Divisibility Problem

Divisibility Problem:
What is the smallest positive integer that leaves a remainder of 1 when divided by 2, remainder of 2 when divided by 3, a remainder of 3 when divided by 4, and so on up to a remainder of 9 when divided by 10?

Solution:
Suppose our number is N. Observe that $N+1$ must be divisible by $2, 3, \cdots, 10$. The smallest such integer is $5 * 7 * 8 * 9 = 2520$. This gives us $\boxed{N = 2519}$.