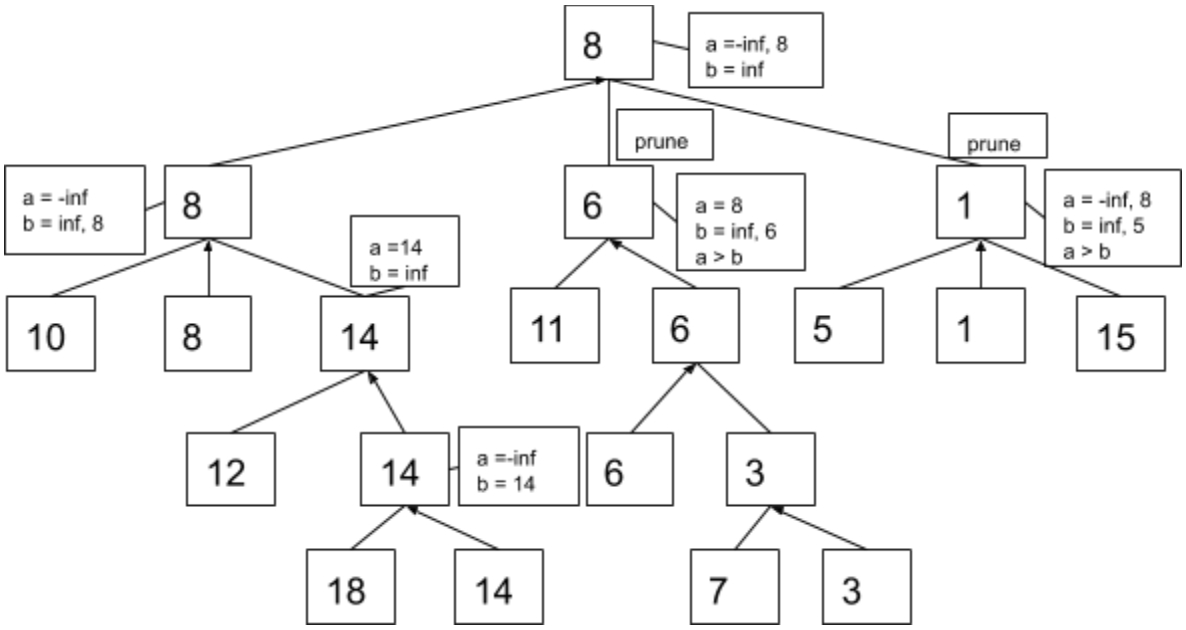
Homework 3

1.



