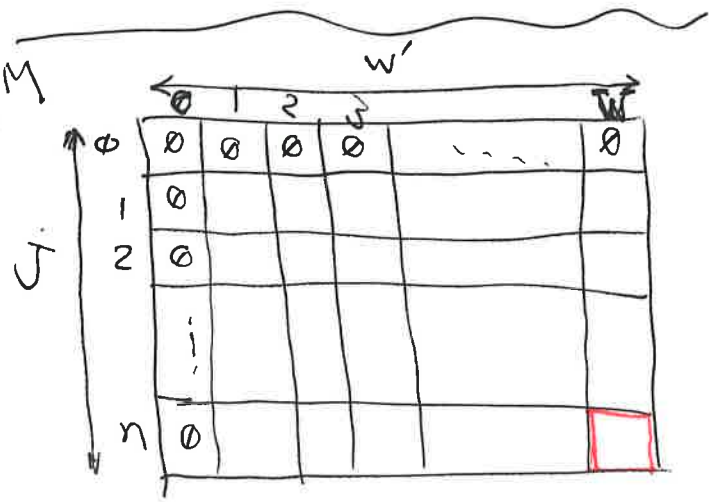
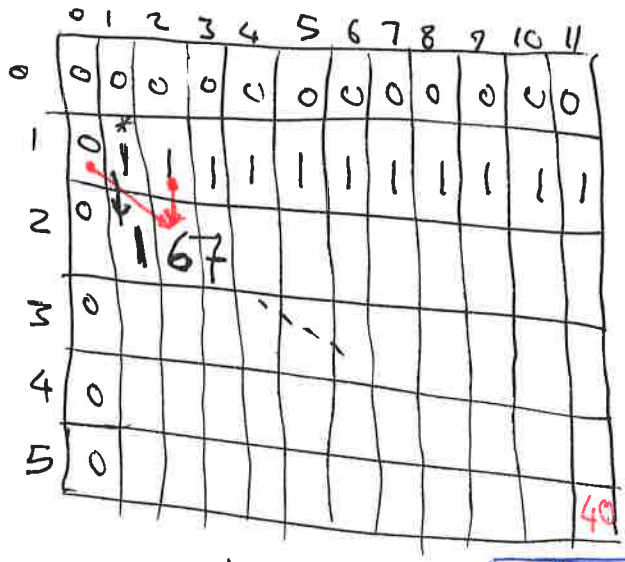
$Opt(n, W)$

$Opt(j, w') =$

$$\begin{cases} \max\Big(Opt(j-1, w'),\ Opt(j-1, w'-w_j)+v_j\Big) & \\ Opt(j-1, w') & \text{if } w' < w_j \\ \emptyset & \text{if } j = \emptyset \end{cases}$$

$$T(n) = T(n-1)+T(n-1)+1$$
$$= 2T(n-1)+1$$
$$= 1+2+2^2 T(n-2)$$
$$= 1+2+2^2+\dots+2^n \quad T(\emptyset) \to 1$$
$$= O(2^n)$$





Item	Value	Weight
1	1	1
2	6	2
3	18	5
4	22	6
5	28	7

$W = 11$

$opt(1,1)$
$opt(1,2)$
...
$opt(2,1)$
$opt(2,2) = \max(opt(1,2), opt(1,0)+6)$

$opt(2,3) = \max(opt(1,3), opt(1,3-2)+6)$

$= 7$

$$O(nW)$$

$$f = \sum (y_i - ax_i - b)^2$$

$$\frac{\partial f}{\partial a} = -2\sum x_i (y_i - ax_i - b) = 0$$

$$\frac{\partial f}{\partial b} = -2\sum (y_i - ax_i - b) = 0$$