Project Report

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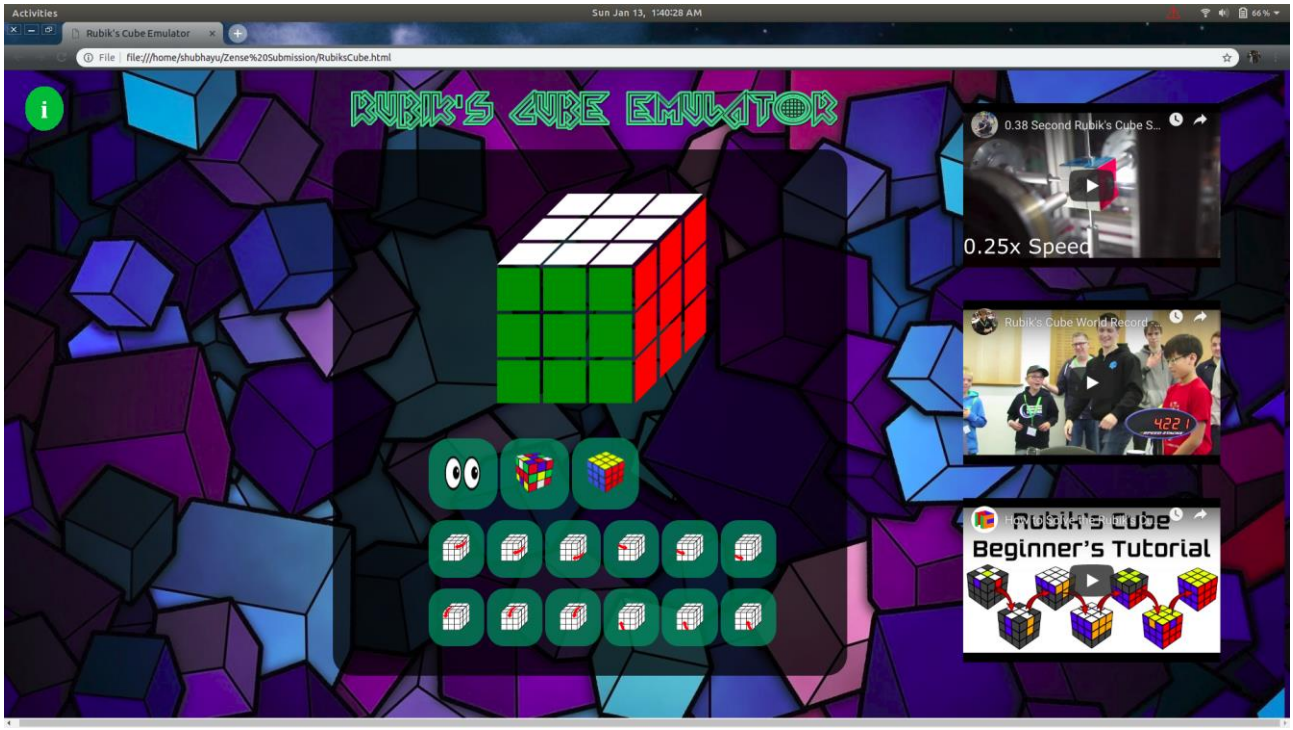
Link to project video:
https://drive.google.com/open?id=1DMWzHVKsRwH8ybE3iiovl0iO-pdlwWGC

Requirements(optional) : Internet connection to show the links at the side.

Project Description/ Idea: Simulate a Rubik's Cube with all it's real-life operations with a **3-D** appearance, to give it a realistic appearance.



The webpage after loading.

