CSC-654 Algorithms Analysis and Design

Homework #3

# Use the following ideas to develop a non-recursive, linear-time algorithm for the maximum-subarray problem. Start at the left end of the array, and progress toward the right, keeping track of the maximum subarray seen so far. Knowing a maximum subarray of A[i..j], extend the answer to find a maximum subarray ending at index j+1 by using the following observation: a maximum subarray of A[1..j+1] is either a maximum subarray of A[1..j] or a subarray A[i..j+1], for some 1 <= i <= j+1. Determine a maximum subarray of the form A[i..j+1] in constant time based on knowing a maximum subarray ending at index j.

Func maxSubArray(array)

Maximum=-inf

Total=-inf

Start=0

End=0

For j in range array.length

Total += array[j]

If array[j] > total

Total = array[j]

Start = j

If total > maximum

Maximum = total

End = j

Return array[i:j]