Assignment 5, Share Your Screenshots

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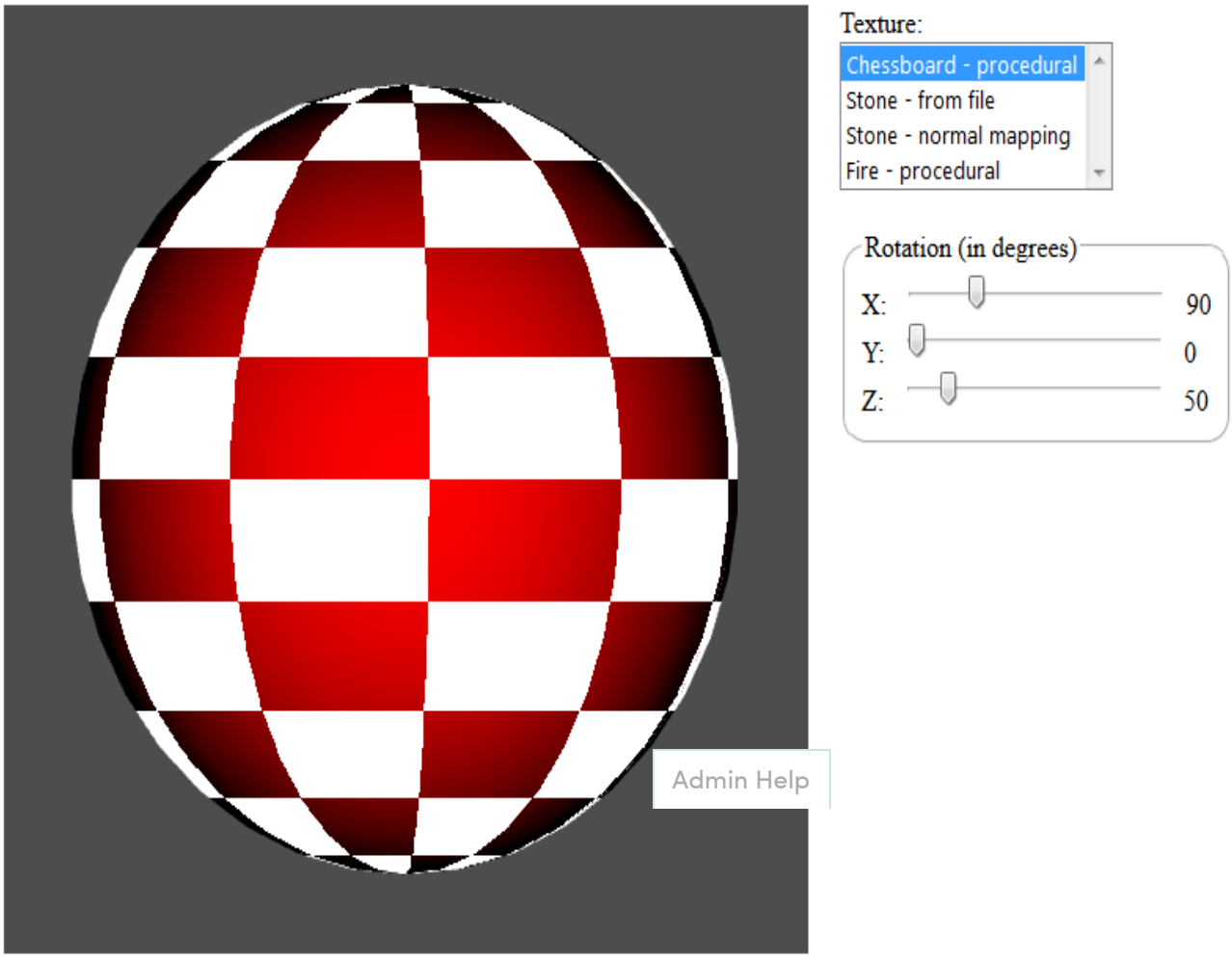
Krzysztof Gdawiec · 18 days ago

Assignment 5: Texture Mapping to a Sphere

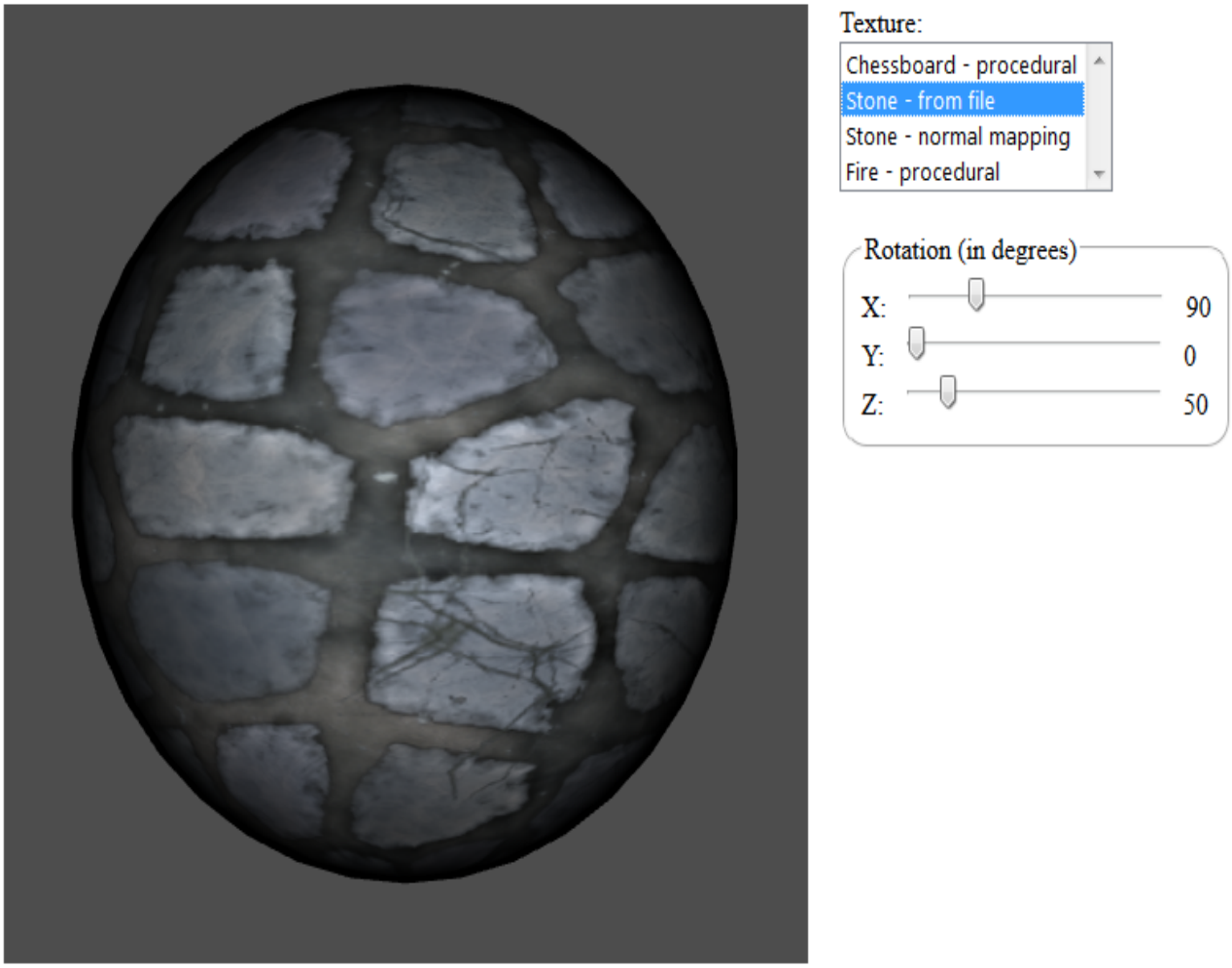
And finally, the last assignment. Please share screenshots of Yours applications.

I'll start with mine. First the required part.

