Problem Set 5

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Q4:

Step 1: prove simple L.I. for each of the 'smaller' loops'.

① For Loop 1, I'll take L.I. as: $A[b:c] \leq A[b]$. and $b+1 \leq c \leq e$.

Assume the pre. holds, i.e. A is non-empty and $\forall k, b, e \in \mathbb{N}$, $0 \leq b < c \leq \text{len}(A)$. $0 \leq k < e-b$.

WTS: L.I. is correct.

Base Case: $\text{len}(A[b:c]) = 1$.

Since $\text{len}(A[b:e]) = 1$, gives $e = b+1$ which doesn't go into loop 1, is vacuously true.

Induction Step: Let