Proof by contradiction – similar to induction proof

We want to prove $\forall n \in \mathbb{Z}^+, P(n)$
If the "for all" statement is false, then there must be *some* element $n \in \mathbb{Z}^+$ such that $P(n)$ is False.
Let N be the **smallest** positive integer where $P(N)$ is false.

We prove that $P(1)$ is true, so that $N \geq 2$ (and hence $N - 1 \geq 1$).

Since N is the smallest positive integer where $P(N)$ is false, it must be that $P(N - 1)$ is true.

We then showed that $P(N - 1) \rightarrow P(N)$*, and hence derived a contradiction.*

Note the similarity to a proof by induction!