ME 557
Assignment 4

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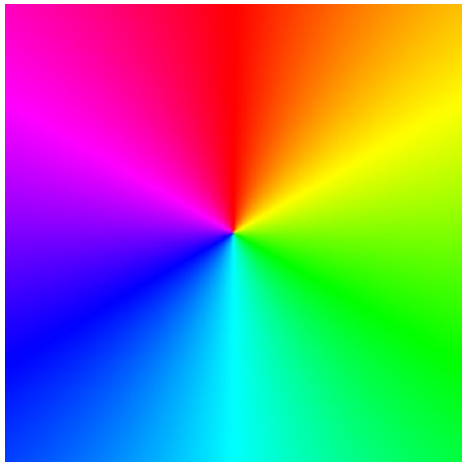
Problem 1

Objective: To combine three textures and to explore different blend modes on them.

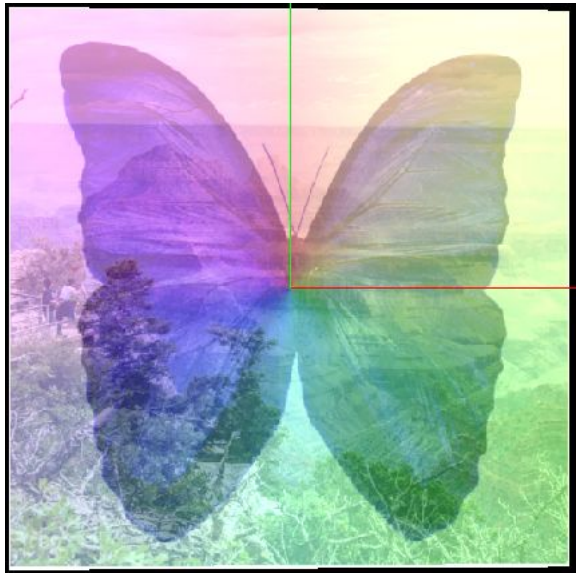
The three textures we selected were landscape, color gradient and a butterfly. These are shown below.



After combining these three textures, we applied different blend modes on the textures to get different results and these are explained below.

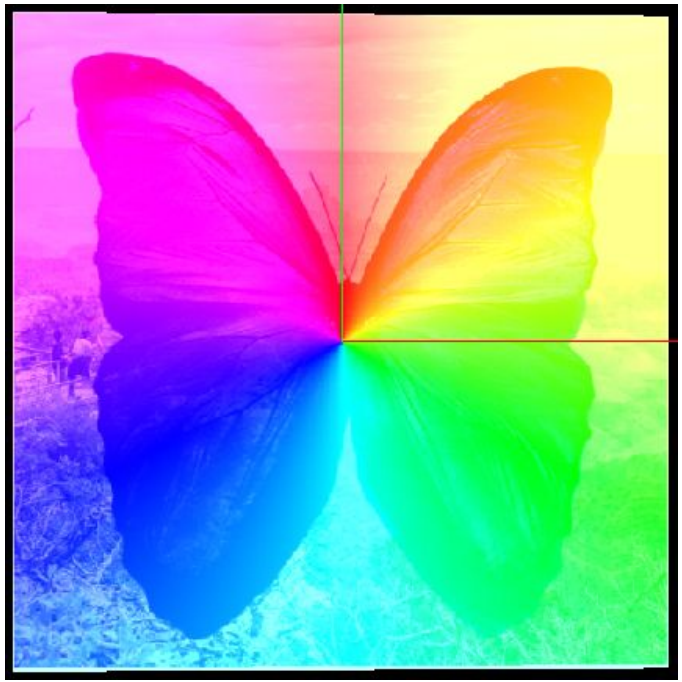
Blend mode1:

color = 0.1 * pass_Color + 0.3*tex_landscape + 0.3*tex_color_gradient + 0.6*tex_butterfly;



