4.3 You are given a predicate \( \text{prime} \) with domain \( \text{nat} \) such that \( \text{prime} \ n \) is \( \top \) if \( n \) is a prime number, and \( \bot \) if it is not. You are given natural variable \( n \). Write a program to assign to \( n \) the smallest prime number that is bigger than or equal to the initial value of \( n \). Write all specifications and refinements necessary to prove your program is correct, but you do not need to write the proof. You may ignore time.

\[ P \text{ be the specification } n' \geq n \land \text{prime} \ n' \land \neg \exists i: n..n' \cdot \text{prime} \ i. \]

\[ P \iff \text{if prime n then ok else n:= n+1. } \]