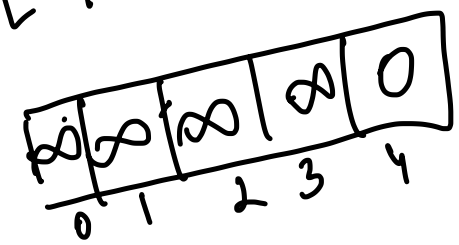
45 Jump Game II

Dynamic Programming

eg: [2, 3, 1, 1, 4]

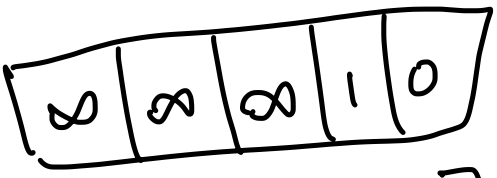
dp



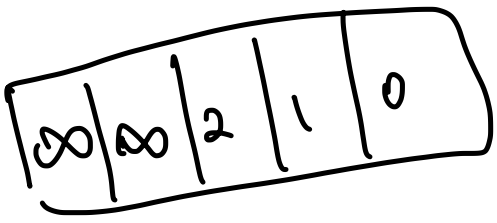
Initialize dp array

$$dp[3] = \min_{x \text{ in } jump[3]} \left[1 + dp[3+x] \right]$$

$$dp[3] = \min \left[1 + dp[4] \right] = 1$$



$$dp[2] = \min \left(1 + dp[3] \right) = 2$$



$$dp[1] = \min \begin{pmatrix} 1+dp(3) \\ 1+dp(4) \\ 1+dp(5) \end{pmatrix} = \min \begin{pmatrix} 1+2 \\ 1+1 \\ 1+0 \end{pmatrix} = 1$$

∞	1	2	1	0

$$dp[0] = \min \begin{pmatrix} 1+dp(1) \\ 1+dp(2) \end{pmatrix} = \min \begin{pmatrix} 1+1 \\ 1+2 \end{pmatrix} = 2$$

2	1	2	1	0

return dp[0]

∴ dp[i] ← represents minimum number steps taken to reach end from index 'i'

$dp[i] = \min$ for j in range(nums(i)) $\left(1 + dp[j] \right)$ Rec Formula (1)

for x in range (len(nums) - 2, -1, -1): → O(n)

use Rec Formula (1) → O(n)

return dp[0]

$O(n^2)$