A Decision Tree for Mergesort with $n = 4$

The list being sorted is $abcd$. The root and left subtree of the decision tree are shown. The right subtree is identical to the left, except that $a$ and $b$ are interchanged.

For mergesort,

$C_{\text{max}}(4) =$ height of decision tree $= 5$,

$C_{\text{ave}}(4) =$ mean leaf depth in decision tree $= 8 \times 4 + 16 \times 5 = 4.667$. 