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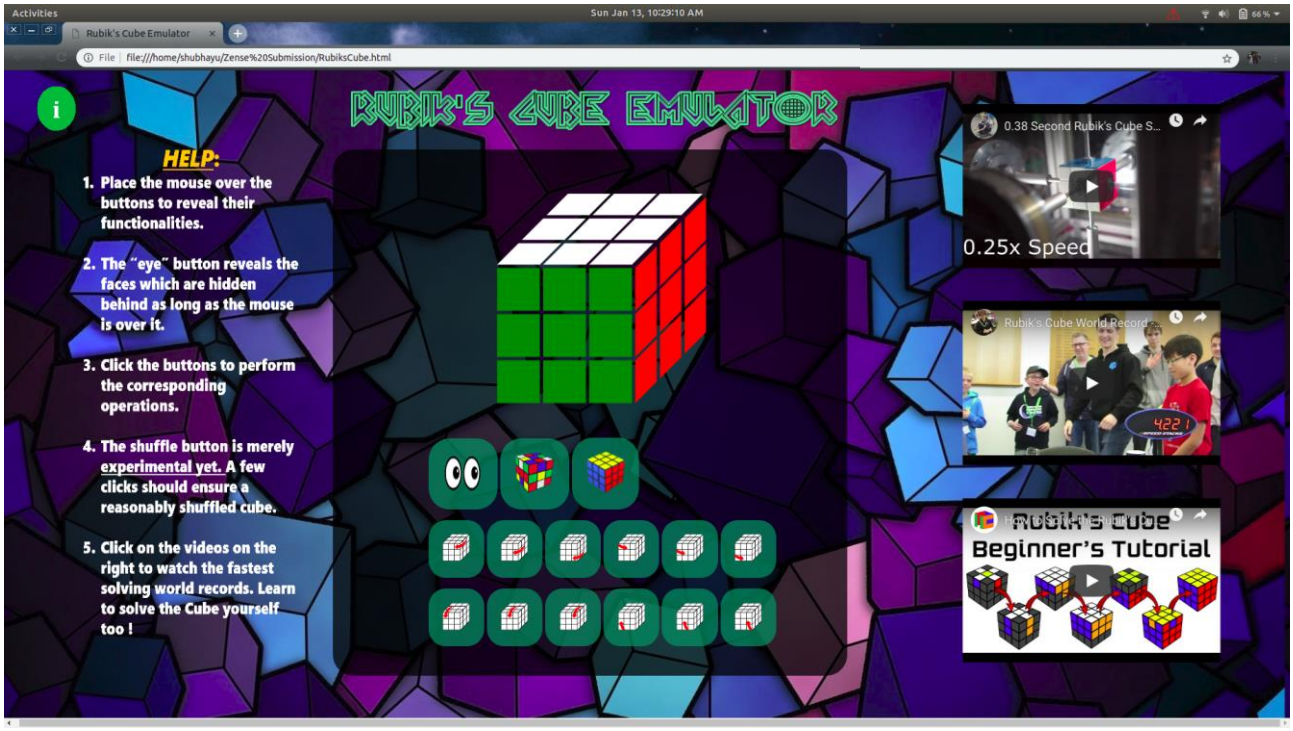
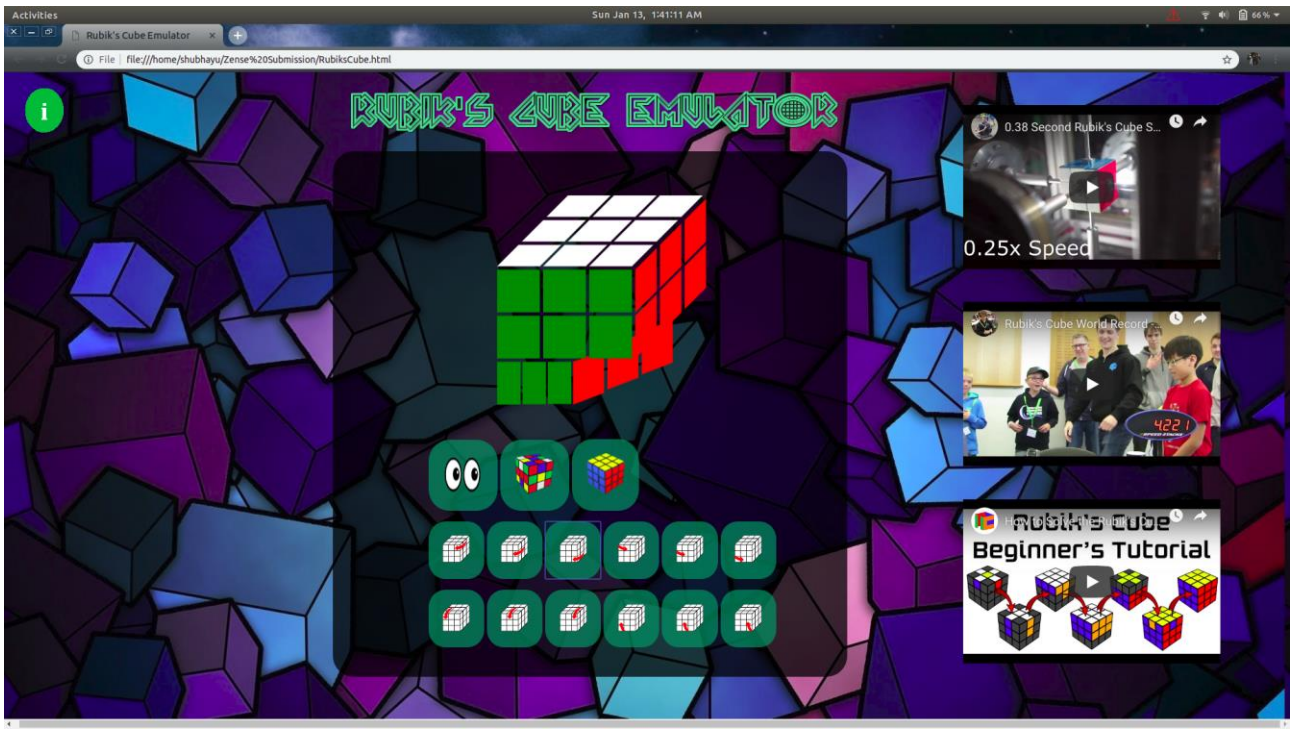
Implementation details: I have used **JavaScript/CSS** to make my program. So essentially its a webpage. Due to constraint of time, I couldn't learn and use

