

- Knapsack problem

example: Knapsack $W = 10$

3 items item 1 $W_1 = 8$ $V_1 = 10$

item 2 $W_2 = 6$ $V_2 = 7$

item 3 $W_3 = 3$ $V_3 = 4$

solution item 2 + item 3

total weight = 9 total value = 11

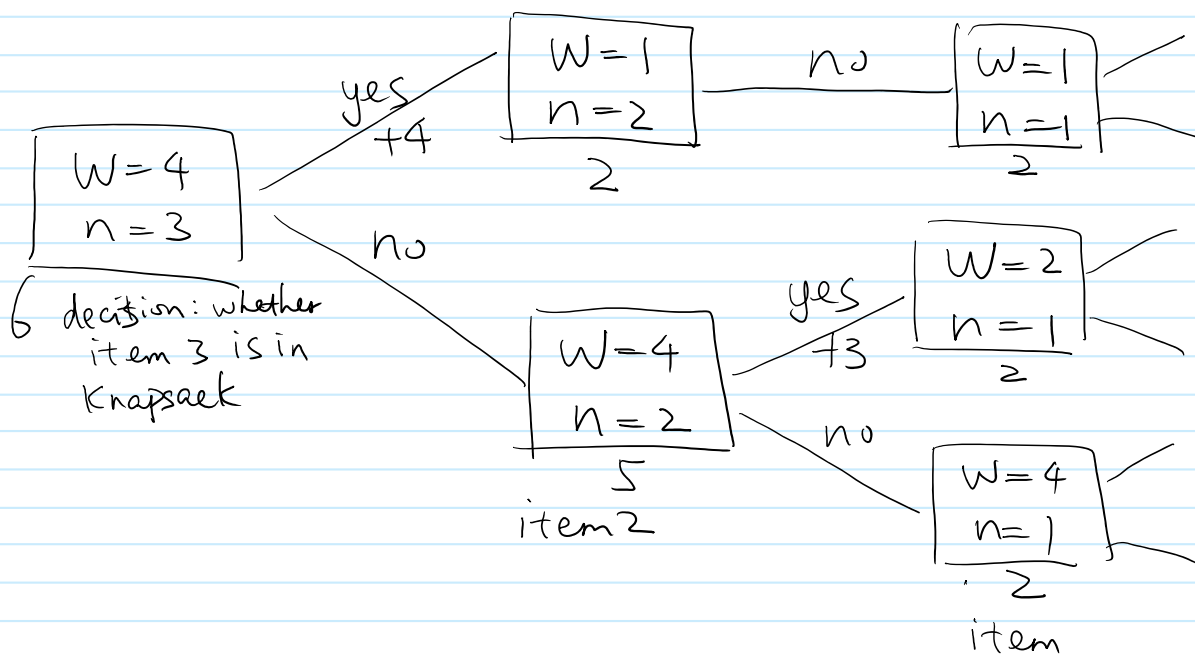
- example 2 capacity $W = 4$

items 1 $W_1 = 1$ $V_1 = 2$

2 $W_2 = 2$ $V_2 = 3$

3 $W_3 = 3$ $V_3 = 4$

(solution: item 3 + item 1 value = 6)



- observation: in the recursion, only need

① n : number of remaining items

② W : remaining capacity.

(conditioned on the ordering of the items)

$$W = 10$$

items	1	W	V
2	2	3	
3	4	11	
4	6	10	

$$W=4$$
$$n=1$$

number of items : 1, 2, 3, ..., n

capacity : 0, 1, 2, ..., W

