

Group Project 3

Andrew Johnson

Most Magical Sub(A[0, 1, ..., n-1])

n = length of (A[])

max = min = magic = sum = start = end = 0

for (i=0; i < n-1; i++) $\leftarrow \Theta(n-1)$

 for (j=i+1; j < n; j++) $\leftarrow O(n-1)$

 min = minOf(A[i, ..., j])

 sum = sumOf(A[i, ..., j])

 magic = min * sum

$O(3)$

 if magic > max

 max = magic

 start = i

 end = j

 return [max, start, end]

minOf(A[n])

m = A[0]

for (i=1; i < n; i++)

 if m > A[i]

 m = A[i]

return m

$\Theta(n-1) \cdot O(n-1) \cdot O(3)$

$= O((n-1)(n-1)(3)) = O(3n^2 - 6n + 3)$

$= O(3n^2) = O(n^2)$

Given A = [31, 41, 59, 26, 53, 58, 6, 97, 93, 23]

it will look at all options with A[0]

then gradually go through the array and look at the options after those indices.

sumOf(A[n])

s = A[0]

for (i=1; i < n; i++)

 s = s + A[i]

return s