

568. Maximum Vacation Days

reachflights = { }

Key: dest location

Value: [points from where
we can reach
this destination]

$dp(i)(j)$ be max vacation days I had completing
week $\dots i$ and ending in city 'j'

Initialization

$$dp[0][0] = days[0][0]$$

For x in range $[0, \text{len}(dp[0])]$:

if flights[0][x] == 1:

$$dp[0][x] = days[x][0]$$

Positions
where we
can start
in week 0

Rec formula ①

$$dp[i][j] = \max_{\substack{\text{for} \\ m \text{ in } \text{reach}[\text{flights}[j]}} (dp[i-1][m]) + \text{days}[j][i]$$

example flights = [(1,3) (2,3)]

Say I am ending my trip in week 2 on city 1

\therefore I can say either I was in city 3 in week 1

OR

in city 1 in week 1

OR

in city 2 in week 1

\therefore I will be in city which provides me with max holidays

for x in range (1, len(dp)):

for y in range (0, len(dp(0))):

Use Rec Formula ①

ans = max (last row)

as I can end my trip in any city

example

flights = city1

city2

city3

	city1	city2	city3
city1	0	1	1
city2	1	0	1
city3	1	1	0

days = city1

city2

city3

	week1	week2	week3
city1	1	3	1
city2	6	6	3
city3	3	3	3

step1

dp

	c1	c2	c3
week1	1	6	3

as flights from
 $c1 \rightarrow c2$
 $c1 \rightarrow c3$

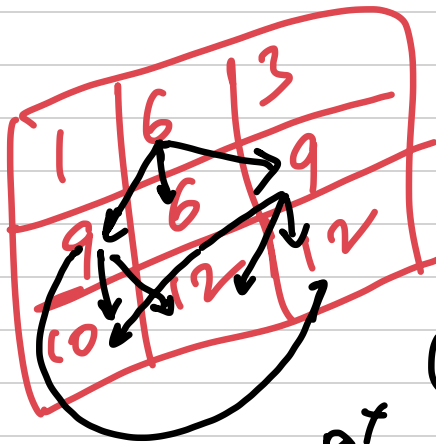
step2

	c1	c2	c3
week2	1	6	3
	3 + $\max(6, 3)$	6 + $\max(1, 3)$	3 + $\max(1, 6)$

1	6	3
9	6	9

Step 3

1	6	3
9	6	9
$1 + \max(9, 6, 9)$ 10	$3 + \max(9, 6, 9)$ 12	$3 + \max(9, 6, 9)$ 12



ANS = MAX (10, 12, 12)

OPTIMAL
ANSWERS

$\frac{12}{2}$
C2 C1 C2
C2 C1 C3
C2 C3 C2
C2 C3 C3