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EC330 HW 4

1) sort A(Array A[0...n-1])

$\begin{matrix} 3 & 4 \\ 5 & 4 \end{matrix}$
 $\begin{matrix} 0 & 1 & 2 & 5 & 6 & 7 \\ [8, 7, 6, \dots, 3, 2, 1] \end{matrix}$ $n = 8$

for $i = 0$ to $n/2$ 0 to $8/2 \rightarrow 0$ to 4

for $j = n/2 + 1$ to $n - 1$ $4 + 1$ to $8 - 1$ or 5 to 7

$n - 1 = 7$

if ($A[i] \leq A[j]$)

at first

then

then

swap ($A[i], A[j]$)

$i = 0, A[i] = 8$ $j = 5, A[j] = 3$

$i = 0, j = 6$

$i = 0, j = 7$

$A[i] < A[j]$

$A[i] \neq A[j]$

$A[i] \neq A[j]$

a) for every case $A[i] \geq A[j]$ since the latter half of the array is smaller so the result is the same array.

b) The algorithm does not sort arrays of size ≥ 8 because when an array like $[4, 5, 6, 7, 8, 3, 2, 1]$ is given, the program will return that exact array since for all cases, $A[i]$ will always be $\geq A[j]$ but the returned array will not be sorted.

c) my reasoning for (b)

