# On the Subject of The Rule

Isn't this whole game about rules anyway?

This module is based on Wolfram's cellular automata. This module displays four rows of squares. From top to bottom, the rows contain 9, 8, 7, and 6 squares. Some squares in the top row may be colored black (on = 1), but the rest of the squares will be white (off = 0). The module also displays a number between 0 and 15 inclusive in the top left corner. This is the Rule Number.
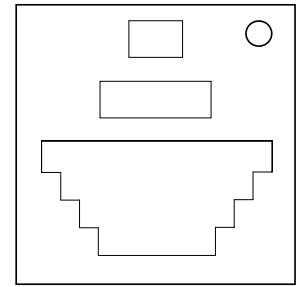
The Rule Number represents a cellular automaton. The goal of this module is to find the values of the next three stages of the cellular automaton based off of the first row. Whether a square is on or off is based on if the two adjacent squares immediately above it are on or off, as determined by the Rule.

The defuser can click any cell in the bottom three rows to toggle its color. When the Submit button is pressed, the module will check each square in the bottom three rows. If each square is correct, then the module will solve. If any square is incorrect, then a strike will be incurred and the initial five squares (but not the Rule Number) will reset.

Solving the Module

The Rule Number is converted to a four-digit binary number, prepending with zeroes if necessary. In reading order, the four digits in the binary number are respectively the value of a cell under cells represented by 11, 10, 01, and 00. To solve the module, toggle squares so that the module displays the correct behavior of the cellular automaton and click the Submit button.

An example solve is shown here for Rule 6 (0110 in binary), where cells represented by 11 and 00 yield 0, while cells represented by 10 and 01 yield 1.