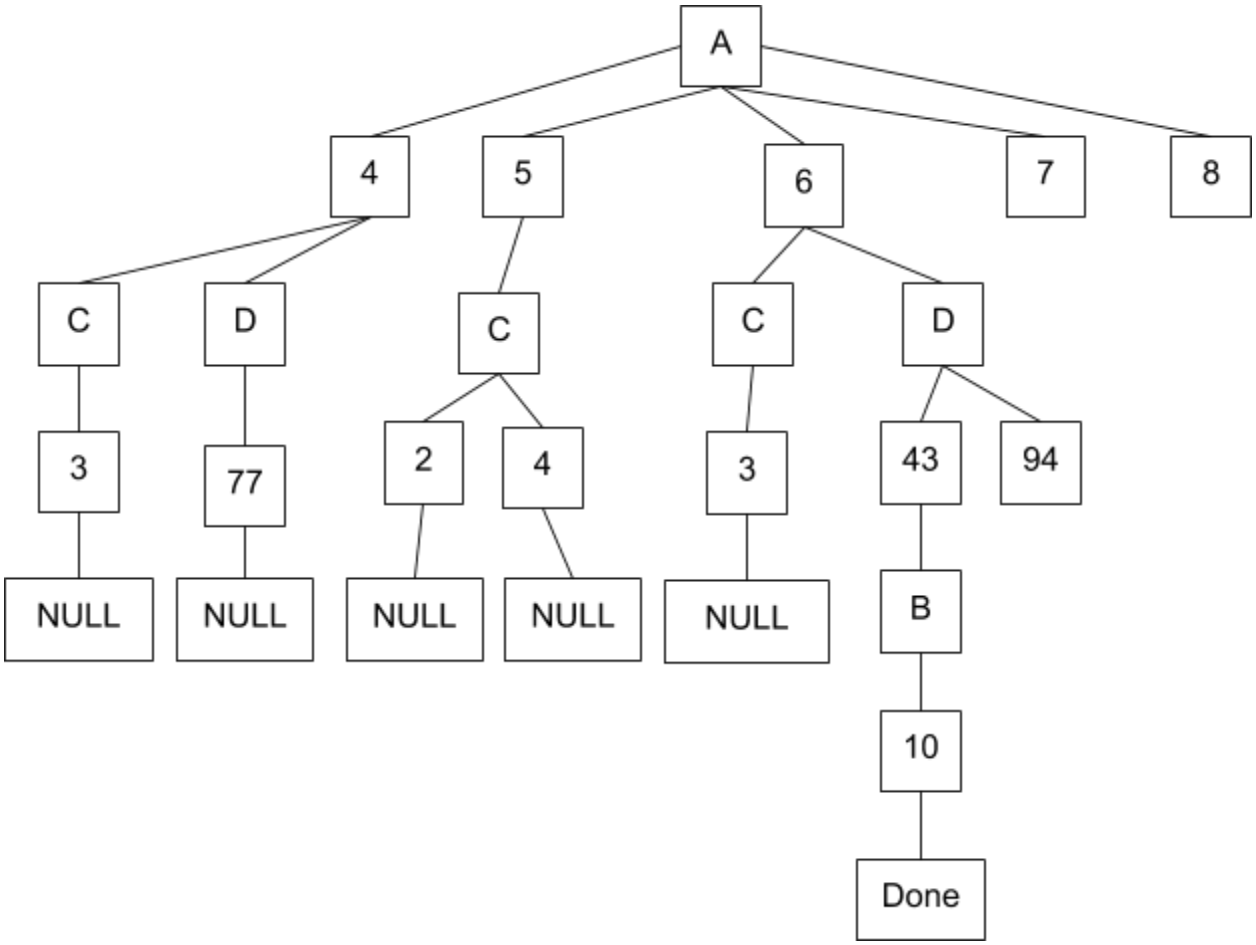
The maximum utility is that max can achieve is 8 with min playing optimally.

2.



3.

	A = 4	C = 3	D = 77	A = 5	C = 2	C = 4	A = 6	C =3	D = 43	B = 10
A = [4, 5, 6, 7, 8]	4	4	4	5	5	5	6	6	6	6
B = [10, 20, 30, 40]			NULL				10		10	10
C = [2, 3, 4]	3	3	3	[2, 4]	2	4	3	3	3	3
D = [28. 43, 56, 77, 94, 114]	77	77	77	NULL			[43, 94]	[43, 94]	43	43



We backtrack whenever we hit a NULL value. We arrive at a solution when A =6, B= 10, C = 3, and D = 43. Those assignments satisfy the 3 constraints.

