



You must find the first value of  $k$  such that:

$$\frac{k}{999} + \frac{1}{2} \cdot \frac{1}{999} > \frac{k+1}{1000}$$

$$\Leftrightarrow k + \frac{1}{2} > \frac{999k + 999}{1000}$$

$$\Leftrightarrow 0.999k + 0.999$$

$$\Leftrightarrow k + \frac{1}{2} > 0.999k + 0.999$$

$$\Leftrightarrow 0.001k > 0.499$$

$$\Rightarrow k > 499 \Rightarrow \boxed{k = 500}$$

First error:  $501^e$  bit.