

309 Best Time to Buy and Sell Stock with Cooldown

Solution 1

$opt(i) \rightarrow$ maximum profit obtained from first $1 \dots i$ days

Rec formula ①

$$opt(i) = \max \left(opt(i-1), \max_{0 \leq j < i} \left(price(i) - price(j) + opt(j-2) \right) \right)$$

Initialize $opt(0)$ $opt(1)$ $opt(2)$

for $i = 3$ to n

for $j = 2$ to i

$$opt(i) = \max \left(\begin{array}{l} opt(i-1), \\ 0, \\ \max_{0 \leq j < i} \left(price(i) - price(j) + opt(j-2) \right) \end{array} \right)$$

$price(i) - price(1)$,
 $price(1) - price(0)$

considered separately as $j = 2$ to n
because they do not have any
cooldown before them

Time complexity

$$O(n^2)$$

space complexity

$$O(n)$$

solution 2