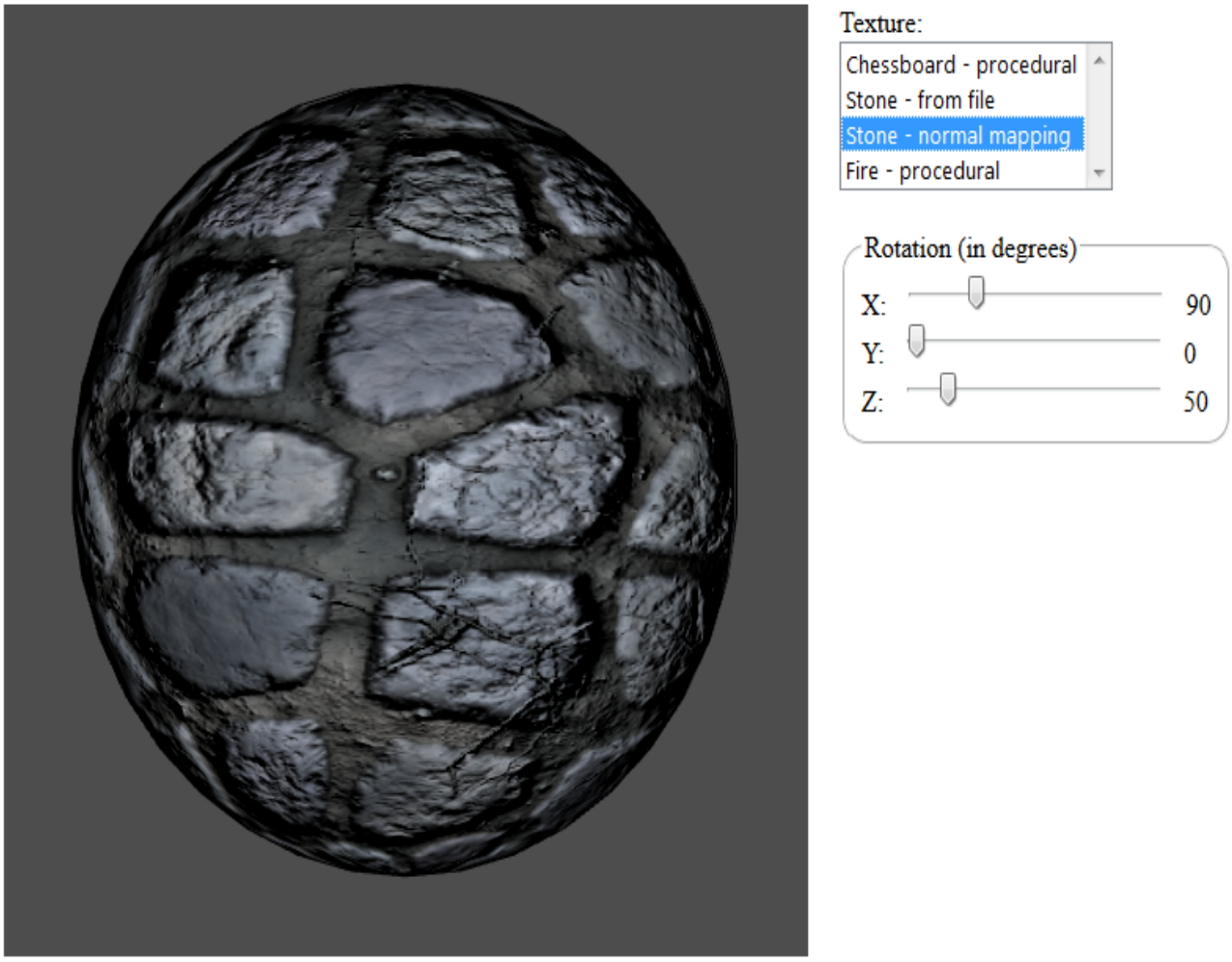
Generated chessboard texture



Stone texture loaded from a file

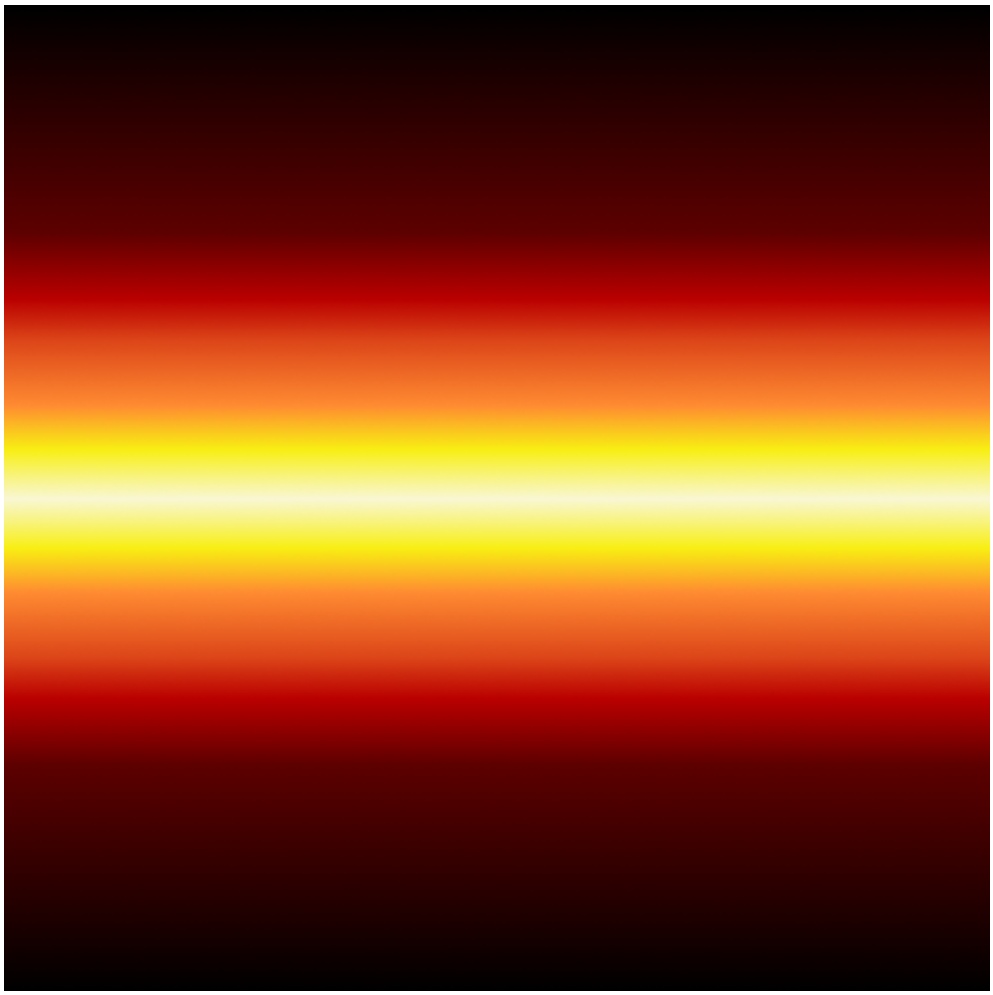


And some extras. The first one is the same sphere textured with the stone texture but with normal mapping added (a bump-mapping technique).

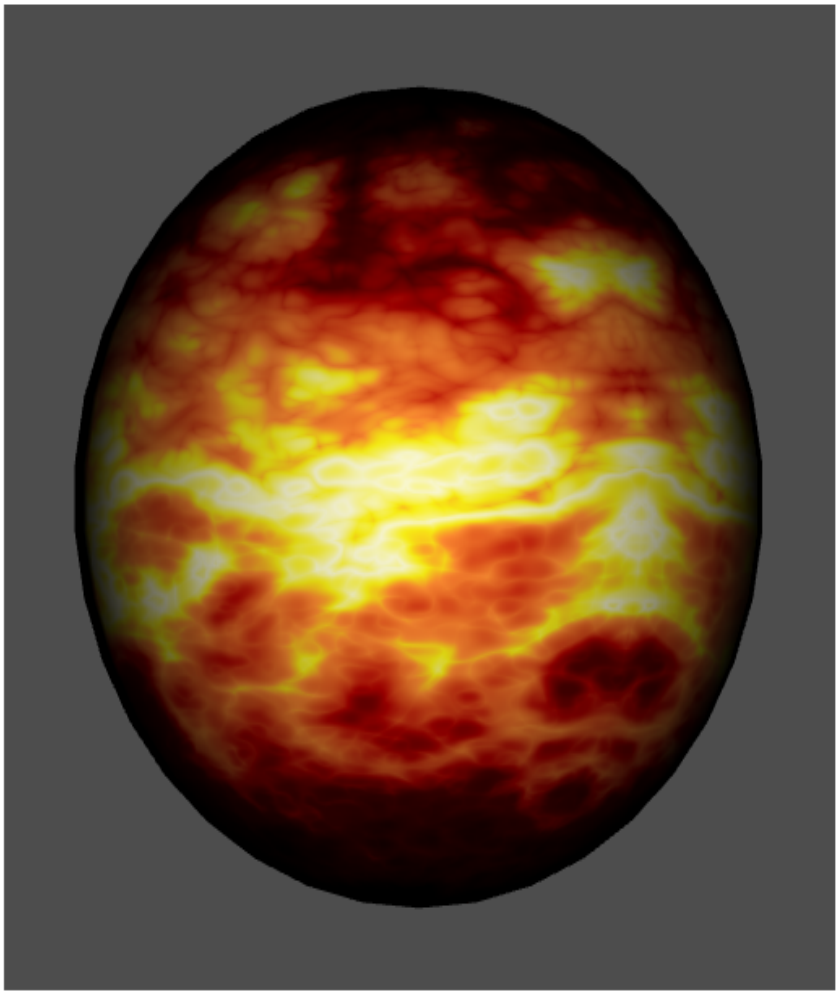


The second one is animation of something that reminds fire. The effect was obtained using a simple texture (presented below) and Perlin noise. The pattern is completely generated in the shaders.

The texture



And two frames of the animation

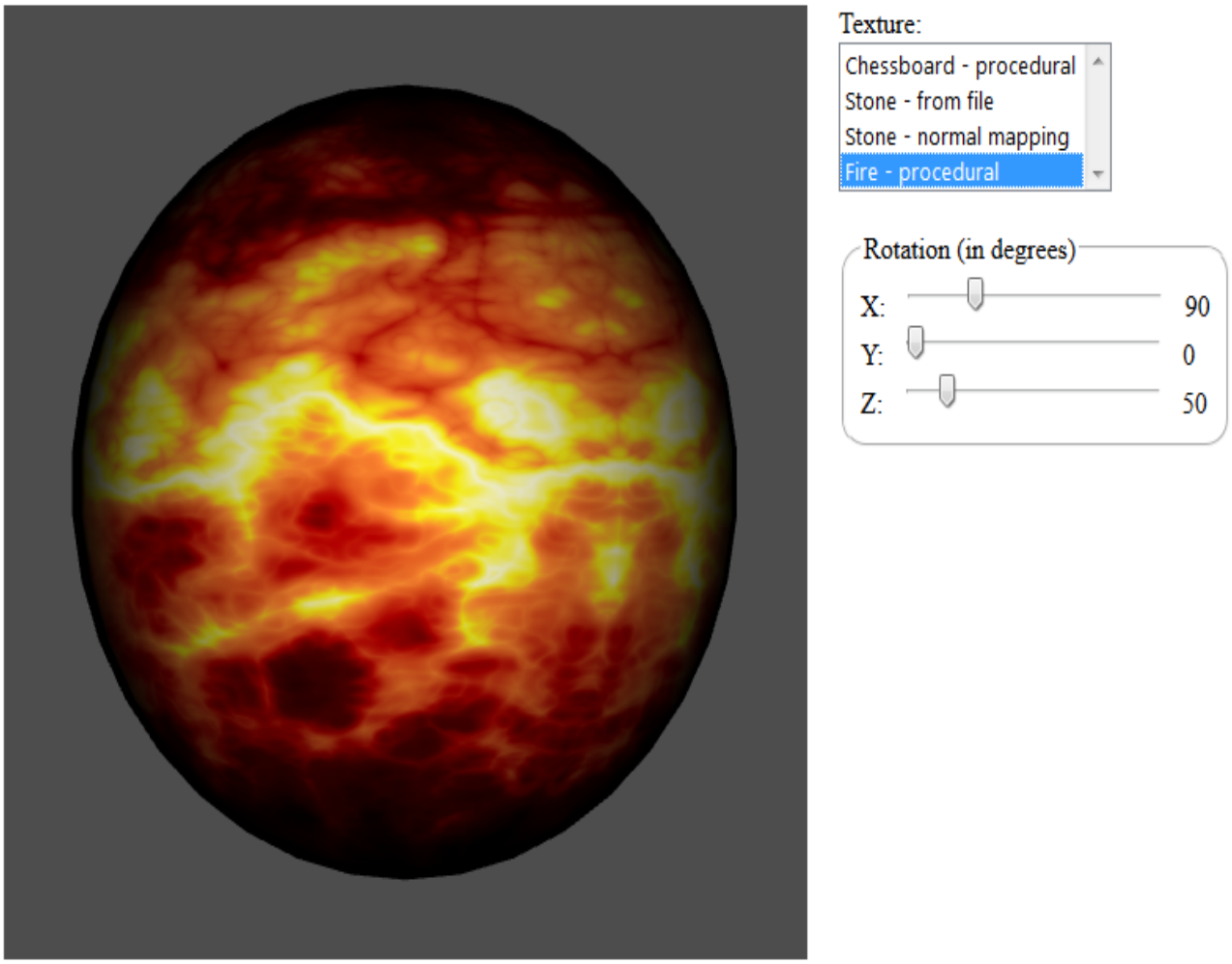


Texture:

