



Let's run our algorithm on the following data:

```
n = 4 (# of elements)

W = 5 (max weight)

Elements (weight, benefit value):

(2,3), (3,4), (4,5), (5,6)
```

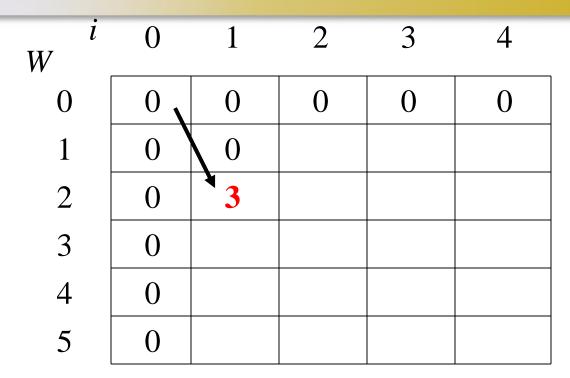




W $i$	0	1	2	3	4
0	0				
1	0				
2	0				
3	0				
4	0				
5	0				

for 
$$w = 0$$
 to  $W$   
 $B[0,w] = 0$ 





#### Items:

- 1: (2,3)
- 2: (3,4) i=1
  - 3: (4,5)
- $b_i=3$   $w_i=2$ 4: (5,6)

$$w=2$$

$$w-w_i = 0$$

$$\begin{split} &\text{if } \mathbf{w_i} <= \mathbf{w} \text{ // item i can be part of the solution} \\ &\text{if } \mathbf{b_i} + \mathbf{B[i\text{-}1,w\text{-}w_i]} > \mathbf{B[i\text{-}1,w]} \\ &\mathbf{B[i,w]} = \mathbf{b_i} + \mathbf{B[i\text{-}1,w\text{-}w_i]} \\ &\text{else} \\ &\mathbf{B[i,w]} = \mathbf{B[i\text{-}1,w]} \\ &\text{else } \mathbf{B[i,w]} = \mathbf{B[i\text{-}1,w]} \text{ // } w_i > w \end{split}$$



W $i$	0	1	2	3	4
0	0	0	0	0	0
1	0	0	0	0	0
2	0	3	3	3	3
3	0	3	4	4	4
4	0	3	4	5	5
5	0	3	7	7 <b>–</b>	<b>→</b> 7

 $b_{i}=5$   $w_{i}=4$  w=5

if 
$$\mathbf{w_i} \le \mathbf{w}$$
 // item i can be part of the solution  
if  $\mathbf{b_i} + \mathbf{B[i-1,w-w_i]} > \mathbf{B[i-1,w]}$   
 $\mathbf{B[i,w]} = \mathbf{b_i} + \mathbf{B[i-1,w-w_i]}$   
else  
 $\mathbf{B[i,w]} = \mathbf{B[i-1,w]}$ 

else  $B[i,w] = B[i-1,w] // w_i > w$