

Computer Science Problem of the Month

Longwood University

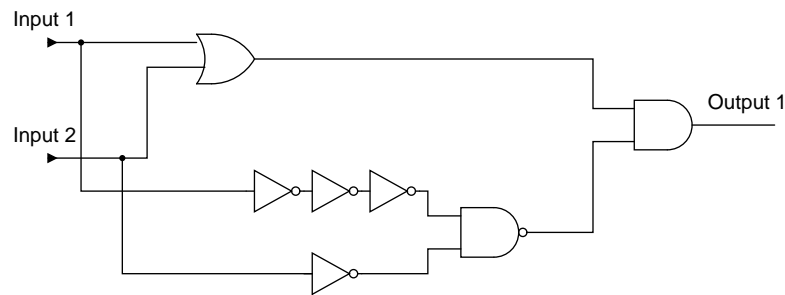
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1 Background

In order to keep down the cost of manufacturing a computer chip, companies like Intel, Motorola, and AMD use logic to simplify every circuit they create. Every logic gate added to a chip increases the size of the chip, the amount of heat it produces, the amount of power it draws, and the probability of that the chip will have etching flaws or other critical problems. Understanding truth tables and the laws of logic allows a chip designer to produce better and cheaper chips.

2 Problem

Using truth tables and/or the laws of logic to simplify the circuit shown below, find an equivalent circuit that uses the minimum number of gates.



3 Solutions

Solutions should be submitted by e-mail to marmorsteinrm@longwood.edu, my campus e-mail address. The first correct student solution will receive a \$1 prize. Other solutions will be recognized on the web site. You can download a copy of this problem at <http://narnia.homeunix.com/~robert/PoTM/>