- Chessboard - procedural
- Stone - from file
- Stone - normal mapping
- Fire - procedural

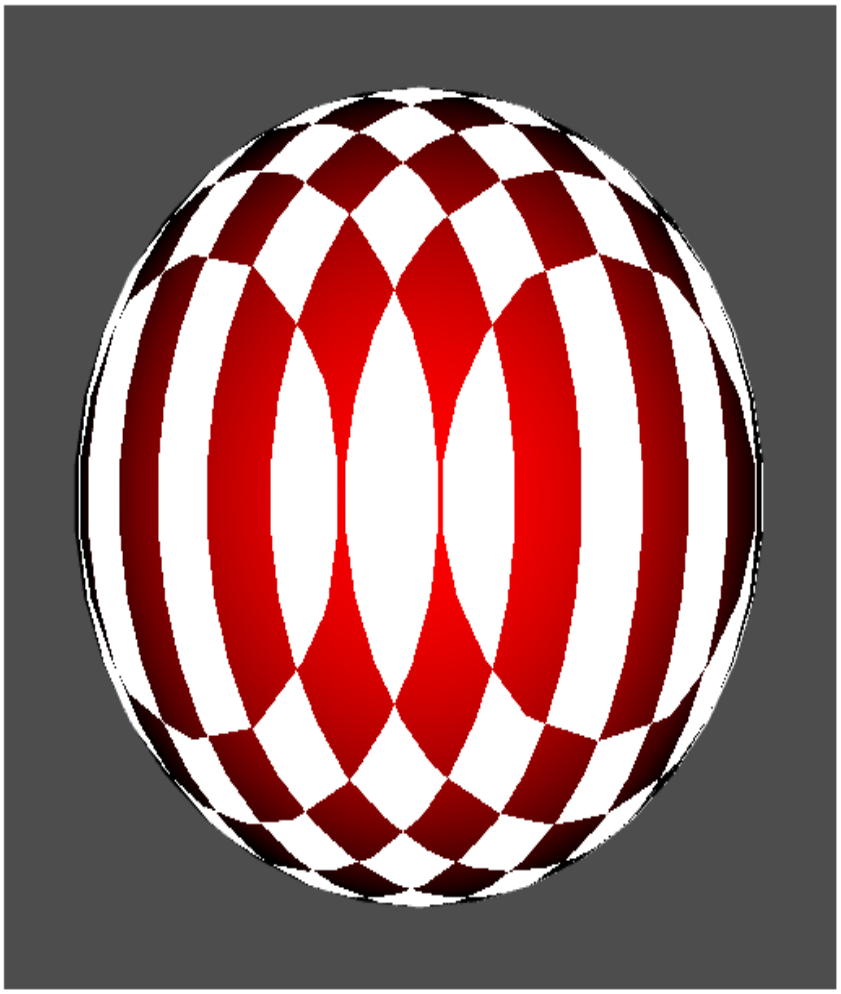
Rotation (in degrees)

X:	90
Y:	0
Z:	50



UPDATE (2015-09-01):
It turns out that an additional requirement for 10 points appeared: *In addition to the above, the application demonstrates more than one method of assigning texture coordinates.*
I added a second method of assigning the texture coordinates. The second method is based on planar mapping
http://escience.anu.edu.au/lecture/cg/Texture/coordinateGeneration2.en.html

The images below present sphere textured with the chessboard texture using the second method

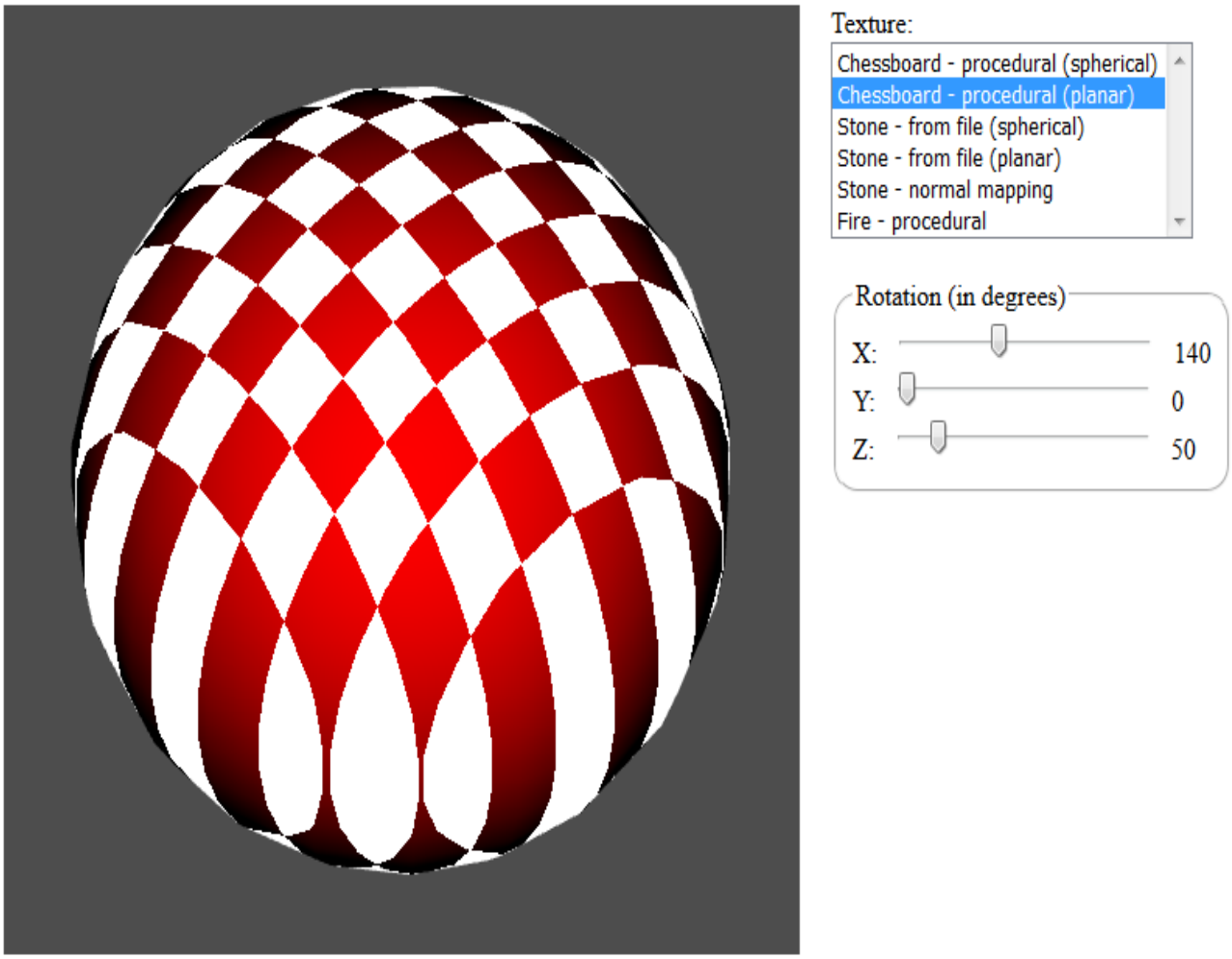


Texture:

- Chessboard - procedural (spherical)
- Chessboard - procedural (planar)
- Stone - from file (spherical)
- Stone - from file (planar)
- Stone - normal mapping
- Fire - procedural

Rotation (in degrees)

X:		90
Y:		0
Z:		50



10 · flag

Jimmy Kiang Signature Track · 18 days ago

zomg!!!

0 · flag

Sebastian Sanabria Signature Track · 18 days ago

sweet! that normal mapping!

0 · flag

Nam Ha Truong Signature Track · 3 days ago

Wow that bump mapping is like magic! Looks so real.
Does that mean that no extra polygon is drawn?

1 · flag

Nachiketa Das · 3 days ago

I'll be forever thankful to you for challenging me like this which made me come out of procrastination (and stop playing COC) to actually do something and learn a lot.

Off to project fire animation!

0 · flag

Krzysztof Gdawiec · 3 days ago

@Nam Ha Truong
In all my examples the geometry of the sphere doesn't change, it's fixed. In bump mapping techniques like normal mapping we play only with normals to deceive the observer. So we can have a flat surface consisting of two triangles and changing just the normals at the surface we are able to obtain for example a brick wall.
If You're interested in normal mapping details, then in the following link is a chapter from NVidia's book about the Cg language. Theory from this chapter is general and can be used in any shading language. The code is in Cg language, but it can be easily converted into GLSL.
http://http.developer.nvidia.com/CgTutorial/cg_tutorial_chapter08.html

