dp ⟶ lcs
lis
knapsack
mcm
edit dist
fib

1

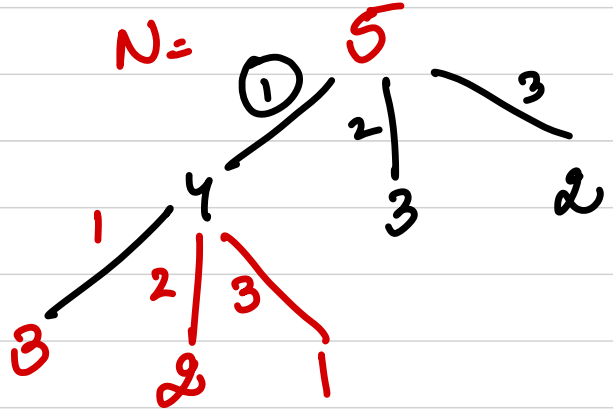
K = 2

N < 3

L = 3

→ optimally

5

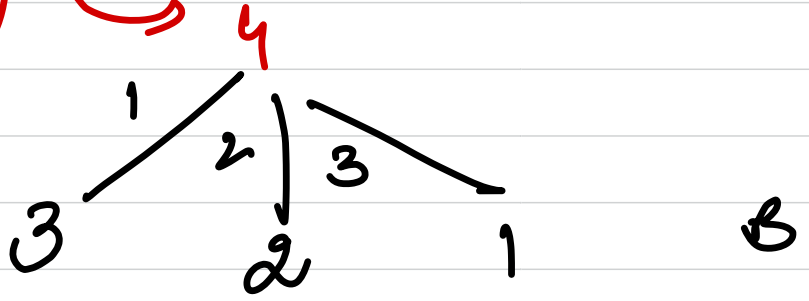


A

B

A = 4 → A xx

Bosny stab



B

$f(i)$

$\Rightarrow$

not

- $f(i-1)$ and
- $f(i-k)$ and
- $f(i-2)$

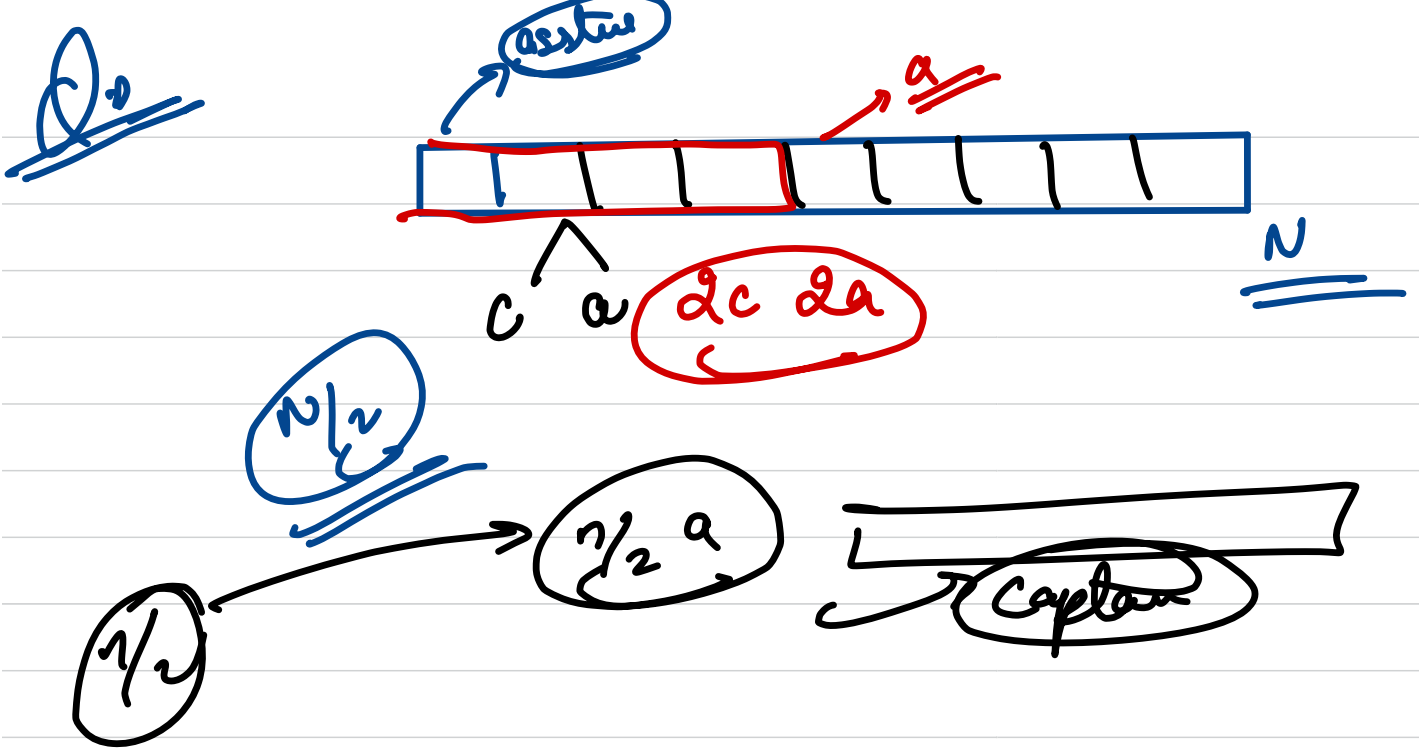
return whether i is a loosing state or winning state

