

FIND-MAXIMUM-SUBARRAY($A, low, high$)

if $high == low$

return ($low, high, A[low]$) // base case: only one element

else $mid = \lfloor (low + high) / 2 \rfloor$

$(left-low, left-high, left-sum) =$

 FIND-MAXIMUM-SUBARRAY(A, low, mid)

$(right-low, right-high, right-sum) =$

 FIND-MAXIMUM-SUBARRAY($A, mid + 1, high$)

$(cross-low, cross-high, cross-sum) =$

 FIND-MAX-CROSSING-SUBARRAY($A, low, mid, high$)

if $left-sum \geq right-sum$ and $left-sum \geq cross-sum$

return ($left-low, left-high, left-sum$)

elseif $right-sum \geq left-sum$ and $right-sum \geq cross-sum$

return ($right-low, right-high, right-sum$)

else return ($cross-low, cross-high, cross-sum$)

FIND-MAX-CROSSING-SUBARRAY ($A, low, mid, high$)

// Find a maximum subarray of the form $A[i \dots mid]$.

$left\text{-sum} = -\infty$

$sum = 0$

for $i = mid$ **downto** low

$sum = sum + A[i]$

if $sum > left\text{-sum}$

$left\text{-sum} = sum$

$max\text{-left} = i$

// Find a maximum subarray of the form $A[mid + 1 \dots j]$.

$right\text{-sum} = -\infty$

$sum = 0$

for $j = mid + 1$ **to** $high$

$sum = sum + A[j]$

if $sum > right\text{-sum}$

$right\text{-sum} = sum$

$max\text{-right} = j$

// Return the indices and the sum of the two subarrays.

return ($max\text{-left}, max\text{-right}, left\text{-sum} + right\text{-sum}$)