1 · flag

 Nam Ha Truong Signature Track · 3 days ago

Thanks, Krzysztof. I will have to check that out. :D

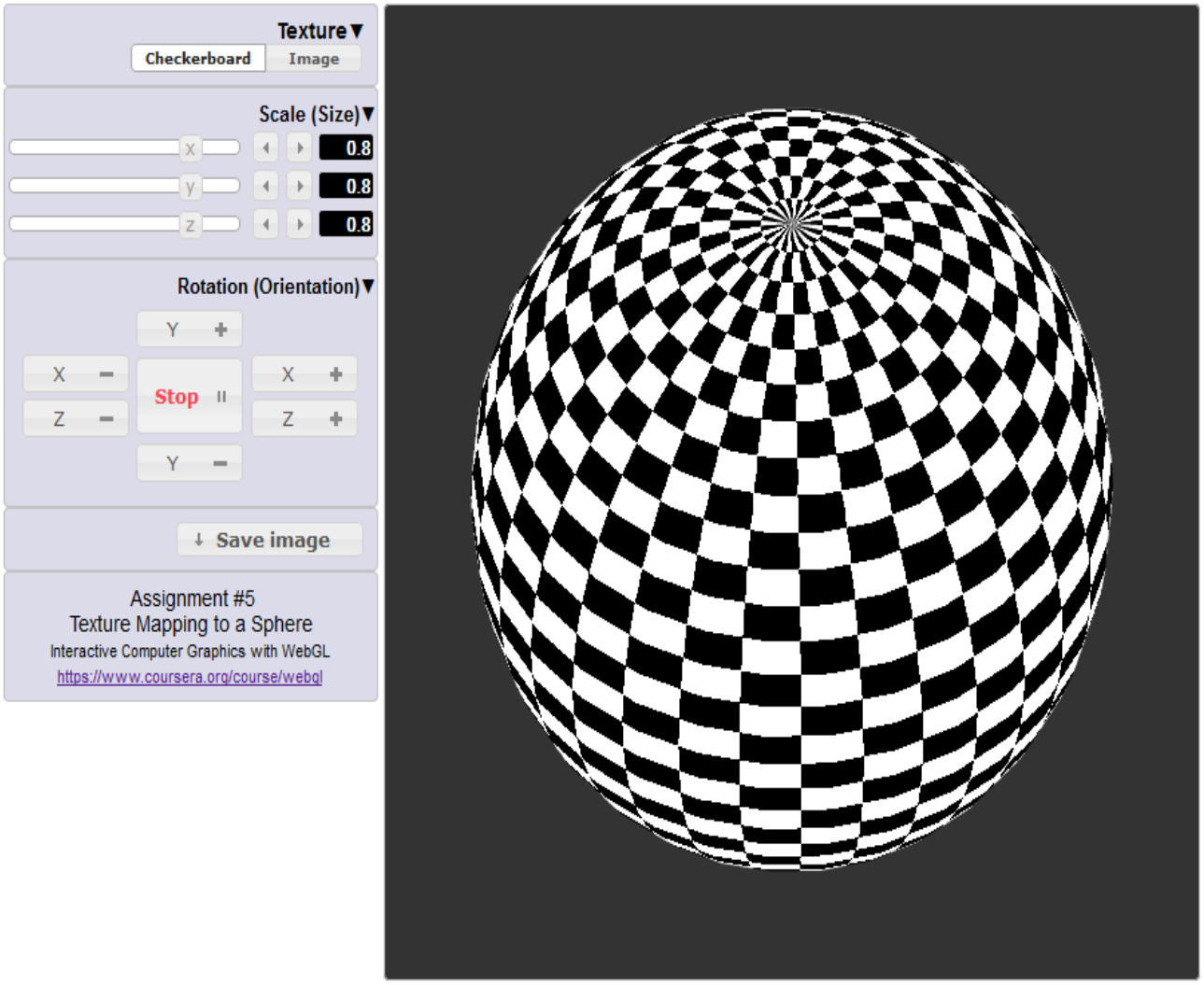
0 · flag

+ Comment

 yggdrasil · 18 days ago

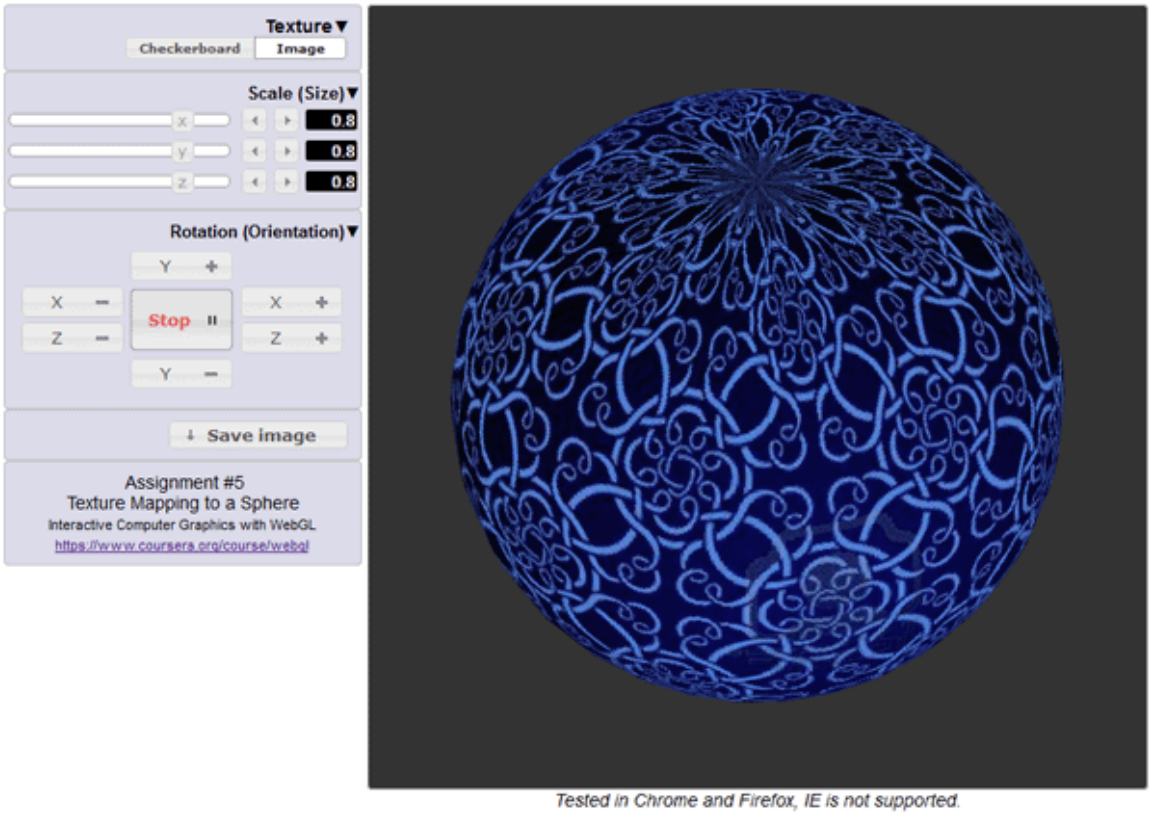
Hi all, ...
Krzysztof you're the best!

Mine is simple but already fulfill all requirements, no lighting yet, still doing experiments with environment mapping.

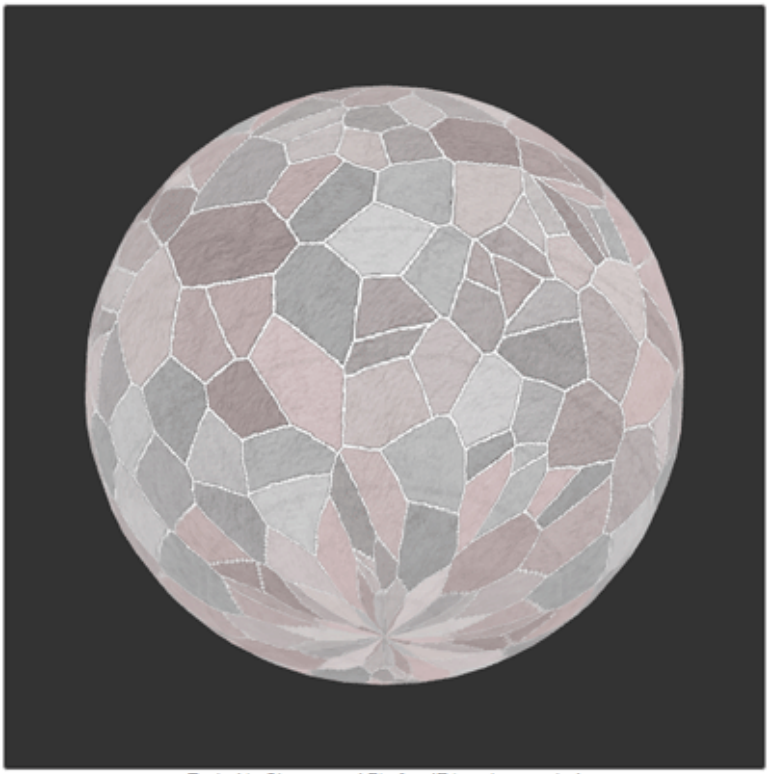


Tested in Chrome and Firefox, IE is not supported.

Some textures,



Tested in Chrome and Firefox, IE is not supported.



Tested in Chrome and Firefox, IE is not supported.

Tested in Chrome and Firefox, IE is not supported.

Below is my experiment with environment mapping, still not perfect.
http://http.developer.nvidia.com/CgTutorial/cg_tutorial_chapter07.html
This is based on cube maps with six environment textures (neg-x, neg-y, neg-z, pos-x, pos-y, pos-z).
But to draw the background environment, I have to flip (horizontal + vertical) the neg-y.

Tested in Chrome and Firefox, IE is not supported.

The six cube map textures, negative x, y, z,

positive x, y, z,

Pictures are "borrowed" from http://www.humus.name/index.php?page=Textures&ID=81

Please share yours, to exchange ideas! Thanks a lot.

↑ 6 ↓ · flag

Nam Ha Truong Signature Track · 3 days ago

Woah I have no idea how that last part works. You actually wrap the 6 cube textures around the sphere to get that effect? That's amazing.

↑ 2 ↓ · flag

 yggdrasil · 3 days ago

Hi Nam Ha Truong,

It uses gl.TEXTURE_CUBE_MAP, as in the provided example code,
reflectionMap2.html
and
reflectionMap2.js

In the example it uses colors, I replace the colors with textures.
(but it still doesn't perfect, I'm running out of time.)

Regards,

0 · flag

 Nam Ha Truong Signature Track · 2 days ago

I totally skipped the lectures this time and went straight to reverse engineering TextureCube files and started having fun with the Hw, guess I have to back and check others out. Thanks for the tip :D

2 · flag

Prasenjit Mondal · a day ago

@**yggdrasil**: Can you please explain the last requirement of the assignment (10 pts)? Did you incorporate that?

0 · flag

 Nam Ha Truong Signature Track · a day ago

Not yggdrasil but I transformed the Texture Coordinates (with a matrix but you can do without) like we do with the Vertices. This effectively changes the mapping of the texture.

0 · flag

 yggdrasil · a day ago

Hi Prasenjit M.,
"In addition to the above, the application demonstrates more than one method of assigning texture coordinates: 10 points"

I am not sure, sorry =) Looks like our friends have more expertize in this case, Krzysztof G. has examples of "fire" and "planar", as well as Nam Ha Truong with "matrix".

Not sure if bump mapping and reflective (environment) mapping is also considered as another "method of assigning texture coordinates" ? Since e.g. in reflective we use

TEXTURE_CUBE_MAP (instead of TEXTURE_2D).

Is this also counted? TEXTURE_WRAP, mipmap, etc, as in here,
http://webglfundamentals.org/webgl/lessons/webgl-3d-textures.html
http://what-when-how.com/opengl-programming-guide/assigning-texture-coordinates-texture-mapping-open...
http://www.glprogramming.com/red/chapter09.html

Did you incorporate that?
I didn't (yet).