loosing → 0
winning → 1

Base (n)

10 precal

2 min


assise
a
N
c
a
2c 2a
N/2
n/2 a
n/2
capteur

$f(i, a, c) =$

$$\begin{cases} f(i+1, a, c+1) + cap[i] & a == n/2 \\ f(i+1, a+1, c) + as[i] & a == c \\ \min\left(f(i+1, a+1, c) + as[i],\ f(i+1, a, c+1) + cap[i]\right) & \end{cases}$$

min cost of crew with pilots $[i, n]$

$a \leftrightarrow c$ dependent quantity

$dp[i][a]$

$x = a - c$

$$f(i, x) = \begin{cases} f(i+1, x+1) + a[i] & x == 0 \\ f(i+1, x-1) + c[i] & x == n - i \\ \min\left(f(i+1, x+1) + a[i],\ f(i+1, x-1) + c[i]\right) & \end{cases}$$

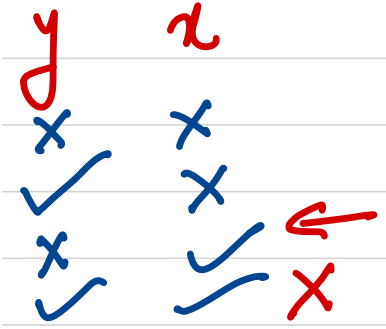
$x = a - c$

Q. LCS

Subsequence

axyb

abyxb



(adyb, abyxb)

(ady, abyx)

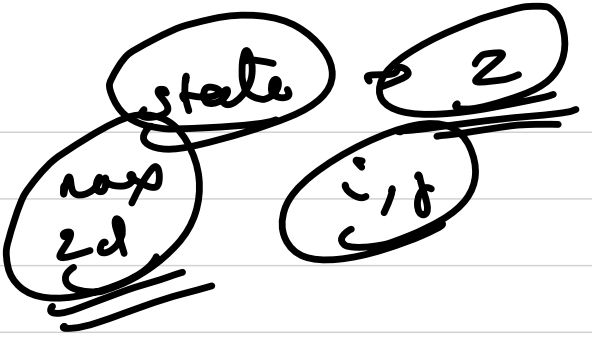
(ad, abyx) (ady, aby) (ad, aby)

(a, aby) (ad, aby) (a, abyx)

(n+1) (m+1)

