

Edit Distance

s1 = "horse"

s2 = "ros"

Minimum Operation: → Insertion

Remove

Replace

Is it always possible? → Yes at n+m operation

→ String matching:

no

h o r s e

 ↓ ↓

 r o s

 ↑

match = we got the char we move forward

But not match: we have can do 3 operation on the string as we know,

~~if~~

① Insert

② delete and move forward

③ Replace and try to match

Try all ways and find minimum - Recursion

horse → we can't make it.
ros → we made it

Recursion.

2 strings $f(i, j)$

Base if $(j < 0)$ return $i+1$,
if $(i < 0)$ return $j+1$;

$i = n-1, j = n-1$.

find min operation
 $s1[0 \dots i]$
 $s2[0 \dots j]$

Explan if $(s1[i] == s2[j])$ return $0 + f(i-1, j-1)$,

return $1 + \min$ ($\overset{\text{insert}}{f(i, j-1)}$, $\overset{\text{delete}}{f(i-1, j)}$, $f(i-1, j-1)$),

Base Case:

S1 get exhausted

-1 house
↑

res
!
0

if ($i < 0$) return $j+1$

we have to minimize
the res so in
only

So, min Operations 2

S2 exhausted
we have min operation

hor → ur S2
ex

return 1

Overlapping Subproblem \rightarrow Memorization

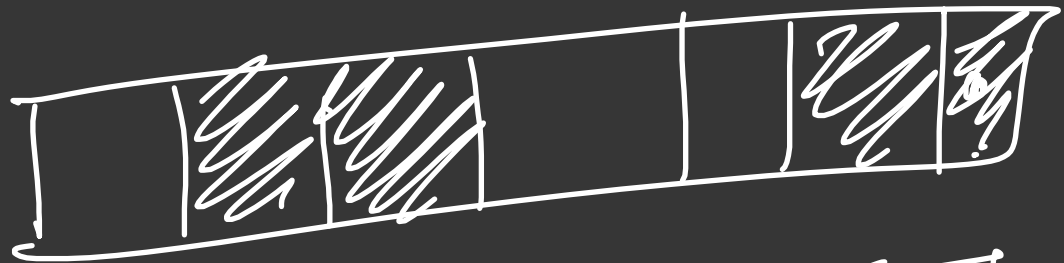
$dp[n][m]$

Space Optimisation

$dp[i][j] = dp[i-1][j-1]$

\swarrow
 $curr[j-1]$

prev



curr

