CSC/MAT-220: Discrete Structures
EFY 12

Thomas R. Cameron

Due: November 10, 2017

Puzzle of the Week. A school has lockers index by $1, 2, 3, \ldots, 1000$. By flipping a locker, we mean changing its open/closed state. The lockers start out all being open. Then, for $i = 1, \ldots, 1000$, student i changes the state of each locker whose index is divisible by i.

i. Which lockers are open and which lockers are closed?

ii. Suppose now that there are a countably infinite number of lockers and students, will there be more open lockers or closed lockers? Prove your assertion.