Regards,

EDIT: Just realized it's already discussed in this thread, https://class.coursera.org/webgl-001/forum/thread?thread_id=432

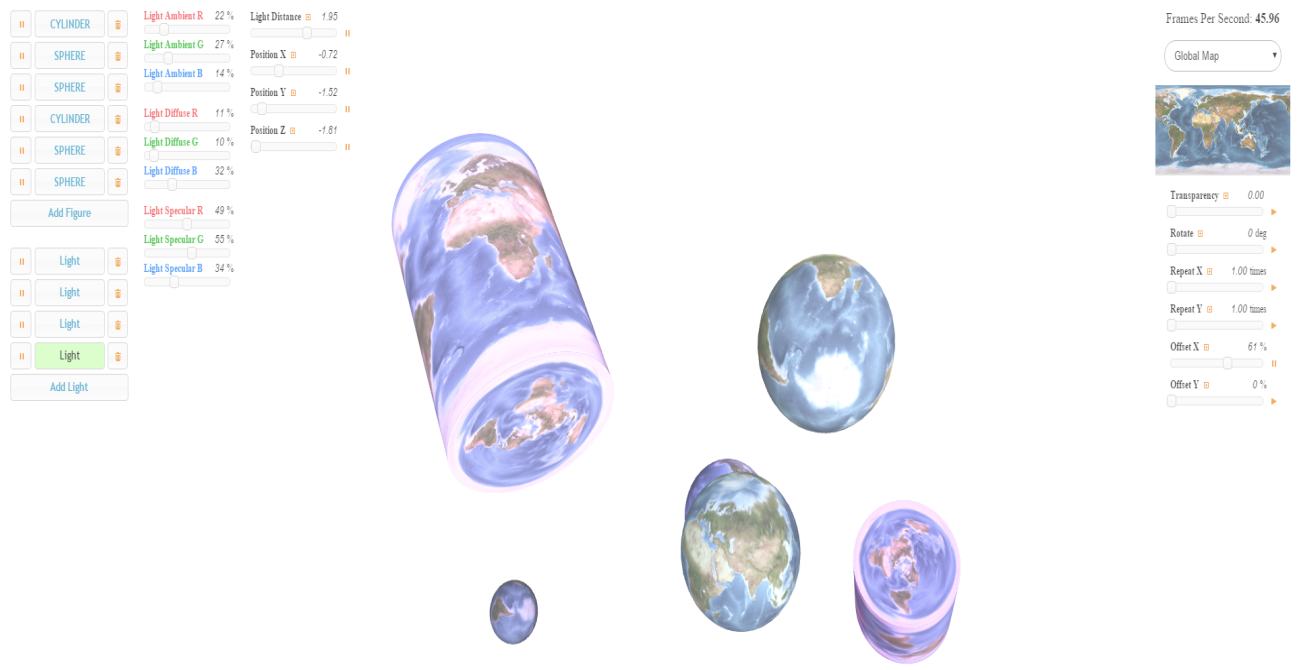
↑ 0 ↓ · flag

+ Comment

~~Anonymous · 3 days ago~~

~~I added the texture code to my Assignment 4 program (which was built on top of Assignment 3 to begin with lol), so my texture program is a bit overloaded with all the controls lol.~~

~~Right below the Image/Pattern drop-down box is a preview window that lets you preview the texture transparency and texture coordinate transformations (The good old Rotate, Scale/Repeat, Offset/Translate). These parameters are animated, too:~~
~~https://youtu.be/skp5fFxPcM4~~

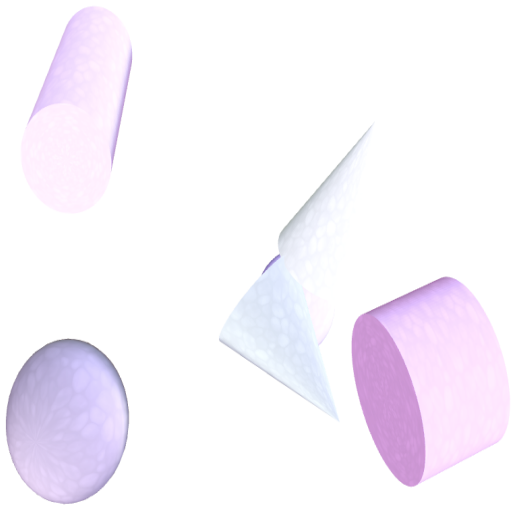


CYLINDER
SPHERE
CONE
CYLINDER
SPHERE
CONE
Add Figure

Light
Light
Light
Light
Add Light

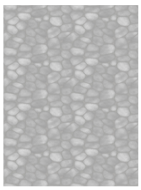
Light Ambient R 22 %
Light Ambient G 27 %
Light Ambient B 14 %
Light Diffuse R 11 %
Light Diffuse G 10 %
Light Diffuse B 32 %
Light Specular R 49 %
Light Specular G 55 %
Light Specular B 34 %

Light Distance 2.55
Position X 0.78
Position Y -0.02
Position Z -0.30



Frames Per Second: 46.89

Dark Cells



Transparency 0.47
Rotate 90 deg
Repeat X 4.00 times
Repeat Y 2.00 times
Offset X 0 %
Offset Y 0 %

SPHERE
CONE
SPHERE
CONE
SPHERE
CONE
Add Figure

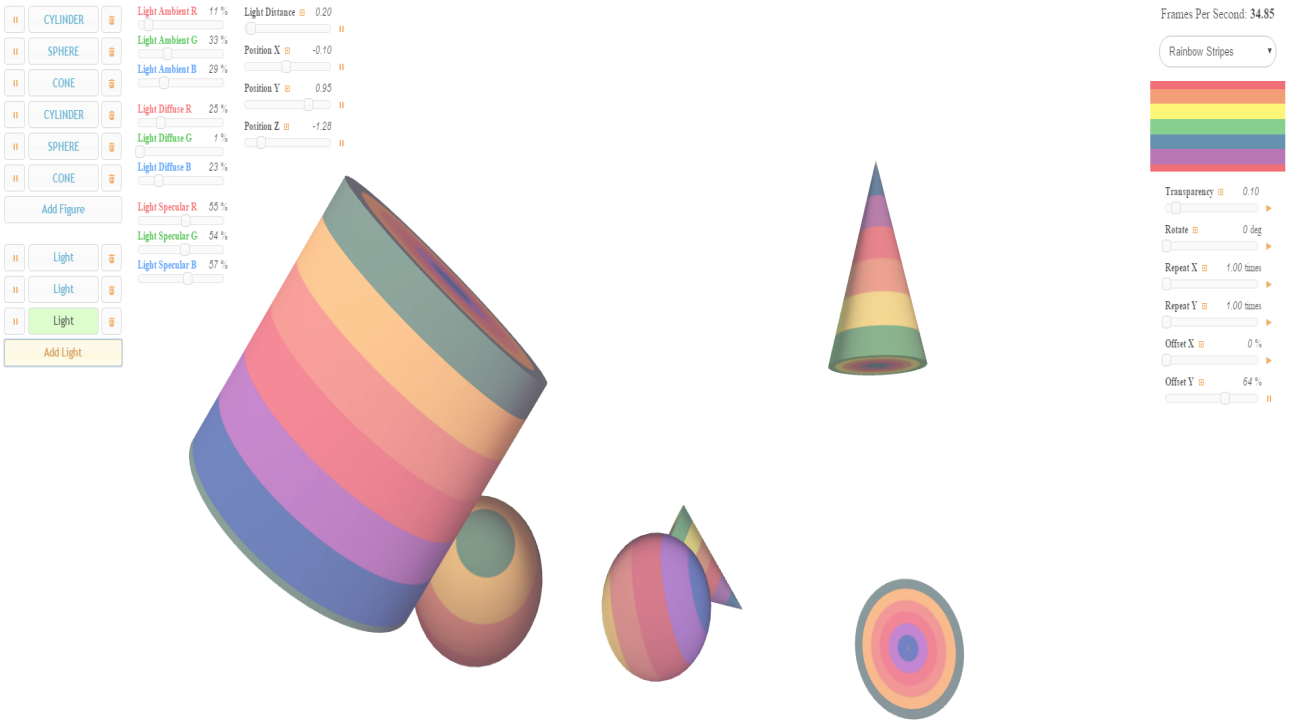
Light
Add Light

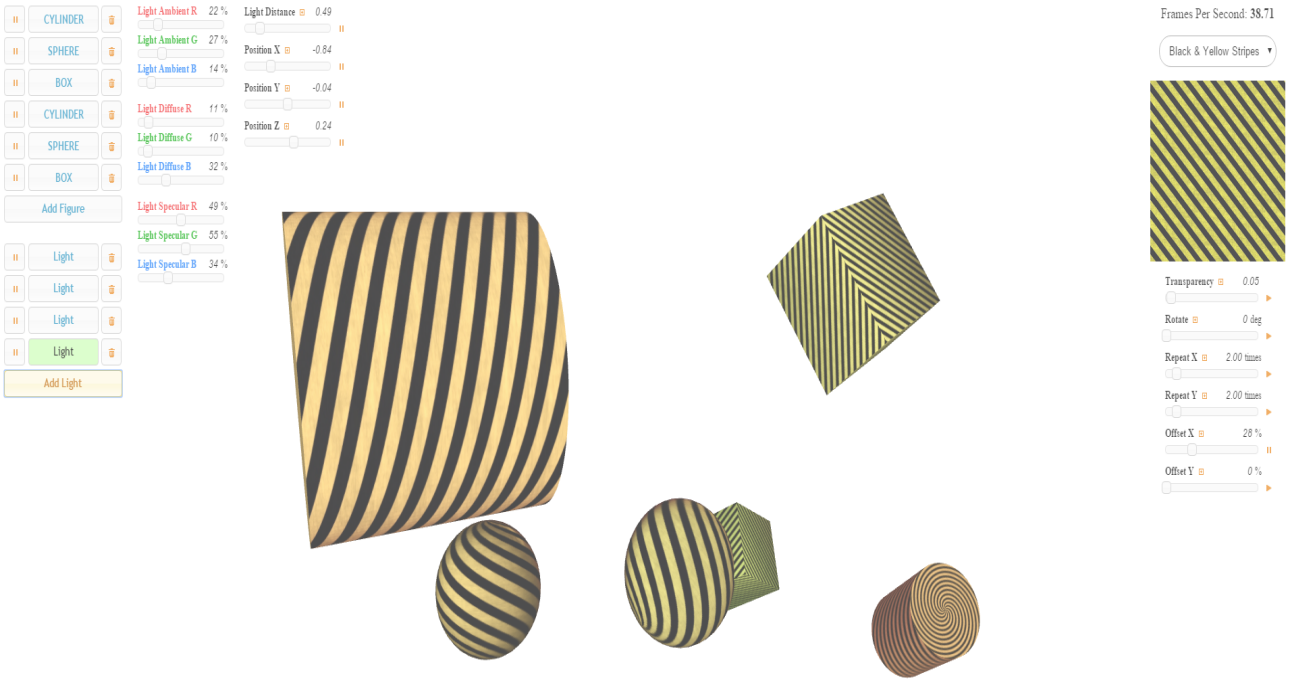
Light Ambient R 22 %
Light Ambient G 27 %
Light Ambient B 14 %
Light Diffuse R 11 %
Light Diffuse G 10 %
Light Diffuse B 32 %
Light Specular R 49 %
Light Specular G 55 %
Light Specular B 34 %

