Ray Tracing

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I've learned about what render is and how it works. In computing, it's a process that draws a set of objects producing an array of pixels. From a material way, rendering means converting 3D objects to 2D images into realistic images, which considers how each object contributes to each pixel. So, if you want it, you need an image-order algorithm called Ray Tracing. Reversing reality, it takes an image based on the camera geometry, known as an array of pixels, running through each pixel in the image shoots rays through the normal surface, checking every object of the scene to see if it intersects with any of them. Also, it computes the pixel color based on the results of the ray intersection. My implementation of the algorithm in pseudocode, thanks to Appel [2]:

```
for each pixel on the scene based on the camera geometry do
    compute the ray direction
    find first object hit by ray and its surface normal
    compute illumination
    calculate color
```

Listing 1: Ray tracing

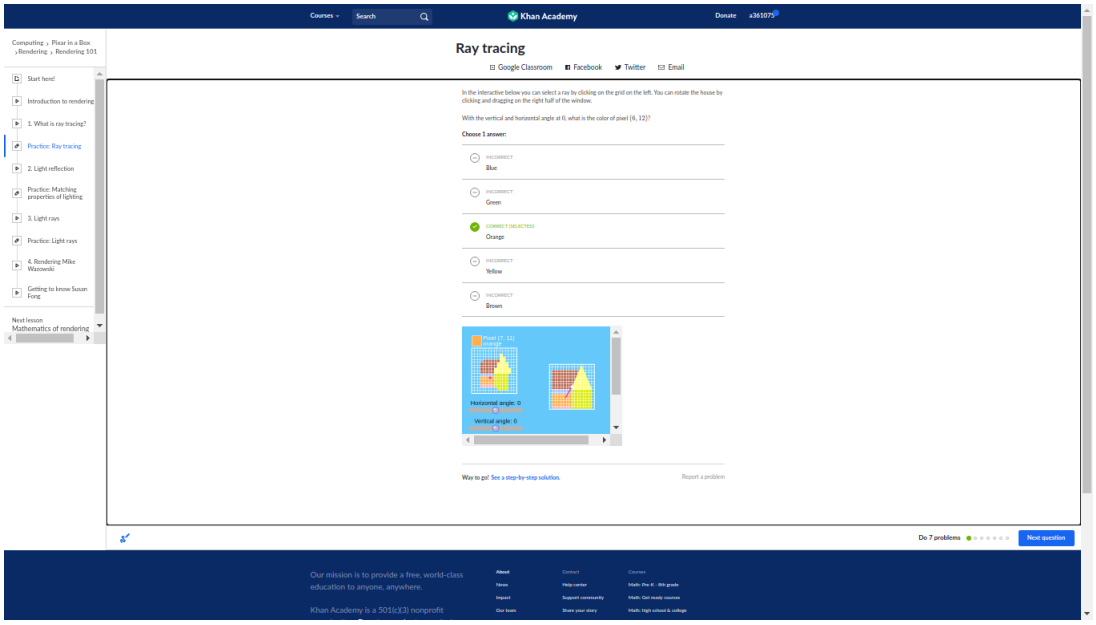

Figure 1: Ray Tracing 1

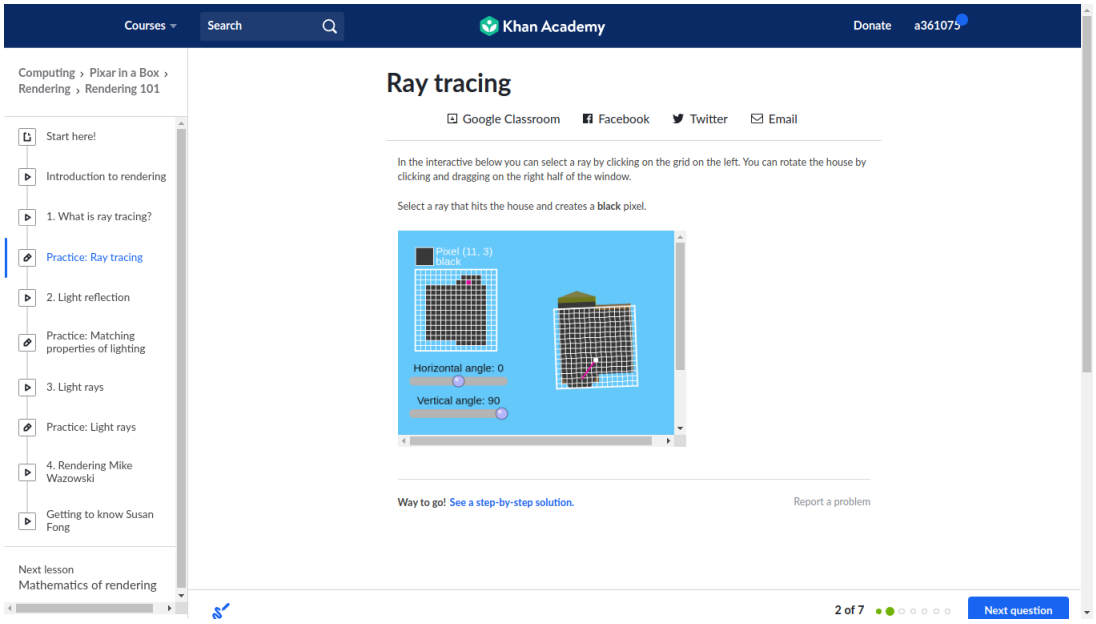

Figure 2: Ray Tracing 2

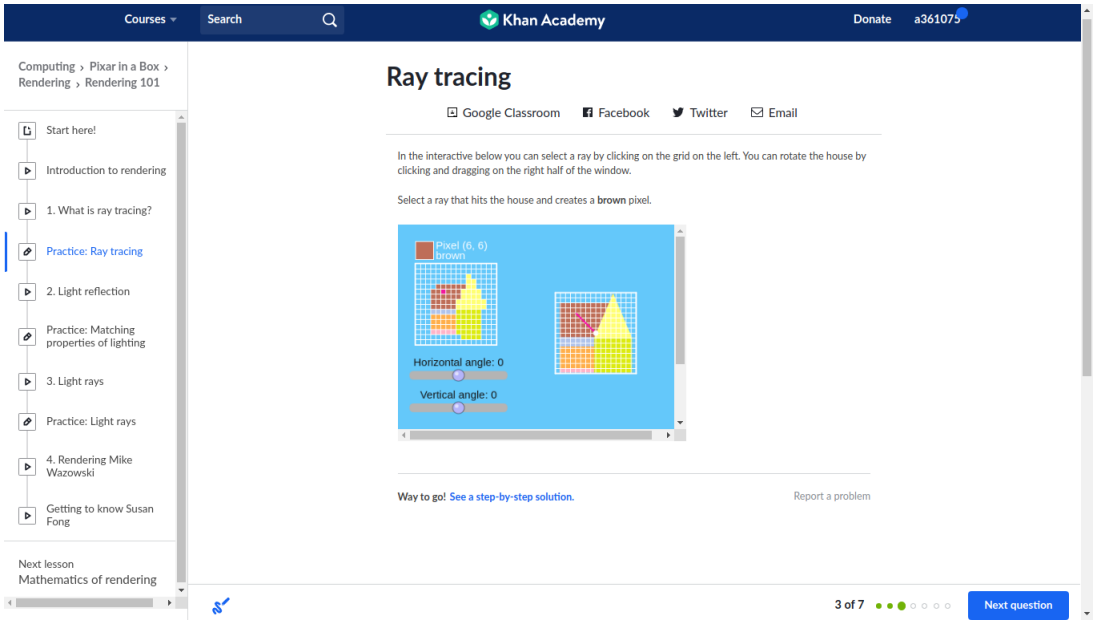

Figure 3: Ray Tracing 3

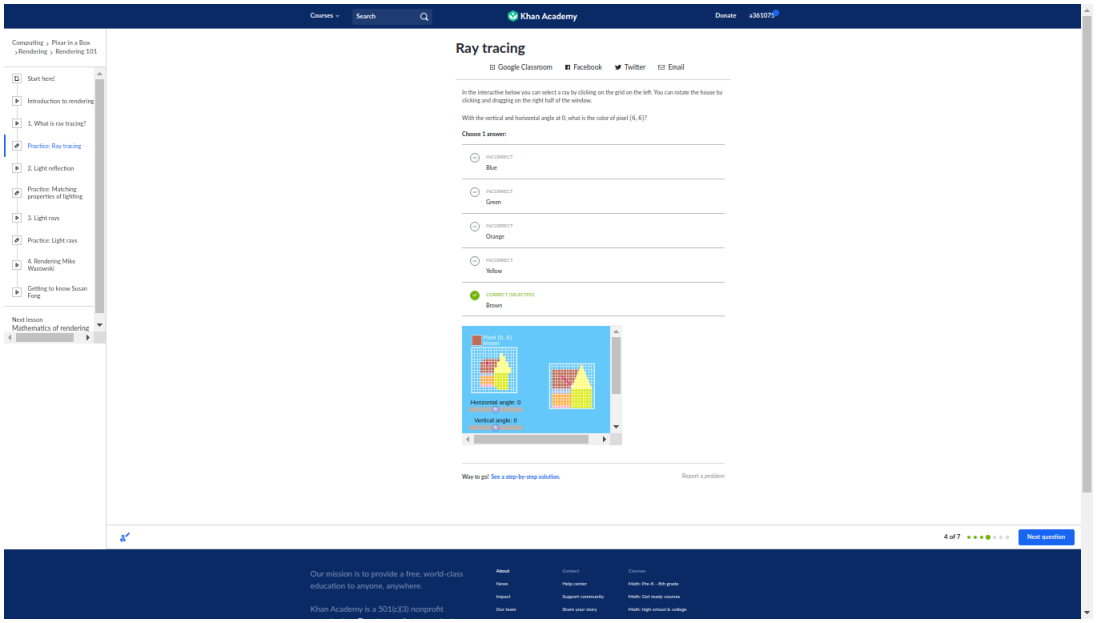

Figure 4: Ray Tracing 4

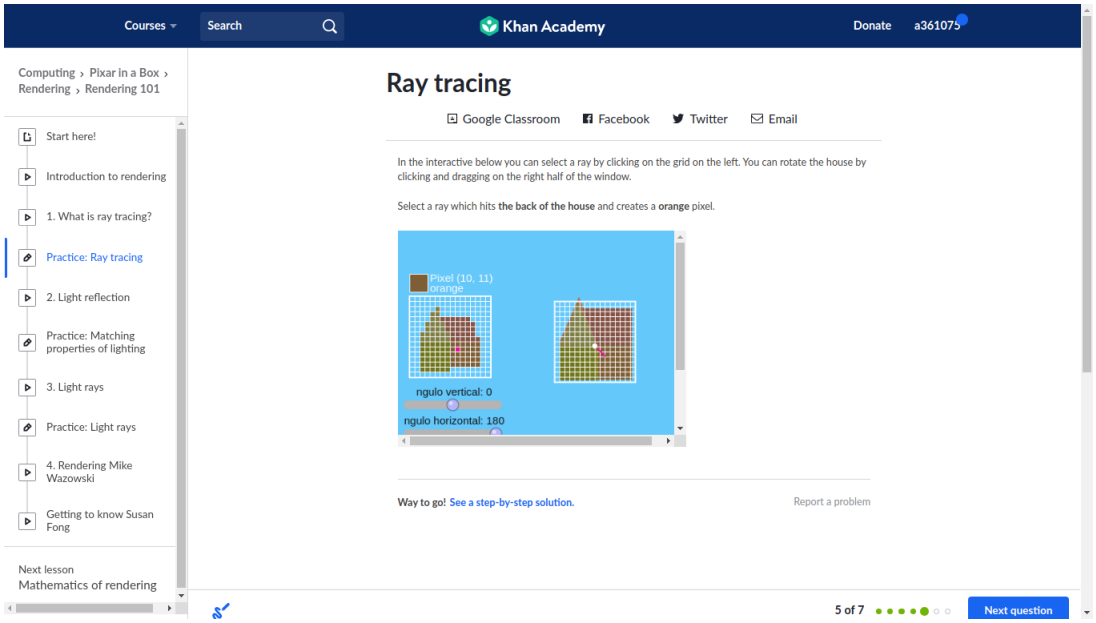

Figure 5: Ray Tracing 5

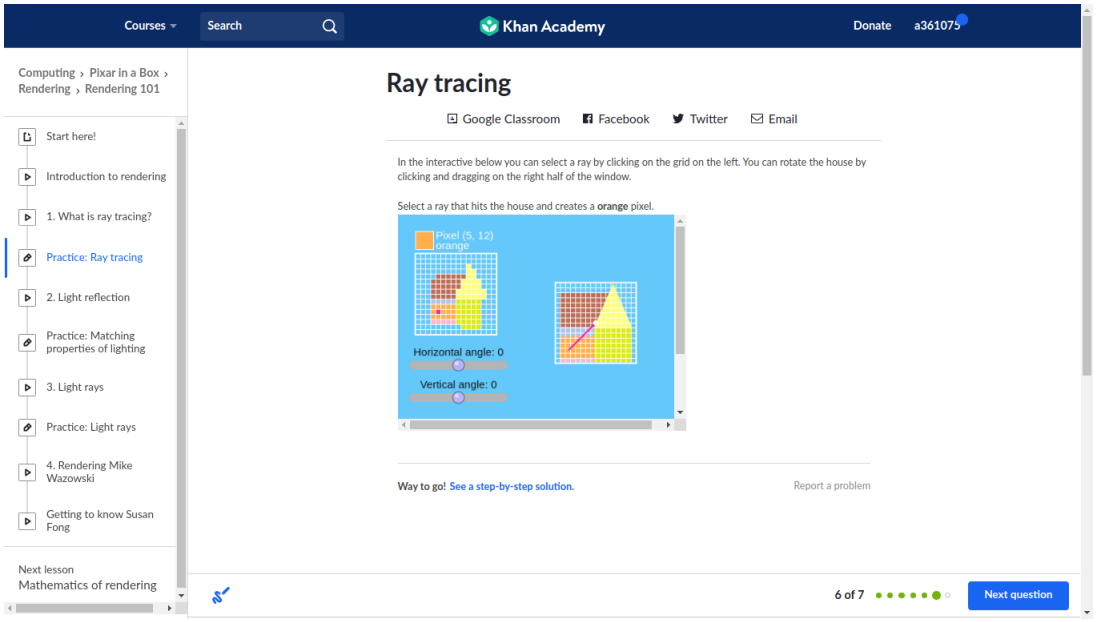

Figure 6: Ray Tracing 6

