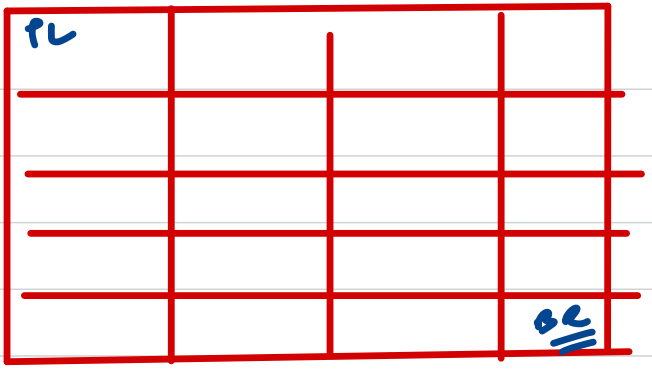
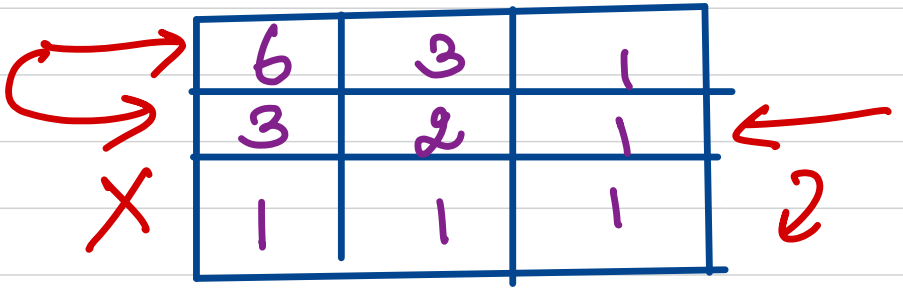