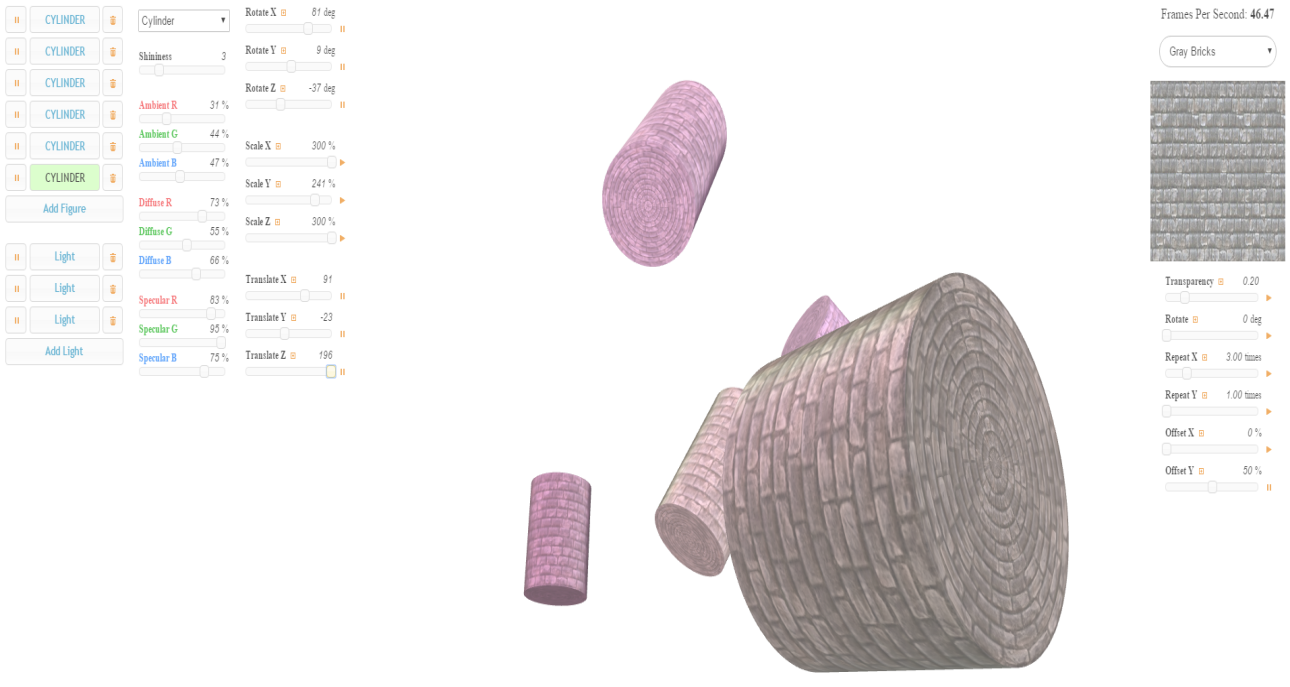
Frames Per Second: 48.41

RGBY

Transparency 0.10
Rotate 0 deg
Repeat X 1.00 times
Repeat Y 1.00 times
Offset X 42 %
Offset Y 85 %

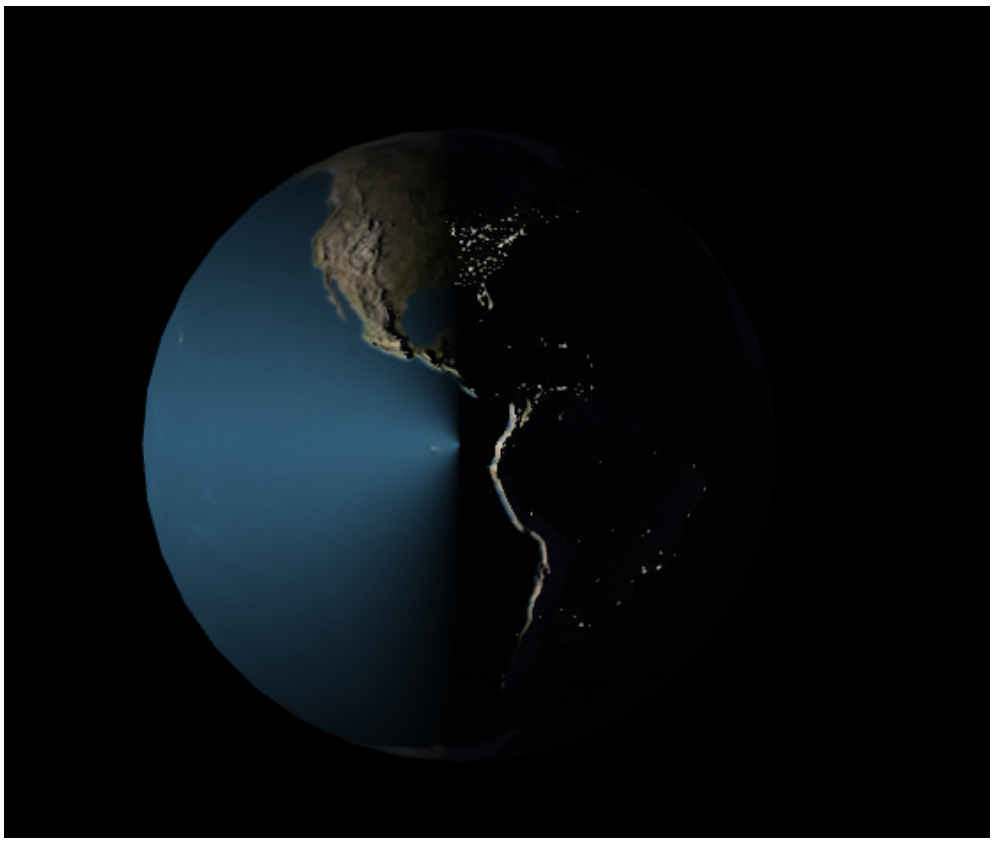

CYLINDER
SPHERE
CONE
CYLINDER
SPHERE
CONE
Add Figure
Light
Light
Light
Add Light
Light Ambient R 11 %
Light Ambient G 33 %
Light Ambient B 29 %
Light Diffuse R 25 %
Light Diffuse G 1 %
Light Diffuse B 23 %
Light Specular R 55 %
Light Specular G 54 %
Light Specular B 57 %
Light Distance 0.20
Position X -0.10
Position Y 0.95
Position Z -1.28
Frames Per Second: 34.85
Rainbow Stripes
Transparency 0.10
Rotate 0 deg
Repeat X 1.00 times
Repeat Y 1.00 times
Offset X 0 %
Offset Y 64 %


CYLINDER
SPHERE
BOX
CYLINDER
SPHERE
BOX
Add Figure
Light
Light
Light
Light
Add Light
Light Ambient R 22 %
Light Ambient G 27 %
Light Ambient B 14 %
Light Diffuse R 11 %
Light Diffuse G 10 %
Light Diffuse B 32 %
Light Specular R 49 %
Light Specular G 55 %
Light Specular B 34 %
Light Distance 0.49
Position X -0.84
Position Y -0.04
Position Z 0.24
Frames Per Second: 38.71
Black & Yellow Stripes
Transparency 0.05
Rotate 0 deg
Repeat X 2.00 times
Repeat Y 2.00 times
Offset X 28 %
Offset Y 0 %



+ Comment

Phillip A. Barton Signature Track · 3 days ago



Bump mapped Earth, with an ambient map so the city lights can be seen when it rotates into night.

5 · flag

Anonymous · 3 days ago

Dammit! I was about to do the same thing :)

