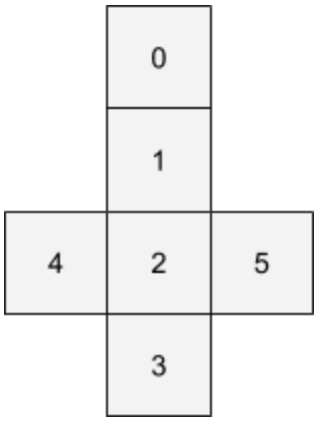
Michael Yu / Brian Chan CSE481P Assignment 2: Problem Formulation 17 April 2018

(1) What is the problem you have formulated? If this is not a well-known problem, explain what the problem is and any rules you have made up.

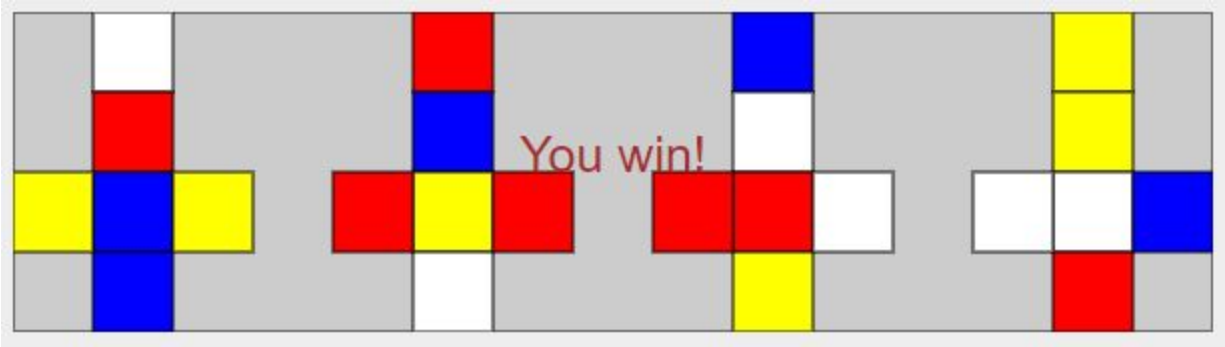
Instant insanity.

(2) What is your state representation and why?

State consists of an array of four strings of length 6. The characters for each string correspond to the colors of the faces of the cubes as follows. This was the most concise sane state representation we could think of and was easy to work with in code.



For example, [wrbbyy, rbywrr, bwryrw, yywrwb] (a winning configuration) looks like this:



(3) What operators do you provide? Did you face a choice when you designed your operators, and if so, what is another possibility that you considered? Why did you go with the choice you made?

We provided two operators for each cube: turn upward and turn sideways. We chose this as the minimum number of operations that would allow us to reach any possible cube orientations for each of our cubes.

(4) Did you provide a visualization in your formulation? Briefly, how does that work?

Yes, see the prior page and InstantInsanity_SVG_VIS_FOR_BRIFL.py… We based our code off of the provided Missionaries visualization code. For each cube, we draw each colored face at certain hard-coded position offsets.

The four sides of the tower that we care about in our win condition are the ones stacked vertically. That is, if you look at the center columns of the cubes in the image of the prior page, each of the corresponding rows has 4 distinct colors.

(5) Describe how you and your partner divided up the work of the project.

We paired together to write all code and the writeup (so everything together).

(6) Describe any particular challenges you had with this project.

We got the winning condition wrong, which made it so even if we ran a solver we couldn't get a winning solution. Of course, once we fixed our winning condition our solver worked and the game was playable.