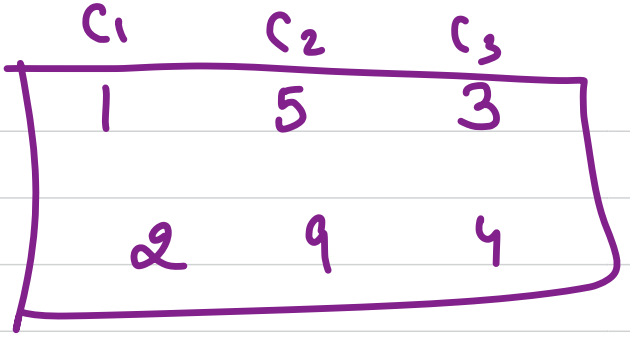
n x n

R

D

$$f(i,j) = f(i+1,j) + f(i,j+1)$$


6
3
1
3
2
1
X
1
1
1
2



1 5 3

5 10 5

$f(i, c_j) = cost[i][j] + \min(f(i-1, c_m))$

$\forall m \in [0, k-1]$ and $m \neq j$

returns the min cost to paint i^{th} house with c_j color

$\min(f(n-1, c_i))$

$\forall c_i \in [c_0, c_1 \ldots\ldots c_{k-1}]$

houses = 4 colors → 3

cost =	c_1	c_2	c_3
h_1	1	5	7
h_2	5	8	4
h_3	3	2	9
h_4	1	2	4

dp

1	5	7
10	9	5
8	7	18
8	10	11

8

$f(i, c_j) = cost[i][j] + \min(f(i-1, c_m))$

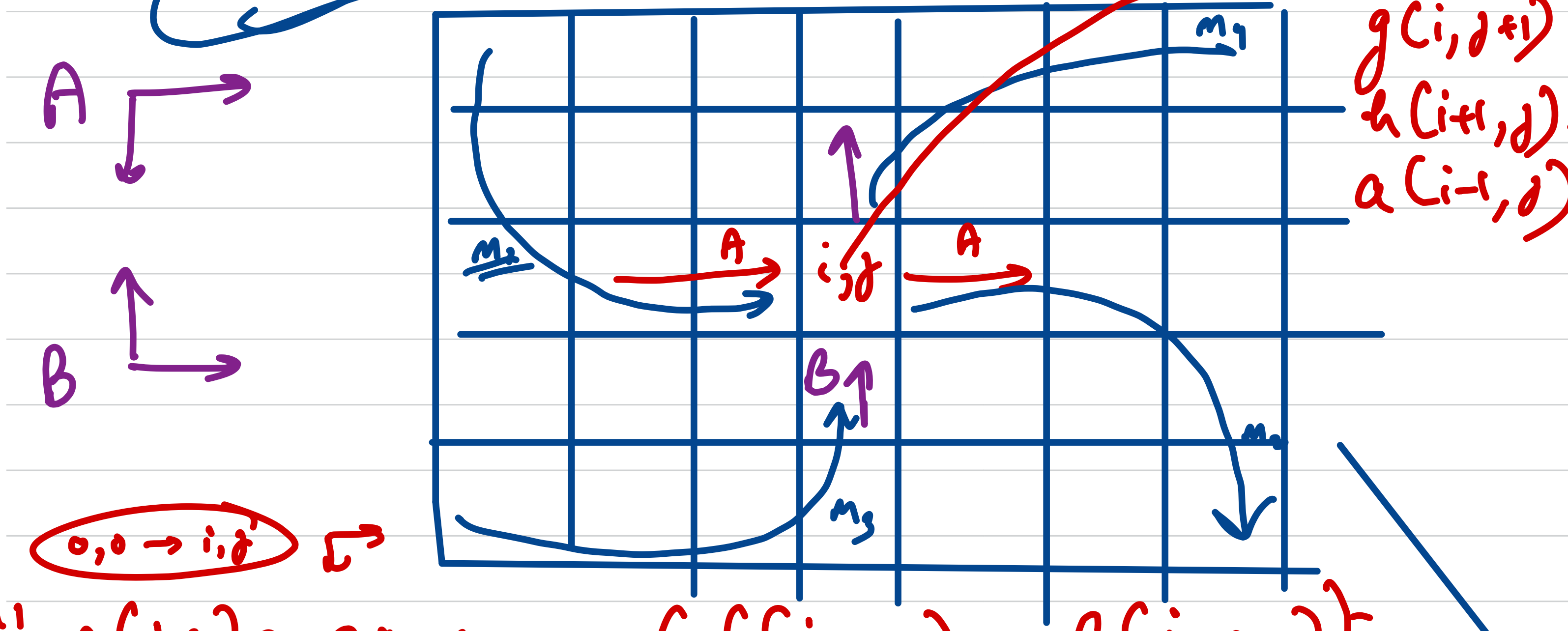
returns the min cost to paint i^{th} house with c_j color

