Think-Thank-Thunked Project Proposal

Colin Hosking, Peter Cwalina, Ahnaf Hasan

We will make a rubik's cube simulation in which user can select the type of cube, shuffle cube, attempt to solve it, and be provided a hint if requested.

Concepts showcased-

Data structures: We will use different data structures to store cube face colors.
ie 3x3 cube = 6 matrices, pyramid = 4 trees
Also we will use a stack/queue to store represent the path of moves to a solved cube.
Note: we decided not to use a 3D array to represent the rubik's cube because that would entail us differentiating between corner pieces, which have 3 colors each, and other pieces, which have 2/1 color each. Instead, we will use six 2D arrays to represent each face.

Utilize processing: to represent each cube run animation of algorithm, and implement manual interaction via clicking and dragging

Data manipulation: Our project will involve manipulating data between arrays, as well as checking for moves that lead to the same permutation of the cube (circular moves) in stacks

Encapsulation: Encapsulating a rubik's cube class using underlying data structures and only allowing the user to perform the functions of a rubik's cube to the object.

Workflow-

Step 1 : make the structure for a 3x3 rubik's cube
Step 2 : Implement mechanical portion of moving the cube
Step 3 : Visually represent the cube via processing either in a blown up view or pseudo 3d view
Important to note- this is all about manipulating data structures to make the cube work
Step 4 : add move tracking / solution finding
Step 5 : move on to different type of cube then repeat 2x2 → 3x3 → pyramid