Written Assignment 2

1. (25) Let A = [1..n] be an array of integers. Consider the following recursive pseudocode:

mysteryfunction[A, right]

if right = 1 return A[1]

else

val = mysteryfunction[A, right-1]

if A[right] > val then val = A[right]

return val

To get our answer we call mysteryfunction(A, n). What does this function do? (Hint: trace its execution on a couple small inputs). Write its running time as a recurrence and solve it.

Answer:

This function finds the highest integer in the given List A

When the array has only one element no operation will be performed, hence T(1)=0

.. T(n)=1+T(n-1)

T(n)=1+1+T(n-2)

T(n)=1+1+1+1+ ..+( n-1)+0

Hence, execution cost can be written as T(n)=1(n-1)

T(n)=n-1

Hence, T(n)=O(n)