The number $a_i$ fits some place on the list $b_1 \leq \ldots \leq b_m$. Let "$r$" be the name of the index with $b_r \leq a_1 \leq b_{r+1}$. We have made $r+1$ comparisons so far. Complete this merge by merging $a_1 \leq \ldots \leq a_{r+1}$ into $b_{r+1} \leq \ldots \leq b_m$, $m-r$ #'s.

The IH says that at most $n + (m-r) + 1$ comparisons are used here. All together at most $r+1 + n+(m-r)+1 = n+m$ comparisons were made!

4. When $n=1$: Make the disk to rod C. 1 Move!
   Note: $1 = 2^1 - 1$

When $n=2$: Make the small disk to rod B. Move the large disk to rod C. Make the small disk to rod C. 3 Moves! Note: $3 = 2^2 - 1$

IH: Suppose that $n$ disks can be moved from rod A to rod C (using rod B for storage) in $2^n-1$ moves!

Instructions for n+1 rods: More the smallest $n$ disks from rod A to rod B (using rod C for storage). The IH says that this required at most $2^n-1$ moves.

Move the largest disk to rod C: 1 Move
Move the $n$ smallest disk from rod B to rod C (using rod A for storage) IH says at most $2^{n-1}$ moves
But $(2^n-1) + 1 + (2^{n-1}) = 2^{n+1} - 1$