

$$\text{weight} = \{2, 3, 3\}$$

$$\text{Profit} = \{1, 2, 4\}$$

$$\text{max capacity} = 6$$

$$n = 3$$

		$\rightarrow w$						
		0	1	2	3	4	5	6
$P(i)$	$w(i)$	0	0	0	0	0	0	0
	1	2	0	0	1	1	2	1
	2	3	0	0	0	2	2	3
	4	3	0	0	0	4	4	4

$$\forall w(i) > w \quad \text{Put: } m[i][w] = 0$$

$$m[i][w] = \max[m[i-1, w], (m[i-1, w - w[i]] + P[i])]$$

$$m[1][2] = \max[m[0, 2], (m[0, 2 - w[1]] + P[1])]$$

$$\Rightarrow \max[m[0, 2], (m[0, 2 - 2] + P[1])]$$

$$\Rightarrow (m[0, 2], (m[0, 0] + 1))$$

$$\Rightarrow (0, 0 + 1)$$

$$m[1][2] \Rightarrow 1$$

0

$$m[1, 3] = \max[m[0, 3], (m[0, 3 - w[1]] + p[1])]$$

$$\Rightarrow \max(0, (m[0, 3 - 2] + 1))$$

$$\Rightarrow \max(0, (m[0, 1] + 1))$$

$$\max(0, 0 + 1)$$

$$\max(1)$$

$$m[1, 3] = 1$$

$$m[1, 4] = \max(m[0, 4], (m[0, 4 - 2] + 1))$$

$$\Rightarrow (0, (m[0, 2] + 1))$$

$$\Rightarrow 1$$

$m[1, 5]$ & $m[1, 6]$ both have 1

w[2]

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$$\begin{aligned}
 m[2,3] &= \max(m[1,3], (m[1,3-3] + 2)) \\
 &\Rightarrow \max(1, (m[1,0] + 2)) \\
 &\Rightarrow \max(1, 0 + 2) \\
 &\Rightarrow \max(1, 2) \\
 &\Rightarrow 2
 \end{aligned}$$

$$\begin{aligned}
 m[2,4] &= \max(m[1,4], (m[1,4-w[2]] + p[2])) \\
 m[2,4] &= \max(1, m[1,4-3] + 2) \\
 &= \max(1, m[1,1] + 2) \\
 &\Rightarrow (1, 0 + 2) \\
 &\Rightarrow 2
 \end{aligned}$$

$$\begin{aligned}
 m[2,5] &= \max(m[1,5], (m[1][5-w[2]] + p[2])) \\
 &\Rightarrow \max(1, m[1,5-3] + 2) \\
 &\quad (1, m[1,2] + 2) \\
 &\quad (1, 1 + 2) \\
 &\quad (3)
 \end{aligned}$$

$$\begin{aligned}m[3,3] &= \max[m[2,3], (m[2,3-3] + 4)] \\&= \max[2, m[2,0] + 4] \\&= \max(2, 0 + 4) \\&= \max(4)\end{aligned}$$

$$\begin{aligned}m[3,4] &= \max[m[2,4], (m[2,4-w[3]] + p[3])] \\&= \max(m[2,4], m[2,0] + 4) \\&= \max(2, 0 + 4) \\&\Rightarrow 4\end{aligned}$$

$$\begin{aligned}m[3,5] &= \max(m[2,5], (m[2,5-w[3]] + p[3])) \\&= \max(3, [m[2,2] + 4]) \\&= (3, 0 + 4)\end{aligned}$$

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$$m[3, 6] = \max(m[2, 6], m[2, 6 - w[2]] + P[3])$$

$$\Rightarrow \max(3, m[2, 3] + 4)$$

$$\max(3, 2 + 4)$$

$$\Rightarrow 6$$