Math Problem of the Fortnight

Holiday Lights

As the holidays approach I have purchased several strings of lights for around my roofline (which you can think of as a circle.) I have 2 strings of 4 different colors: red, green, yellow, and blue. For each color, I have a string that blinks and a string that is always on (solid). So I have 8 strings of lights. I’d like my display to alternate from blinking to solid and have no strings of the same color next to each other. How many ways can I set up the lights for my house (assume that there are exactly 8 positions for the light strings and that sliding them one way or the other by less than 1 full string length can’t happen.)

For a tougher problem, how many ways could I arrange $2N$ strings of light where there are $N$ colors?

The Problem of the Week is open to all undergraduate students, regardless of major. Submit your written solution, along with your name and e-mail address, to the Math Department office (Founders Hall Room 2006) by 2:00 p.m. on Friday December 8, 2017. There is a prize of your choice of a $10 gift certificate to either Komal or Barista’s for the best solution.

http://www.unk.edu/academics/math/problem-of-the-fortnight.php