Strong Induction Hypothesis Quantification

Here is one way to keep it straight:

- ☑ $k \geq$ first base case
- ☑ $n \geq$ last base case
- ☑ $n \geq k$

to prove:

$P(n+1)$ in the IS

Note that this means there are multiple ways to write it:

BC: $P(0)$ ✓ $P(1)$ ✓ $P(2)$ ✓ $P(3)$ ✓

If these are your Base Cases

IH: Fix $n \in \mathbb{N}$
Assume $P(k)$ $\forall k \in \mathbb{N}$ s.t. $k \geq 0$, $n \geq 3$, $n \geq k$

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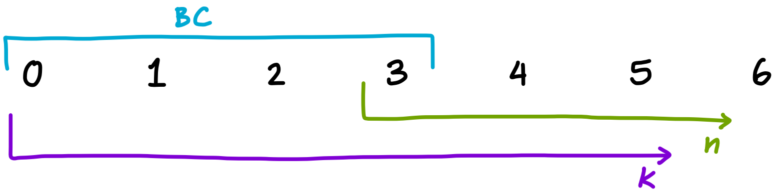
Assume $P(k)$ $\forall k \in \mathbb{N}$ s.t. $0 \leq k \leq n$, $n \geq 3$

All three of these are valid!

We can check that all three are equivalent informally:

Fix $n \in \mathbb{N}$, $n \geq 3$
Assume $P(0) \wedge P(1) \wedge P(2) \wedge \ldots \wedge P(n)$

Visually



$k \geq 0$ $n \geq 3$ $k \leq n$