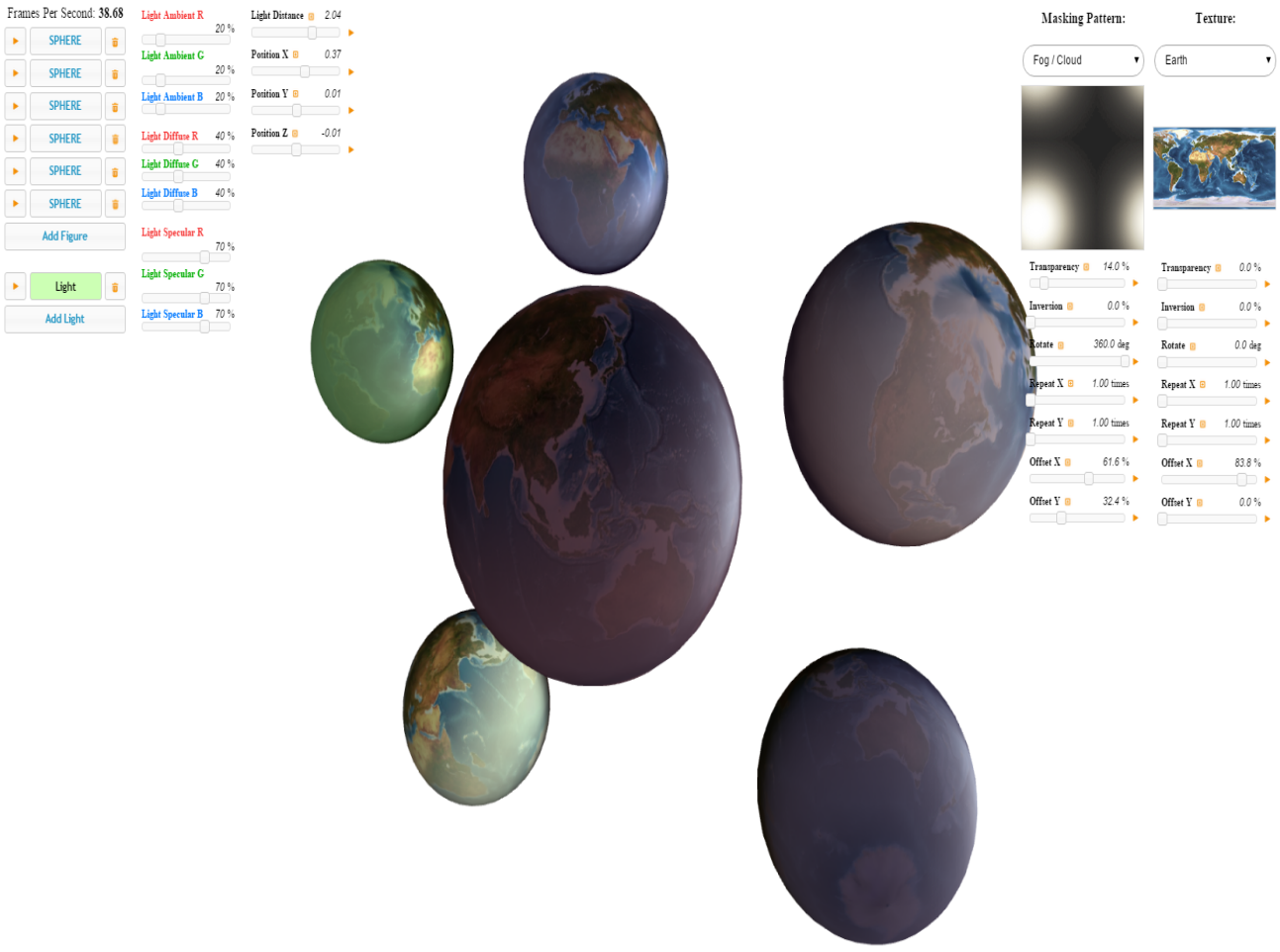
1 · flag

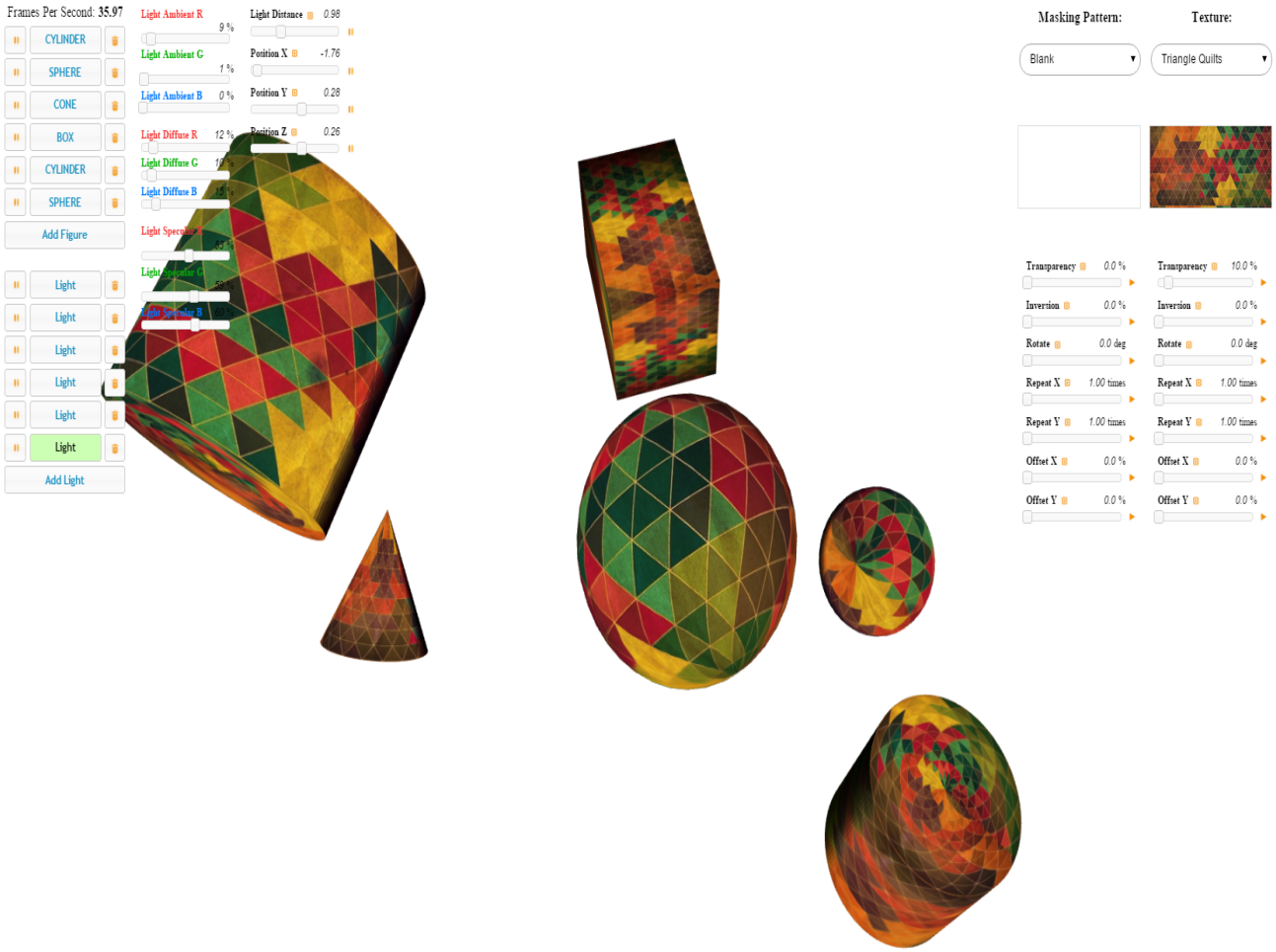
+ Comment

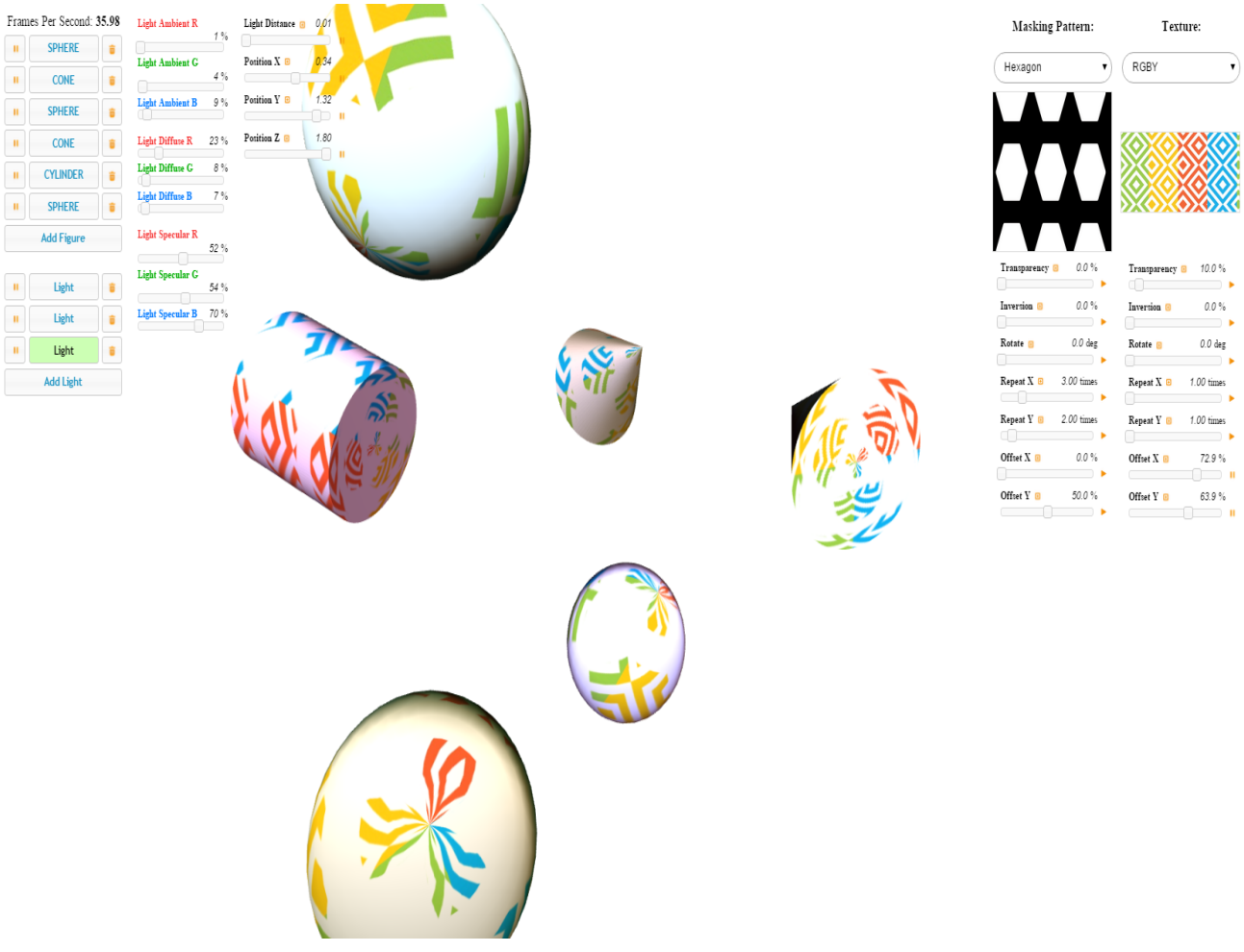
Nam Ha Truong Signature Track · a day ago

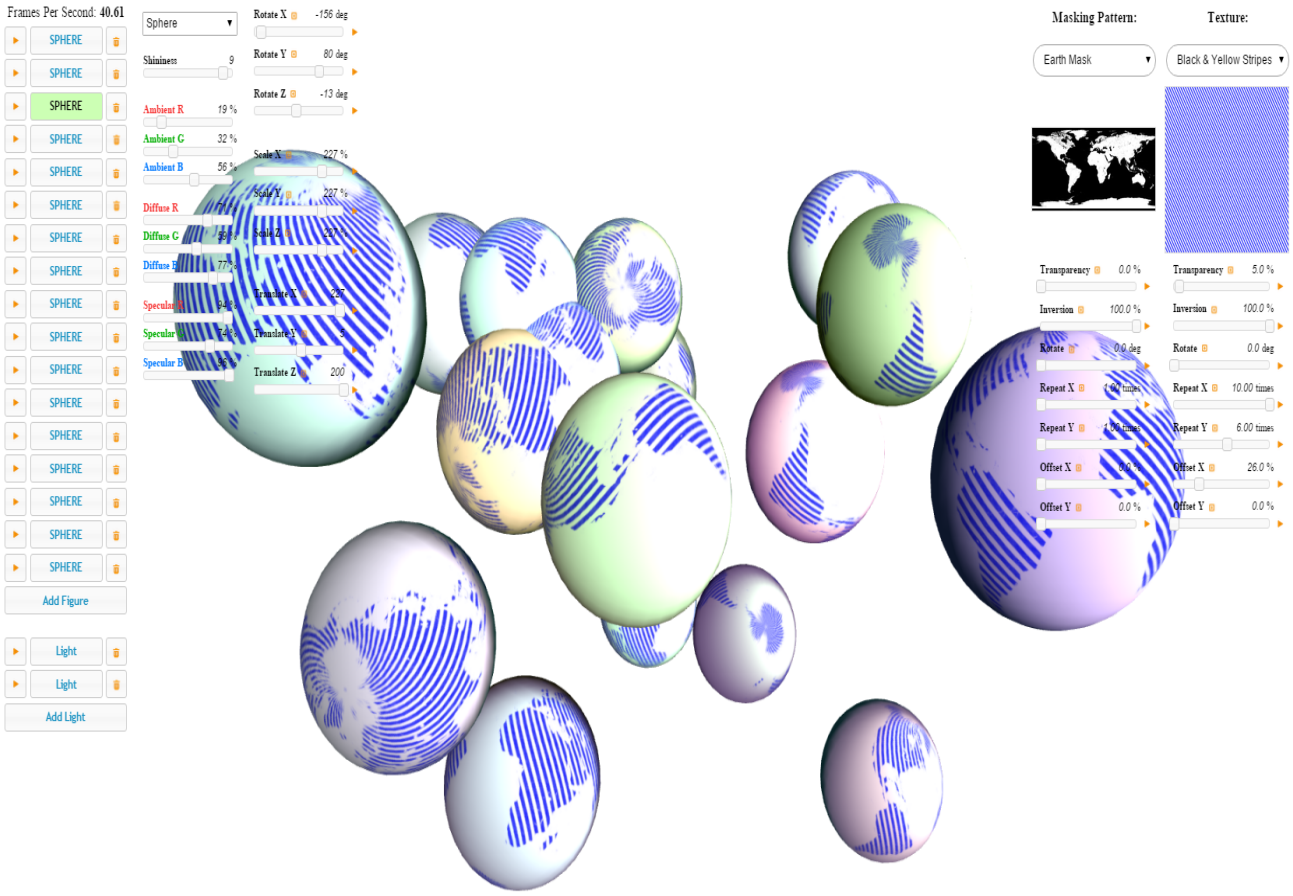
Edit: I went back to add texture masking (i.e. an overlay Black and White map that blocks out the black part and replaces it with the object's native material color). This lets me create fun effects like a cloud/atmosphere layer over my "Earths".

