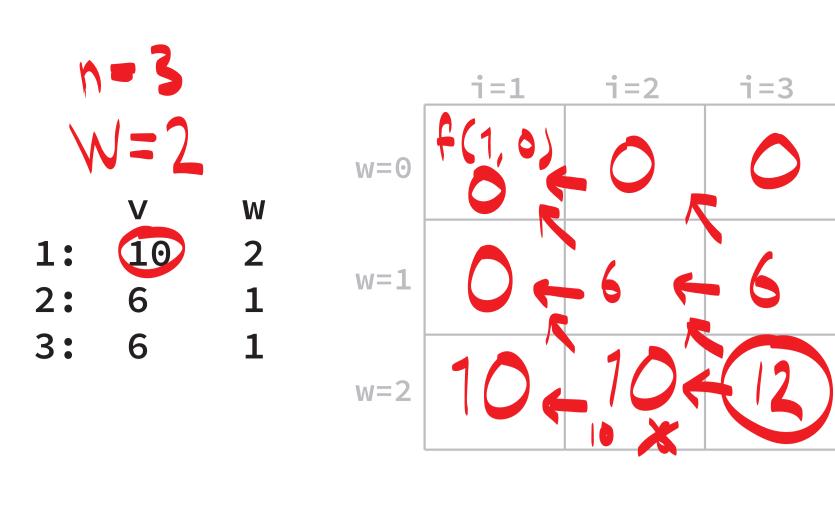
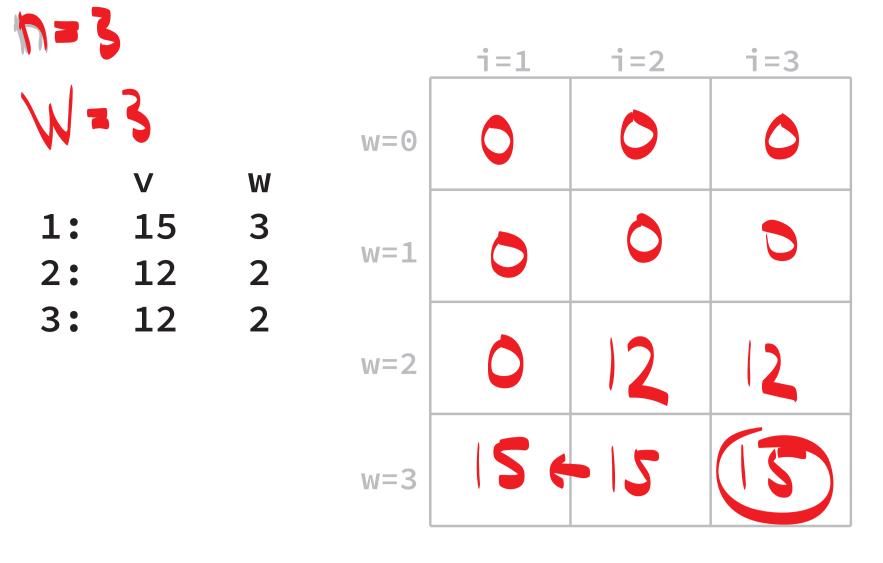
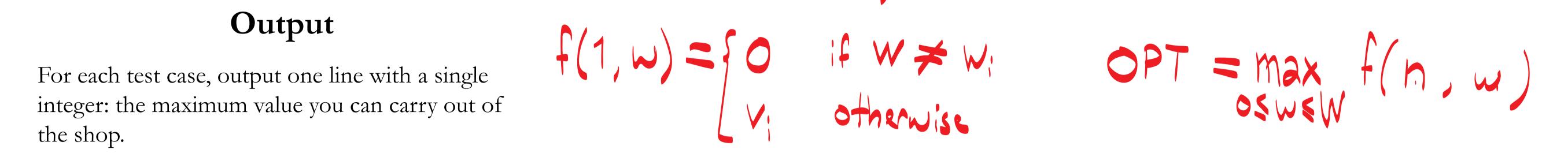
You have broken into a shop. In the shop art n valuable items. For each, you know its weight wi and its value vi. Unfortunately, you carry only a maximum total weight of W. Which subset of the items should you take, such that the sum of wi is at most W and the sum of  $v_i$  is maximised?





## Input

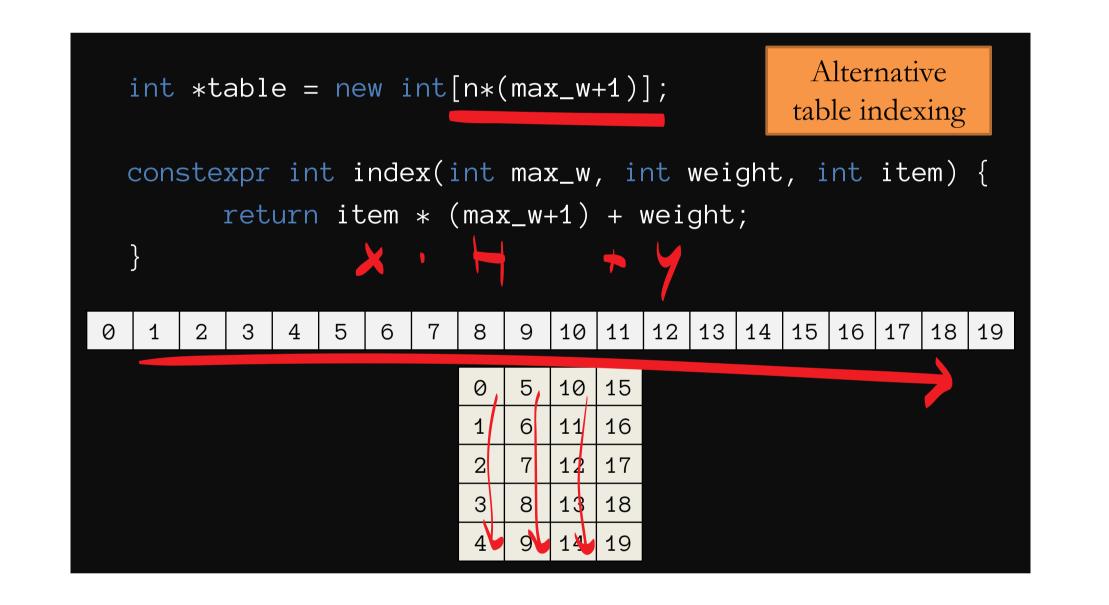
- One line with an integer N,  $1 \le N \le 5000$ , the number of items.
- One line with an integer  $\mathbf{W}$ ,  $1 \le \mathbf{W} \le 30000$ ,
- your carrying capacity.
- N lines with two integers  $\mathbf{v_i}$  and  $\mathbf{w_i}$ , with  $0 \le \mathbf{v_i}$ ,  $\mathbf{w_i} \le 10000$ .



$$f(i,w) = \max \{ f(i-1,w), \geqslant 0 \}$$

$$\rightarrow f(i-1,w-w) + v_i \}$$





### import java.io.\*; public class Thievery { public static void main(String[] args) throws Exception { BufferedReader br = new BufferedReader(new InputStreamReader(System.in));

# Small items: W = 5n, $v_i$ and $w_i \sim [1,10]$

Large items: W = 5n,  $v_i$  and  $w_i \sim [1,100]$ 

Fixed cap: W = 1000, v<sub>i</sub> and w<sub>i</sub> ~ [1,10]



