10/03/2025

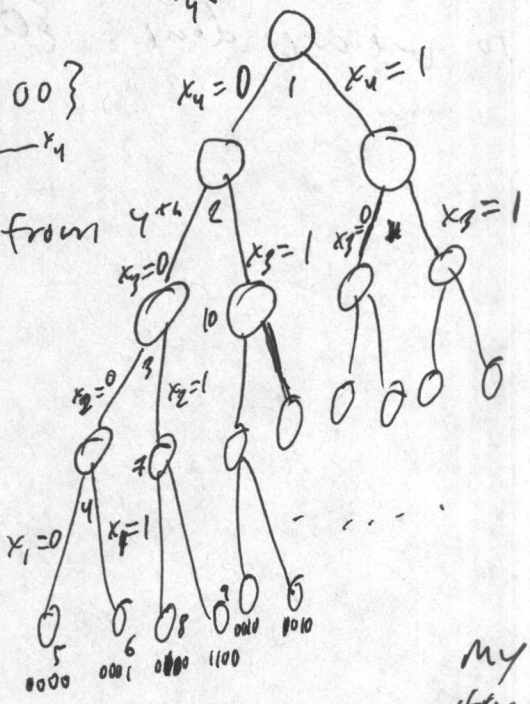
$P_4(m) = \max\{P_3(m), P_3(m-w(4)) + P(4)\}$ (m = 8 (cap))

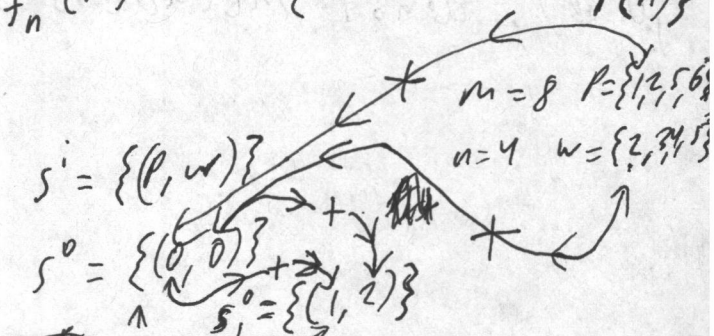
$f_n(m) = \max\{f_{n-1}(m), f_{n-1}(m-w(n)) + P(n)\}$

$x = \{0000\}$

$x_4 \leftarrow x_4$

* start from obj





$s^1 = \{(1, w)\}$

$s^0 = \{(0,0)\}$

$s_1^0 = \{(1,2)\}$

merge

$s^1 = \{(0,0), (1,2)\}$

$s_1^1 = \{(2,3), (3,5)\}$

my try: $s^2 = \{(0,0), (1,2), (2,3), (3,5)\}$

$s_1^2 = \{(5,4), (6,6), (7,7), (8,9)\}$ ✗

$s^3 = \{(0,0), (1,2), (2,3), (3,5), (5,4), (6,6), (7,7)\}$ ✗

- weight increase but profit decrease is impossible, we can discard (3,5)

weight = 9
cap = 8
discard because not feasable

$s_1^3 = \{(6,5), (7,7), (8,8), (11,9)\}$ ✗

$s^4 = \{(0,0), (1,2), (2,3), (5,4), (6,6), (7,7), (6,5), (7,8), (8,8)\}$

corrected
* merge in sorted order and include (7,7) once

$s^4 = \{(0,0), (1,2), (2,3), (5,4), (6,5), (6,6), (7,7), (8,8)\}$ ✗

check for sense because if weight increase, there has to be a profit increase

→ we now start with the 4th object (s^4) to see wether to include it or not in $\{0,0,0,0\}$ so we look at the last ordered pair in $s^4 = (8,8)$, check if its in s^3, it is not so that means That (8,8) was only added as part of s^4, therefore, include it $\{0,0,0,1\}$, but then

$m = 8, (8-6, 8-5) = (2,3)$

- check s^3 if (2,3) exists but we did not get it in s^3 upon merging we got it in s^2, so don't include s^3 $\{0,0,0,1\}$ but it is included as set $^2\{0,1,0,1\}$

subtract $(2-2, 3-3) = (0,0)$ but because it was also in S_0 obj, do not include s'. so we are done: $\{0,1,01\}$