Assignment 6

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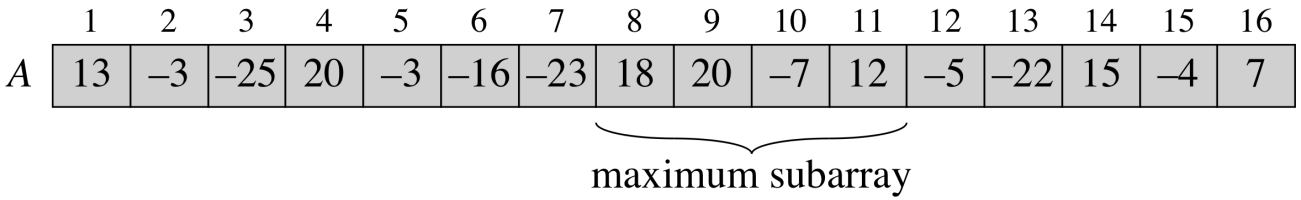
Recall the maximum-subarray problem that we have studied before. We presented an $O(n \log n)$ divide and conquer algorithm.

Problem (The maximum-subarray problem)

Find a sequence of days over which the net change from the first day to the last is maximum. Find the nonempty, contiguous subarray of A whose values have the largest sum.



- **Input**: An array $A[1, 2, \ldots, n]$ of numbers.
- **Output**: Indices i and j such that $A[i, \ldots, j]$ has the greatest sum of any nonempty, contiguous subarray of A, along with the sum of the values in $A[i, \ldots, j]$.

Design a dynamic programming algorithm for this problem with a running time of $O(n)$.