$\forall m \in [0, k-1]$ and $m \neq j$

$\min(f(n-1, c_i))$

$\forall c_i \in [c_0, c_1 \ldots c_{k-1}]$

Case 1

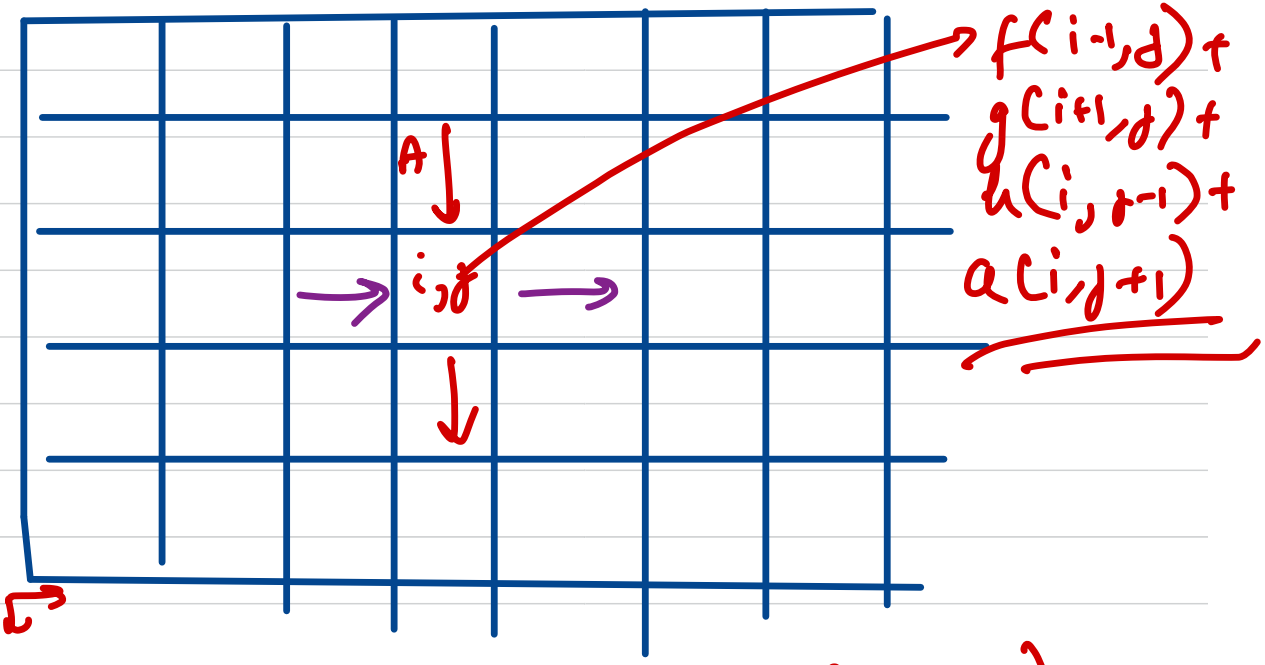


m_1: $f(i,j) = c_{ij} + \max(f(i-1,j),\ f(i,j-1))$

$m_2 \rightarrow g(i,j) = c_{ij} + \max(g(i+1,j),\ g(i,j-1))$

$m_3 \rightarrow h(i,j) = c_{ij} + \max(h(i+1,j),\ h(i,j-1))$

$m_4 \rightarrow a(i,j) = c_{ij} + \max(a(i,j+1),\ a[i-1,j])$

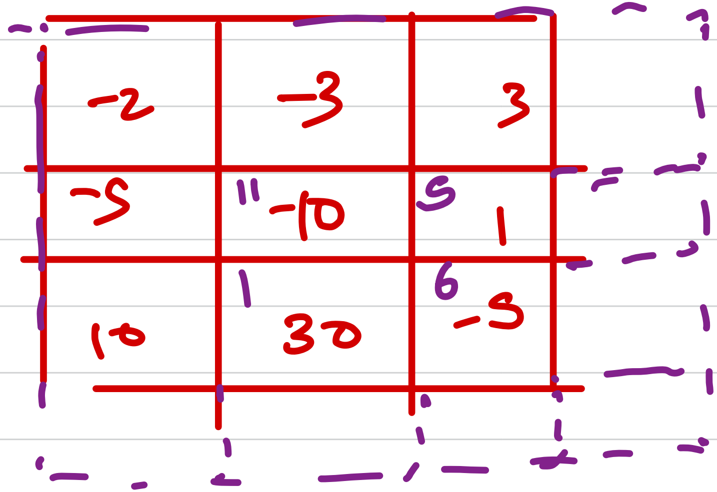


m_1 $f(i,j) = c_{ij} + \max(f(i-1,j), f(i,j-1))$

$m_2 \rightarrow g(i,j) = c_{ij} + \max(g(i+1,j), g(i,j-1))$

$m_3 \rightarrow h(i,j) = c_{ij} + \max(h(i+1,j), h(i,j-1))$

$m_4 \rightarrow a(i,j) = c_{ij} + \max(a(i,j+1), a(i-1,j))$



$$f(i,j) = \min\big(f(i+1,j),\ f(i,j+1)\big) - val[i][j]$$

$\hookrightarrow$ if $f(i,j) \le 0$? 1 : $f(i,j)$

$f(i,j)$ represent min health reqd at (i,j)