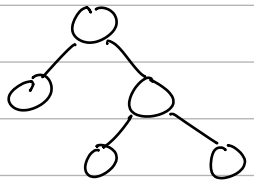
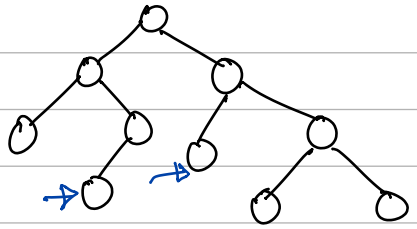
Maximum Sum of Node Values :-

binary Tree  any [u, v] pair can be modified to [u ^ k, v ^ k]

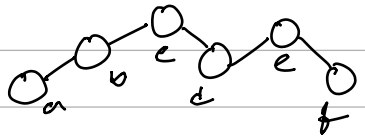
return maximum sum possible.

→ DP solution check all pairs & memoize.

→ Greedy Solution.



ways :
take any 2 node where there's net profit after doing ^k.



[ab] edge XOR, then
[bc] edge XOR ..... [ef] edge XOR.

at the end a ⇒ a^k f ⇒ f^k rest b, c, d, e will remain b, c, d, e.

Minimum Amount of Damage Delt to Bob :

Damage : [100, 20, 60, 30]
Health : [8, 2, 3, 6] power = 4
Damage is done until Health <= 0

no. of strikes = [2, 1, 1, 2]

$100|_2$ $20|_1$ $60|_1$ $30|_2$

option 1 : Kill the one which does most Damage first.
option 2 : Kill the one which will die in minimum strike.

Hybrid option Kill the one first which has highest $\frac{\text{Damage}}{\text{strikes}}$.

* option 1 or 2 give exception for $[80|_2\ 79|_1]$