Project Web 3

Due Date: October 27

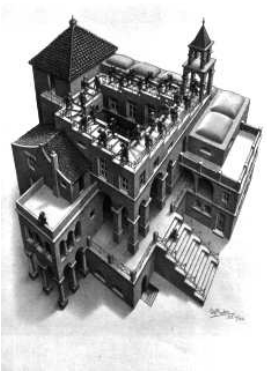
Purpose

This assignment should help to ease you into using JavaScript, along with some HTML and CSS, to create a web page that has some interaction, graphics, and animation. It will also allow you to think about a fun visualization problem.

This is an individual assignment.

Problem

There are countless interesting optical illusions, some famous, such as Escher's staircase:



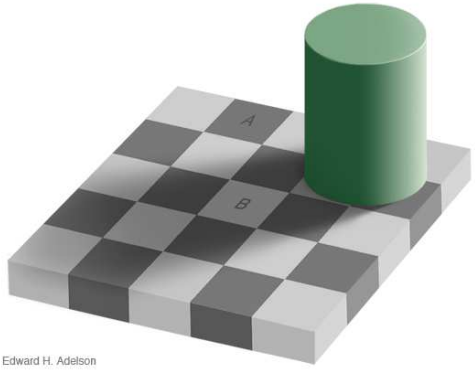
There are many, much simpler, illusions, such as the one shown below. In this case, called Adelson's Checker-Shadow Illusion, squares A and B actually are the exact same color/shade! I first saw this on a Happy Meal bag, and had trouble believing it, until I folded the paper in such a way so as to have the two squares next to one another. Yep, the color was exactly the same. So illusions are cool, but sometimes you have to convince the viewer that what is claimed is true. Go to

`https://michaelbach.de/ot/lum-adelsonCheckShadow/`

for a visualization that tries to do just that for the image below (but which I think fails - perhaps you can do better?). Michael Bach's home page at

`https://michaelbach.de/ot/`

has all sorts of interesting optical illusions; don't miss `https://michaelbach.de/ot/cog-impossHallucii/`!



Your job is to write at least two little JavaScript animations that show two different optical illusions with some animation and possibly additional graphical elements that will convince the viewer of your claim. This means you will create a small site with at least two pages. Each page should show one of the illusion animations, and the site should have a clear and cohesive design. Finally, your animation must do something different than what is shown on websites such as the above.

Input

Your animation should have a simple user interface (UI) to let the viewer change from one illusion to another. More importantly, there should be a button or other method to let the viewer set your visualization in motion to convince him/her of your claim, as well as to reset the scene to its original configuration.

Output

You must create a web page/site stored in appropriate directories (folders) on the CS server, with a link from your home page. The JavaScript should be part of a full web page/site that has a banner, some explanatory text, good design, and so forth. The JavaScript should include one of (at least) two illusions at a time, the UI that controls everything, and a visualization/animation to convince the viewer of your claims.

Specifics

- Build your web pages with HTML5 and CSS. Since there are at least two pages, you should employ an external style sheet that you can use for both pages.
- Use JavaScript and canvas for your graphics and animation, as well as CSS. All of the animation and graphics should be custom-made, with the exception that gif/jpg/webp/etc. files can be used as a background.
- The JavaScript should also be stored in a separate file.
- Any JavaScript canvas methods may be used.
- You must incorporate at least two dynamic changes to the DOM, based on user input; i.e., text input or a mouse click.
- Use proper JavaScript event handler conventions. **Do not use** `onclick()`.
- Your web pages should have a good title and a banner describing their contents.
- The animation(s) should be well integrated into each web page. Choose colors that go well together for the animation itself and the web site overall.
- You should use good web page design principles. Continue to follow principles as shown in the *Web Style Guide*. **This includes proper formatting and aligning of the interface elements.**
- You can use any web page editor to create your pages.
- Your site should pass the HTML and CSS validators.

Notes

- On the bottom of all of your HTML pages, include the following lines:

```
Last updated
<script>
    document.write(document.lastModified);
</script>
```

- Upload all of your web pages to the server before 11:59:59 on the due date. You need not hand in any hard copy.

Beware of bugs in the above code; I have only proved it correct, not tried it.
– Donald Knuth