Problemas Sortidos de Combinatória

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Problema 11 (Ibero 1994, 3). In each square of an $n \times n$ grid there is a lamp. If the lamp is touched it changes its state every lamp in the same row and every lamp in the same column (the one that are on are turned off and viceversa). At the begin, all the lamps are off. Show that lways is possible, with an appropriated sequence of touches, that all the the lamps on the board end on and find, in function of n the minimal number of touches that are necessary to turn on every lamp.