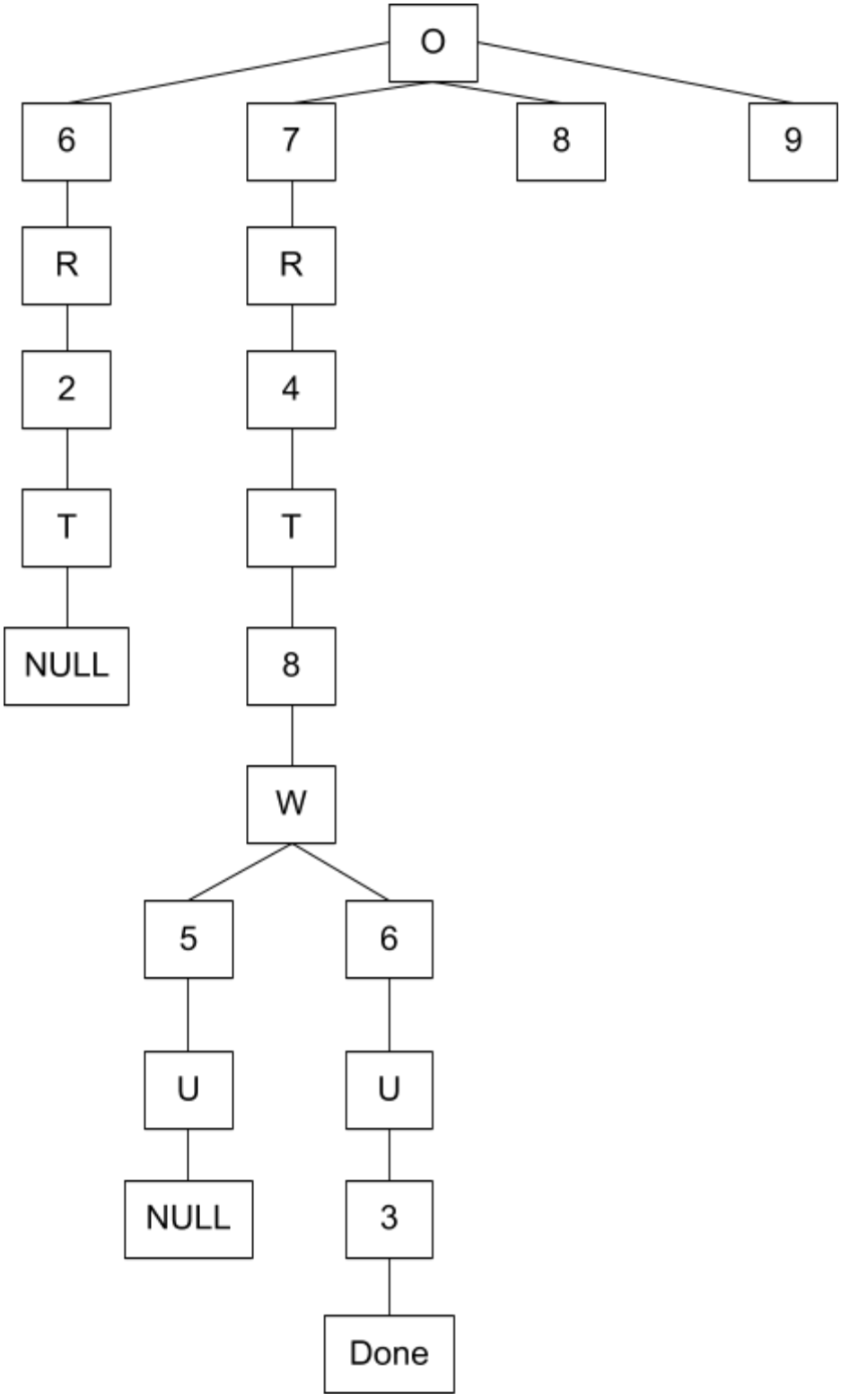
A + C = Odd. 6 + 3 = 9

A + D = a square of an Integer. 6 + 43 = 49

B + D < 60. 10 + 43 = 53 < 60

4.

	O = 6	O= 7	T = 7	R = 4	W = 5	W = 6	U = 3
T = [5, 6, 7, 8, 9]	NULL	8	8	8	8	8	8
W = [5, 6, 7, 8, 9]	[5, 7, 8, 9]	[5, 6, 9]	[5, 6, 9]	[5, 6, 9]	5	6	6
O = [6, 7, 8, 9]	6	7	7	7	7	7	7
U = [0, 2, 3, 4, 5, 6, 7, 8, 9]	[0, 3, 4, 5, 7, 8, 9]	[0, 2, 3, 5, 6, 9]	[0, 2, 3, 5, 6, 9]	[0, 2, 3, 5, 6, 9]	NULL	3	3
R = [0, 2, 3, 4, 5, 6, 7, 8, 9]	2	4	4	4	4	4	4


O
6
7
8
9
R
R
2
4
T
T
NULL
8
W
5
6
U
U
NULL
3
Done

When O = 7, R = 4, T = 8, W = 6, and U = 3 all conditions are satisfied and each letter is distinct.

O + O = 10 + R. 7 + 7 = 10 + 4 = 14

W + W = 10 + U. 6 + 6 + 1= 10 + 3 = 13

T + T +1 = 10 + O. 8 + 8 +1 = 10 + 7 = 17

As well as:

TWO + TWO = FOUR = 867 + 867 = 1734

is True.