

CS460 Fall 2020

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## Assignment 2: XTK Cube / Pixel Art

We will create pixel art - and then use XTK to render it in 3D, fully interactive and web-based.



Here is an empty grid of 9x9 pixels:

If we set pixels to different colors, we can create pixel art.



Here is a fox.

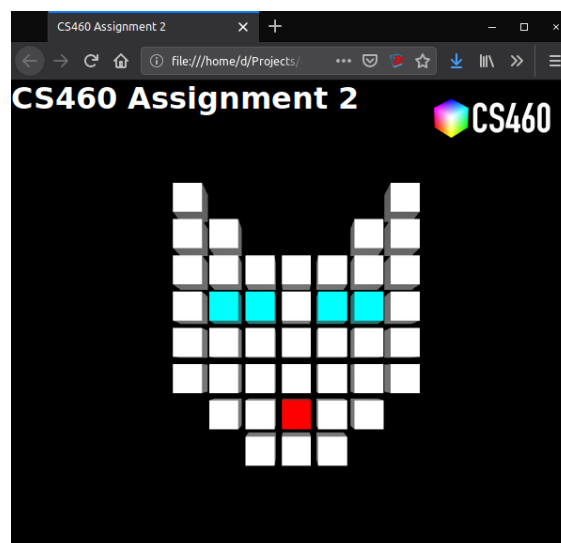


And here is a pine tree.

To create 3D pixel art, we can use colored `x.cube` objects instead of pixels.

**Please choose one, either the fox or the pine tree, and then create a 3D version using XTK** (<http://goXTK.com>). Start with the **index.html** from <https://cs460.org/shortcuts/04/> and save it in directory **02/** in your github fork.

This starter code creates one cube with XTK. For this assignment, you will need to modify the code to create many cubes: one cube for each pixel. Remember, you can set, for example, the color green for a cube `c` using `c.color=[0,1,0]`. Please replace the screenshot below with your version. Also, please commit this PDF and your final code to your Github fork and submit a pull request.



### Bonus (33 points):

Question 1 (10 points): If we would not care about the gap between cubes/pixels, how could we reduce the number of X.cube objects in the scene?

**We can achieve this by creating a big single X.cube() that would replace the 4 rows with 7 cubes. Then we can create two rectangular shaped colored X.cube() on the places of eyes (also fixing Z-Fighting on the way). We can apply same approach for the row where the mouth is located i.e. create a white rectangular shaped cube and red cube at the center. For the second row and the last row we can just create rectangular shaped X.cube(). This way we will have only seven cubes and three overlapped cubes (two blue eyes and one red mouth)**

Question 2 (23 points): Animate the pixel art! We can use the following JavaScript snippet to execute code every second:

```
setInterval(function() {  
    // your code  
}, 1000);
```

Please write code to animate closing/opening of the fox's eyes or, if you chose the pine tree, make some pixels/cubes light up like a Christmas tree. In both cases, you will need to keep track of certain cubes and then change their color using the snippet above. You can submit this as part of your 02/index.html file.

**The code is in the Index.html file that was submitted**