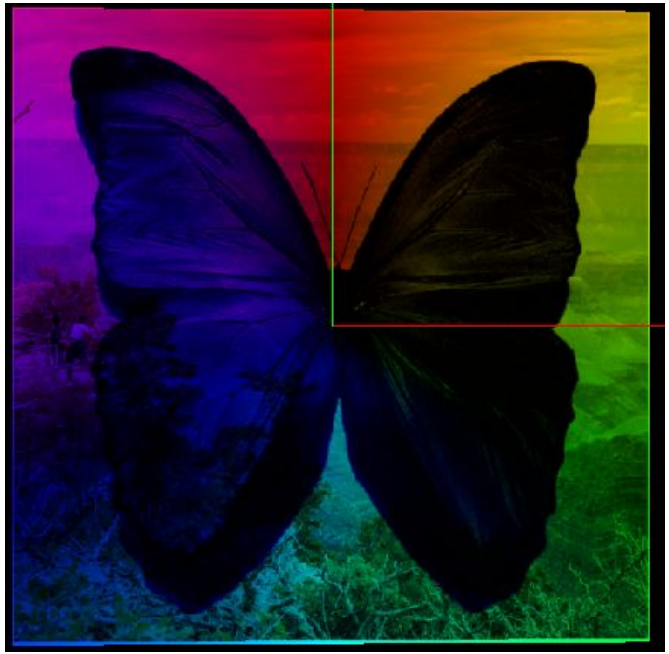
Blend mode 2:

color = tex_landscaper + tex_color_gradient * 0.8*tex_butterfly;



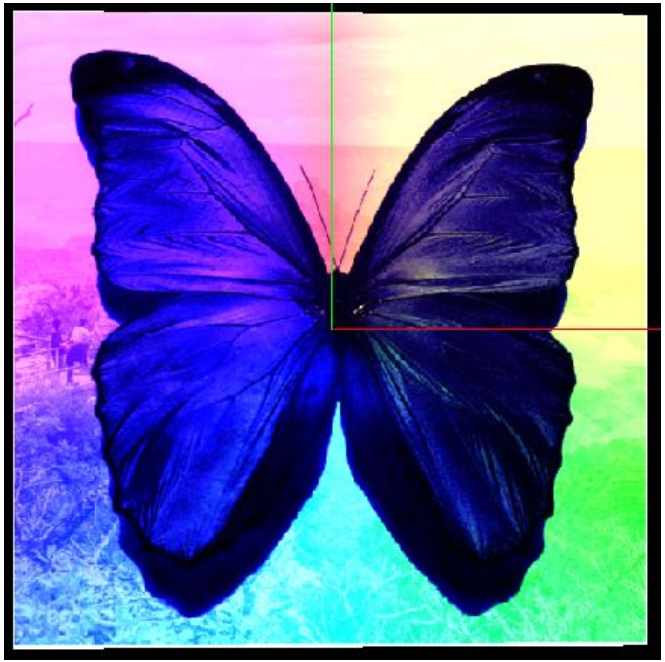
Blend mode 3:

color = tex_landscape * tex_color_gradient*tex_butterfly;



Blend mode 4:

color = (tex_color_gradient) * (tex_butterfly + tex_landscape);



