

CS 170**1. Study Group**

None

2. maximum subarray sum

Define $f(i) :=$ the maximum subarray sum with $A[i]$ as the last element in the subarray.

Then the answer is $\max_{1 \leq i \leq n} A[i]$.

Base case: $f(0) = 0$.

Recurrence: $f(i) = \max(f(i-1) + A[i], A[i])$.

Runtime: $O(n)$.

3. Spaceship

$\text{minimize } x_1 \ln(0.3) + x_2 \ln(0.4) + x_3 \ln(0.2)$

$x_1 \ln(0.3) \leq -\ln(20)$

$x_2 \ln(0.4) \leq -\ln(20)$

$x_3 \ln(0.2) \leq -\ln(20)$

$40x_1 + 50x_2 + 30x_3 \leq 500$

$15x_1 + 20x_2 + 10x_3 \leq 200$

$30000x_1 + 35000x_2 + 25000x_3 \leq 400000$

$x_1, x_2, x_3 \in \mathbb{N}$

4. Motel Choosing

Easy DP question.