University of Massachusetts Boston

CS460

CS460 Fall 2022
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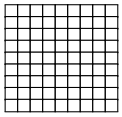
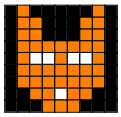
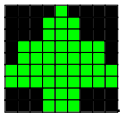
Assignment 2: XTK Cube / Pixel Art

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

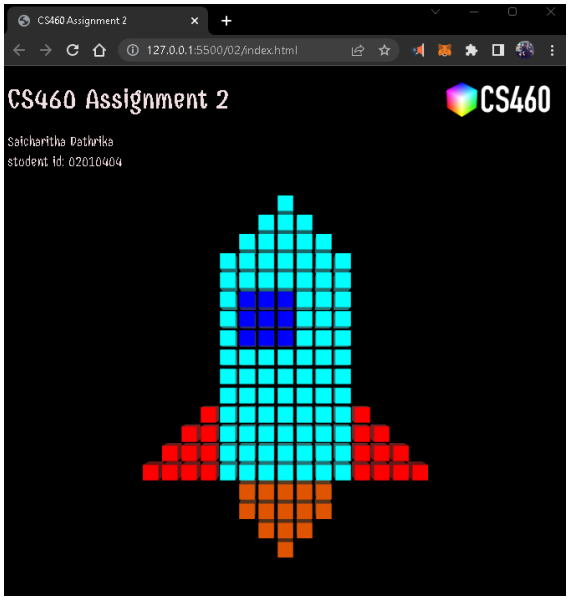
Here is an empty grid of 9x9 pixels: 

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

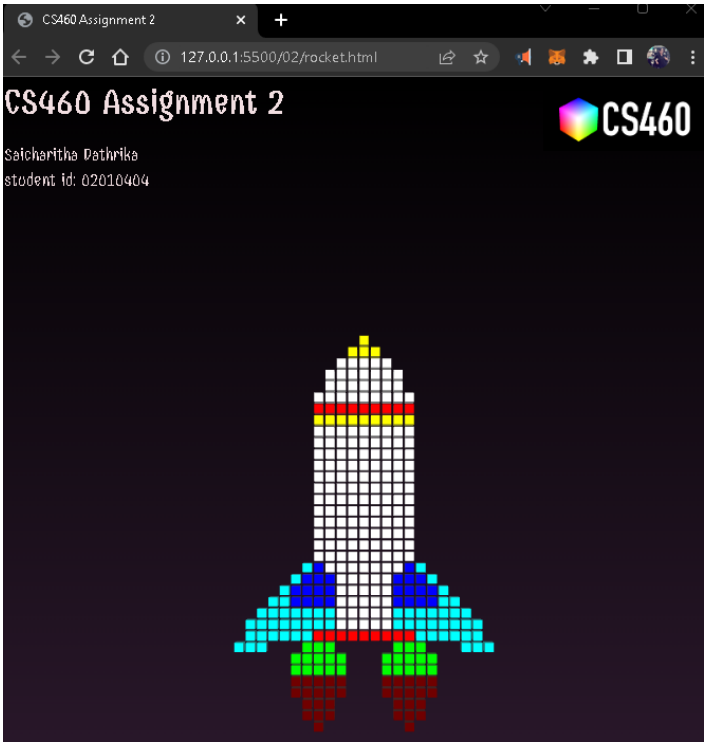
Here is a fox.  And here is a pine tree. 

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

Below is the pixel art of a rocket I created using loops.



However, by using Daniel Haehn's github code at `https://gist.github.com/haehn/f5c23c6af0f7bfed3768313209c03b09` using Functions, I have created a Rocket which is visually appealing than the Rocket I created using loops. With this code I can create many different shapes and figures easily without so many compilcated loops.



REFERENCE: Daniel Haehn Github code link `https://gist.github.com/haehn/f5c23c6af0f7bfed3768313209c03b09`

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 used 3d cubes to form like 2d images, it is done by discarding the z-coordinate because we don't need depth information.

So when the image is projected, the image is in a 2d coordinate system which takes place on a computer screen. Now, the drawing surface is a rectangular grid of pixels(3d cubes), with a horizontal and vertical size.

We have to use down-sampling method to decrease the number of cubes in the plane.

For example, if we have 4x4 grid the first four pixel values are averaged and form a new pixel. This way the number of pixels/cubes in the scene are decreased.

Question 2 (23 points): Animate the pixel art!`https://dathrika13.github.io/cs460student/` file.