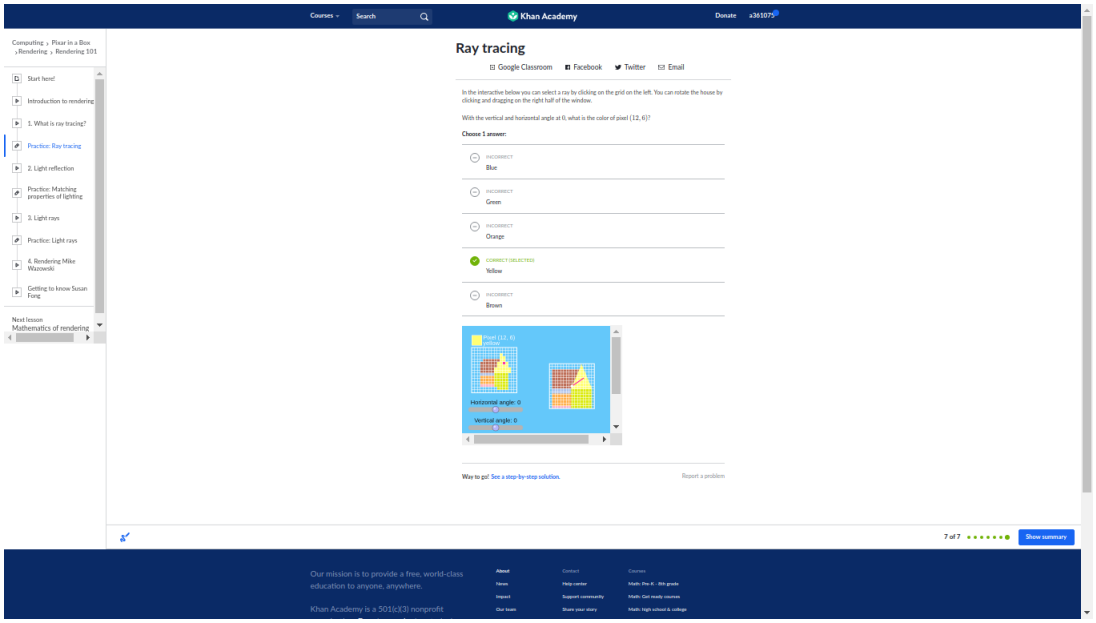

Figure 7: Ray Tracing 7

References

[1] "Ray Tracing," Khanacademy.org, 2022. [Online]. Available: https://www.khanacademy.org/computing/pixar/rendering/rendering1/c tracing. [Accessed: 16-Feb-2022]

[2] "Some techniques for shading machine renderings of solids — Proceedings of the April 30–May 2, 1968, spring joint computer conference," ACM Other conferences, 2022. [Online]. Available: https://dl.acm.org/doi/10.1145/1468075.1468082. [Accessed: 16-Feb-2022]