Another proof by contradiction

Let $F : \mathbb{Z}^+ \to \mathbb{Z}^+$ be defined by

- $F(1) = 0$
- $F(n) = 2 + F(n-1)$ if $n \geq 2$

We want to prove that $\forall n \geq 2$, $F(n) \geq n$

Equivalently, we want to prove that $P(n)$ is true for all $n \geq 2$, where $P(n)$ is the assertion $F(n) \geq n$.

Class exercise:

- Calculate $F(n)$ for $n = 2, 3, 4$.
- Is $P(n)$ true for $n = 1, 2, 3, 4$?