## Answer

The non-zero values of $num[i]$ need to belong to a finite set $S$ (not containing 0) with a relation $\ll$ such that:

- $\forall s, t \in S \, : \, \neg((s \ll t) \wedge (t \ll s))$

- $\forall s \in S \, : \, \exists t \in S \, : \, s \ll t$.

Define $0 \ll s$ to be true for all $s \in S$, and modify the bakery algorithm to use $\ll$ instead of $<$ to compare values of $num[i]$. One way to do this is to let $S$ equal $\{1, 2, 3\}$ and define:

$$a \ll b \;\; \triangleq \;\; b = (a\%3) + 1$$

for $a$ and $b$ in $S$.