any frameworks. So I have used **“canvas” in JS** and manually calculated and drawn out everything including the animations. The program uses **array manipulations** to perform all the operations using various functions as per the nature of the operation. The there are separate **functions** for **calculations**, **drawing** out the shapes and the **animations**.



The help page on the webpage.

Short-Comings: The current version is *highly inefficient* due to lack of use of a proper framework. Also various animations are not there yet in the project. There are also some issues while running the webpage on various devices to differences in the resolution/aspect ratio. All this can be fixed with proper relative coordinates(which I couldn’t implement properly now) and using 3-D frameworks.



An animation in progress.

Future versions: I intend to make the following updates:

1. Implement Frameworks like animate.js to make the animations look decent.

2. Write code for a Cube-solver which the user can use.

3. Make it a login- based website, where the user can store their last configuration, challenge people etc, using Flask or Django.

4. Make the cube completely scalable to larger sizes.(Currently it can only display a larger Cube.)

Overall Experience: It was fun doing the project, as this is my first (slightly big) venture into JavaScript. Though it was frustating to calculate out the animation path and coordinates manually, I still learned something with every function that I wrote.

Inspiration: I recently saw a video by *Code Bullet on YouTube (https://youtu.be/f9smvQ5fc7Q)* on implementing A.I. to solve a 55x55x55 cube. This however being far beyond my capabilities, I merely made the emulator.

Future Explorations: I am further exploring Web developement at the moment by learning Node.js, Angular.js and using jQuery. After that I will continue on with Flask & Django in python2.7 and Spring in Java, once I learn the concepts

of RESTful APIs properly. I am very interested in the future to learn Java in greater detail.

Credits: **1.** Lindsey Stirling for the background music.
2. StackExchange and w3schools, from where I got the solutions to all my problems.
3. cooltext.com for the title at the top.
4. YouTube for the embedded videos.