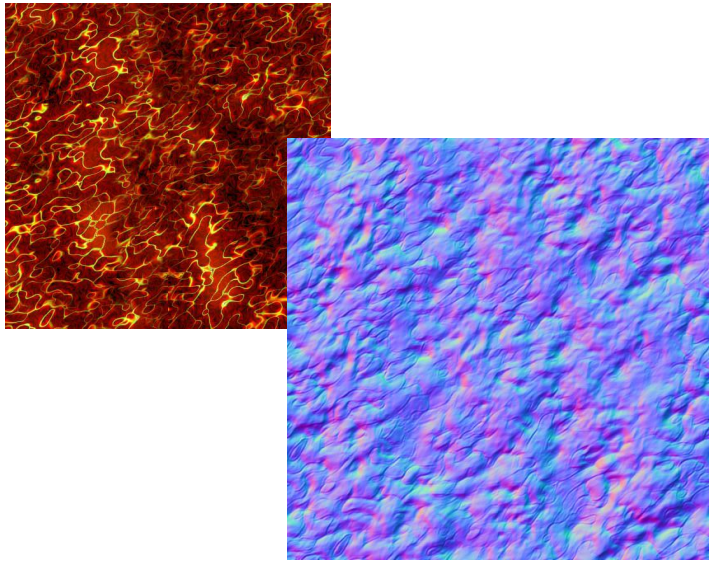
Problem 1 Biggest Challenge

Initially when we were adding the code for the third texture, we missed certain syntax lines in the code which resulted in building errors. Later, we found the missing lines and rectified the problem.

Problem 2

Objective: To combine a landscape and a noise map, every pixel value of the noise map as a vector displacement.

The landscape and noise map we used are shown below.



To combine the landscape and noise map we used the following code:

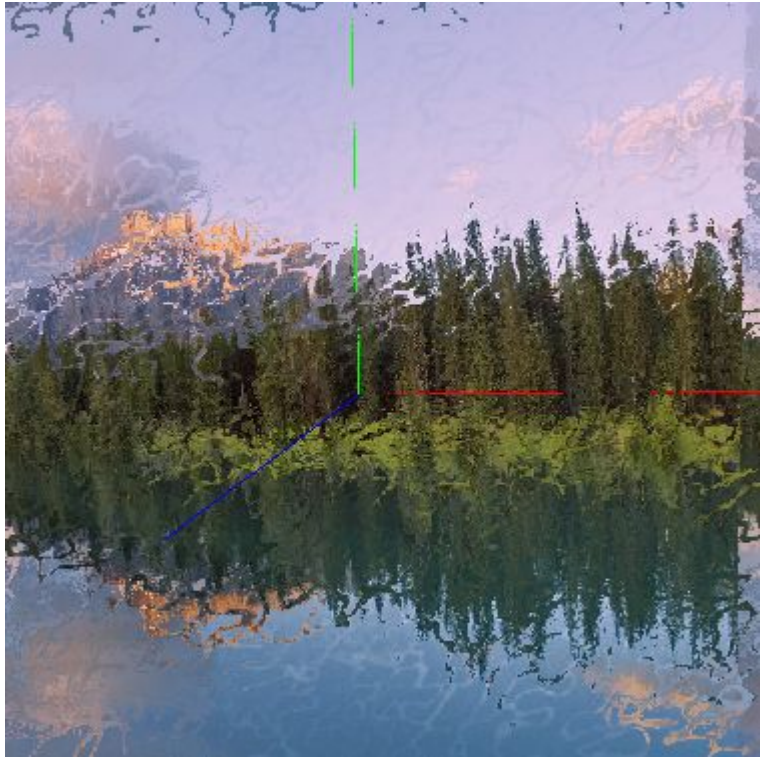
```
void main(void)
{
    // This function finds the color component for each texture coordinate.
    vec2 noiseVec;

    noiseVec = normalize(texture(texture_foreground,pass_TexCoord).xy);
    noiseVec = (noiseVec * 2.0 - 0) * 0.050;

    color = texture(texture_background, (pass_TexCoord + noiseVec));
```

When we scale the noisevec = (noisevec * 2.0 - 1.0) * 0.02 below is the result

When we changed the scaling factor to 0.05, this is the result:



Problem 2 Biggest Challenge

We ran into troubles incorporating the noise map into the code. We tested mapping pixels from regular images as vector displacements which worked fine. But as soon as we would replace the standard image with a noise map, the code would not work.

Many other bitmap images does not seem to work as well. We have tested 16-color, 256-color, 24-bit as well as monochrome bitmap.