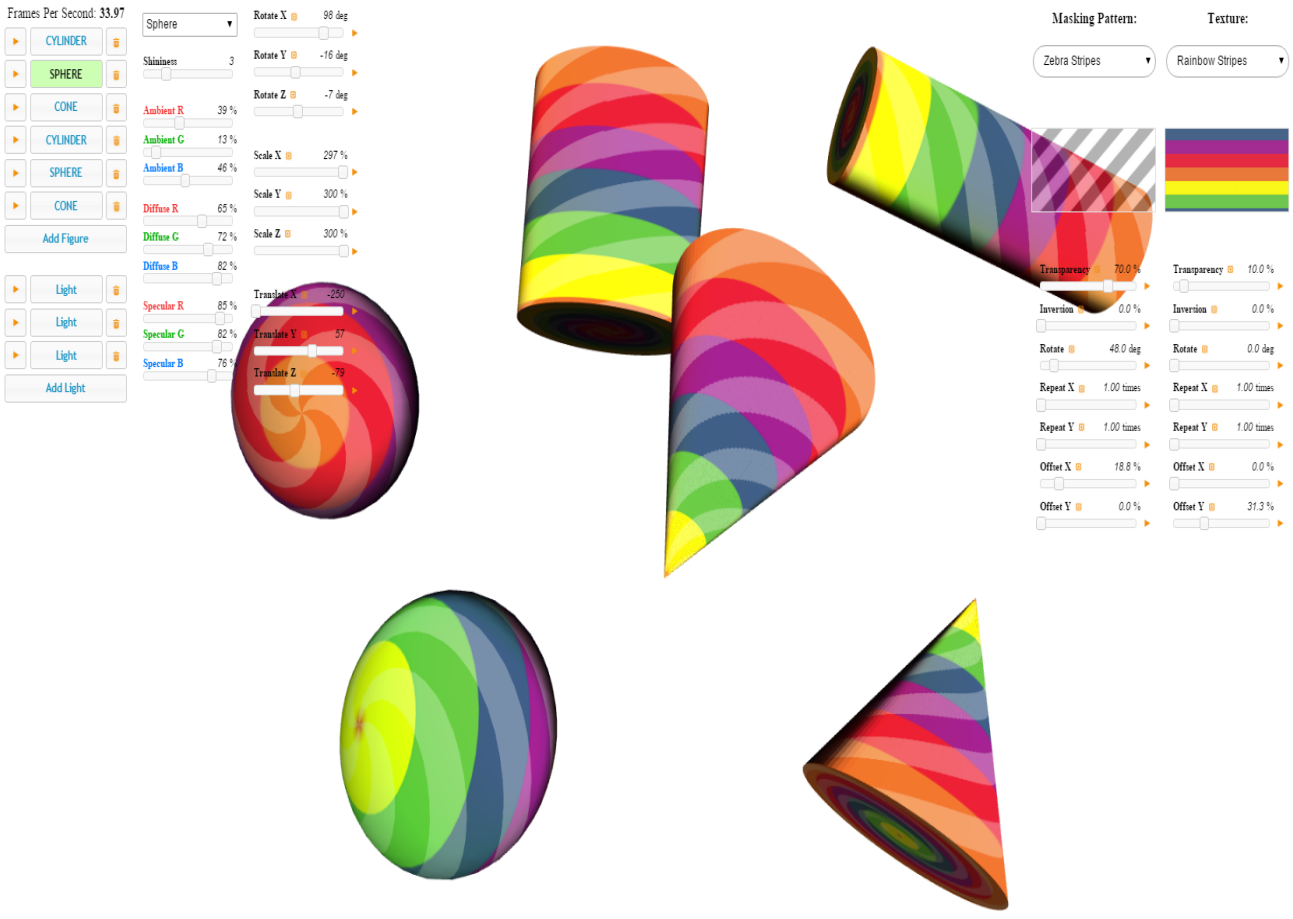
And as usual here's the Video: https://youtu.be/hNARCfbrbx4




Frames Per Second: 35.97
CYLINDER
SPHERE
CONE
BOX
CYLINDER
SPHERE
Add Figure
Light
Light
Light
Light
Light
Light
Add Light
Light Ambient R 9 %
Light Ambient G 1 %
Light Ambient B 0 %
Light Diffuse R 12 %
Light Diffuse G
Light Diffuse B
Light Specular R
Light Specular G
Light Specular B
Light Distance 0.98
Position X -1.76
Position Y 0.28
Position Z 0.26
Masking Pattern:
Texture:
Blank
Triangle Quilts
Transparency 0.0 %
Inversion 0.0 %
Rotate 0.0 deg
Repeat X 1.00 times
Repeat Y 1.00 times
Offset X 0.0 %
Offset Y 0.0 %
Transparency 10.0 %
Inversion 0.0 %
Rotate 0.0 deg
Repeat X 1.00 times
Repeat Y 1.00 times
Offset X 0.0 %
Offset Y 0.0 %


Frames Per Second: 35.98
SPHERE
CONE
SPHERE
CONE
CYLINDER
SPHERE
Add Figure
Light
Light
Light
Add Light
Light Ambient R 1 %
Light Ambient G 4 %
Light Ambient B 9 %
Light Diffuse R 23 %
Light Diffuse G 8 %
Light Diffuse B 7 %
Light Specular R 52 %
Light Specular G 54 %
Light Specular B 70 %
Light Distance 0.01
Position X 0.34
Position Y 1.32
Position Z 1.80
Masking Pattern:
Texture:
Hexagon
RGBY
Transparency 0.0 %
Inversion 0.0 %
Rotate 0.0 deg
Repeat X 3.00 times
Repeat Y 2.00 times
Offset X 0.0 %
Offset Y 50.0 %
Transparency 10.0 %
Inversion 0.0 %
Rotate 0.0 deg
Repeat X 1.00 times
Repeat Y 1.00 times
Offset X 72.9 %
Offset Y 63.9 %


Frames Per Second: 40.61
SPHERE
Add Figure
Light
Add Light
Sphere
Shininess 9
Ambient R 19 %
Ambient G 32 %
Ambient B 56 %
Diffuse R 77 %
Diffuse G 69 %
Diffuse B 77 %
Specular R 94 %
Specular G 74 %
Specular B 83 %
Rotate X -156 deg
Rotate Y 80 deg
Rotate Z -13 deg
Scale X 227 %
Scale Y 227 %
Scale Z 227 %
Translate X 235
Translate Y 3
Translate Z 200
Masking Pattern:
Texture:
Earth Mask
Black & Yellow Stripes
Transparency 0.0 %
Inversion 100.0 %
Rotate 0.0 deg
Repeat X 1.00 times
Repeat Y 1.00 times
Offset X 26.0 %
Offset Y 0.0 %
Transparency 5.0 %
Inversion 100.0 %
Rotate 0.0 deg
Repeat X 10.00 times
Repeat Y 6.00 times
Offset X 26.0 %
Offset Y 0.0 %


Frames Per Second: 33.97
CYLINDER
SPHERE
CONE
CYLINDER
SPHERE
CONE
Add Figure
Light
Light
Light
Add Light
Sphere
Shininess 3
Ambient R 39 %
Ambient G 13 %
Ambient B 46 %
Diffuse R 65 %
Diffuse G 72 %
Diffuse B 82 %
Specular R 85 %
Specular G 82 %
Specular B 76 %
Rotate X 98 deg
Rotate Y -16 deg
Rotate Z -7 deg
Scale X 297 %
Scale Y 300 %
Scale Z 300 %
Translate X -230
Translate Y 57
Translate Z -79
Masking Pattern:
Texture:
Zebra Stripes
Rainbow Stripes
Transparency 70.0 %
Inversion 0.0 %
Rotate 48.0 deg
Repeat X 1.00 times
Repeat Y 1.00 times
Offset X 18.8 %
Offset Y 0.0 %
Transparency 10.0 %
Inversion 0.0 %
Rotate 0.0 deg
Repeat X 1.00 times
Repeat Y 1.00 times
Offset X 0.0 %
Offset Y 31.3 %

4 · flag

 Phillip A. Barton Signature Track · a day ago

Very cool! You may want to try using the masking pattern for the specular shininess and get some interesting effects with that.

1 · flag

 Nam Ha Truong Signature Track · a day ago

Like this?
LoL http://i.dailymail.co.uk/i/pix/2014/10/20/1413807112416_wps_24_Bat_signal3_PNG.jpg

1 · flag

+ Comment

Jason Hayes · 16 hours ago

My updated forest scene.

Was thinking of trying to do shadow mapping.

Everything I am reading talks about reading the depth buffer from a rending at the light source and is geared towards OpenGL, but it seems that WebGL does not allow reading the depth buffer from the back

buffer.
Has anyone attempted shadow maps or have a good resource for it?

2 · flag

+ Comment

New post

To ensure a positive and productive discussion, please read our forum posting policies before posting.

B | I | Link | <code> | Pic | Math | Edit: Rich | Preview

Resolve thread

This thread is marked as unresolved. If the problem is fixed, please check the above box and make a post to let staff know that they no longer need to monitor this thread.

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