Intro to Discrete Structures
Lecture 14

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Mathematical Induction

Mathematical induction is based on the rule of inference

$$\begin{array}{lll} 1. & & P(1) \\ 2. & & \forall k\,(P(k) \rightarrow P(k+1)) \\ \hline 3. & \therefore & \forall n P(n) \end{array}$$

which is true for the domain of natural numbers $\mathbb{N}$.

Climbing an Infinite Ladder

1. We can reach the first rung of the ladder.
2. If we can reach a particular rung of the ladder, then we can reach the next rung of the ladder.
3. Therefore, we can reach any rung of the ladder.