Bilkent University
Department of Mathematics

Problem Of The Month

Term: June 2008

Some unit squares of 2008×2008 square board are colored. Let (i, j) be a unit square belonging to the i^{th} line and j^{th} column and $S_{i,j}$ be the set of all colored unit squares (x, y) satisfying $x \leq i$ and $y \leq j$. At the first step in each colored unit square (i, j) we write the number of colored unit squares in $S_{i,j}$. In each step, in each colored unit square (i, j) we write the sum of all numbers written in $S_{i,j}$ in the previous step. Prove that after finite number of steps, all numbers in the colored unit squares will be odd.