n $S_1 \rightarrow a x y b^{i}$

n $S_2 \rightarrow a b y x b^{i}$

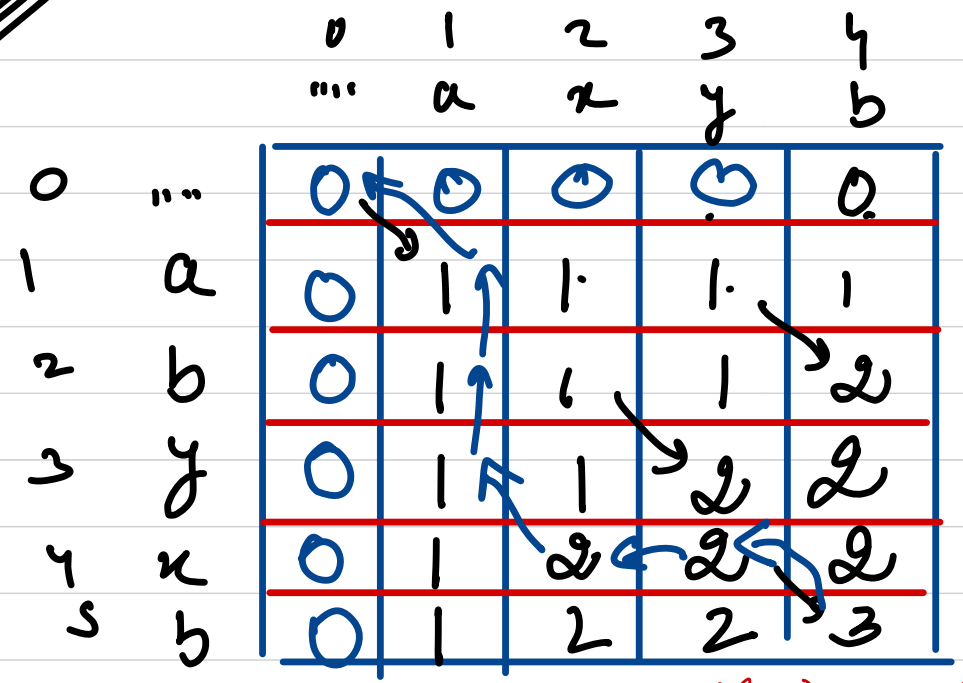


$$f(i,j) = \begin{cases} 1 + f(i-1, j-1) & \text{if } s1[i] == s2[j] \\ \max(f(i-1,j), f(i,j-1)) & \text{else} \end{cases}$$

$f(i,j)$ → returns lcs of $s_1[0,i]$ & $s_2[0,j]$

Lcs plus

axyb
abyxb



axb

$$f(i,j) = \begin{cases} 1 + f(i-1, j-1) & \text{if } s1[i] == s2[j] \\ \max\left(f(i-1,j),\ f(i,j-1)\right) & \text{else} \end{cases}$$

$f(i,j)$: returns the lcs of $s_1[0,i]$ & $s_2[0,j]$

Q n S_1 = Sunday S_2 = saturday

3

insert
remove
replace

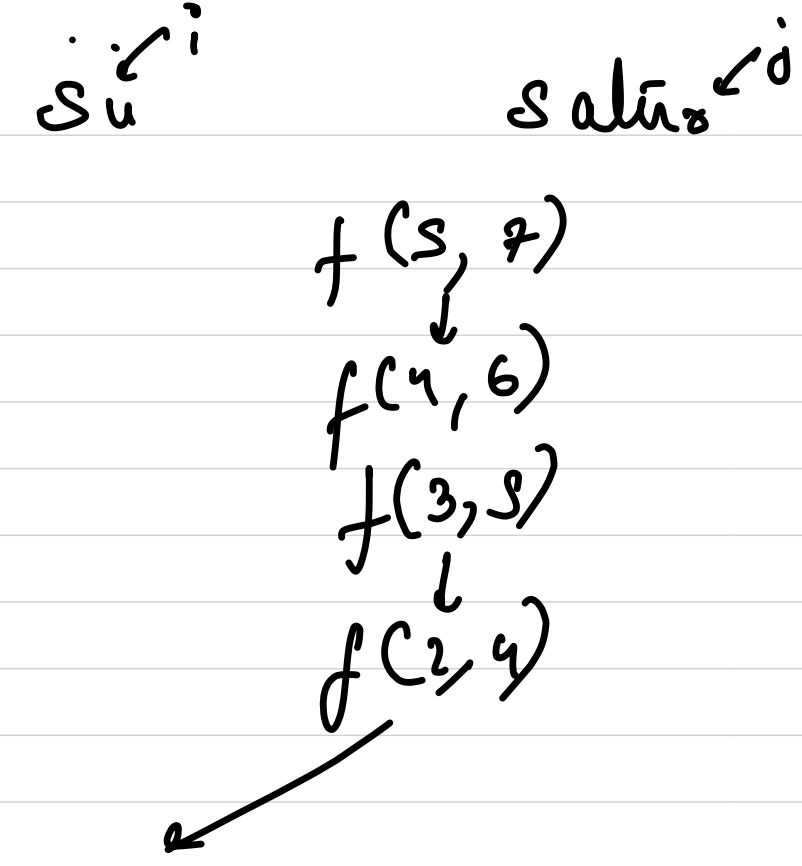
min ops

$S_1 \rightarrow S_2$

Sunday

→ insert a
insert t
n → r

Saturday


f(5, 7)
f(4, 6)
f(3, 5)
f(2, 4)

$f(i, j)$ = min ops

$S_1[0, i]$

$S_2[0, j]$

$$f(i, j) = \begin{cases} f(i-1, j-1) & S_1[i] == S_2[j] \\ \text{else} \\ \text{If min} \begin{cases} f(i, j-1) & \leftarrow \text{insert} \\ f(i-1, j-1) & \leftarrow \text{replace} \\ f(i-1, j) & \leftarrow \text{delete} \end{cases} \end{cases}$$

Sum ↙ i Satır ↙ 0

$f(i,j) \rightarrow f(i+1, j) \rightarrow f(i, j-1)$

Sut ↙ i ↙ i Satır ↙ j

$f(i,j) \rightarrow f(i-1, j)$

$$1 + \min(dp(i-1, j-1),\ dp(i-1, j),\ dp(i, j-1))$$