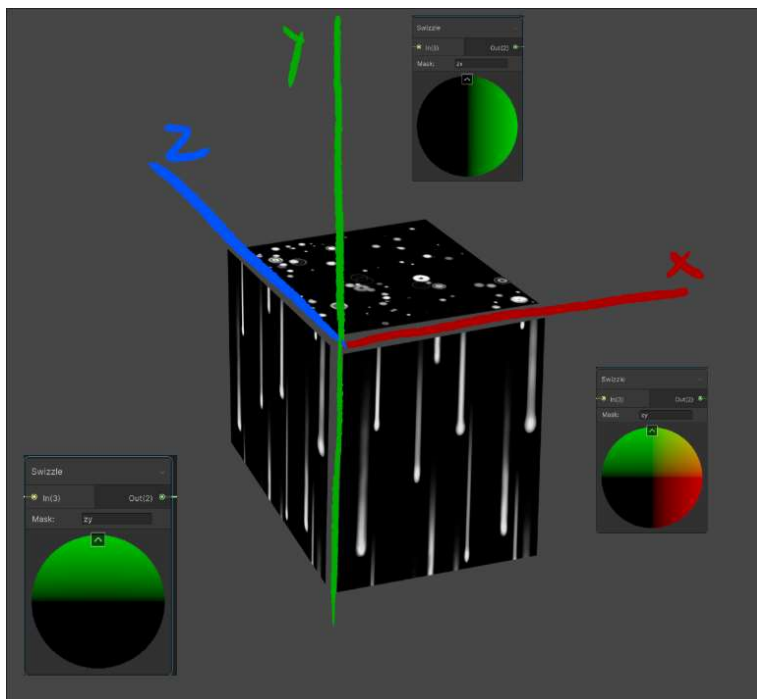


Wet Surface Material

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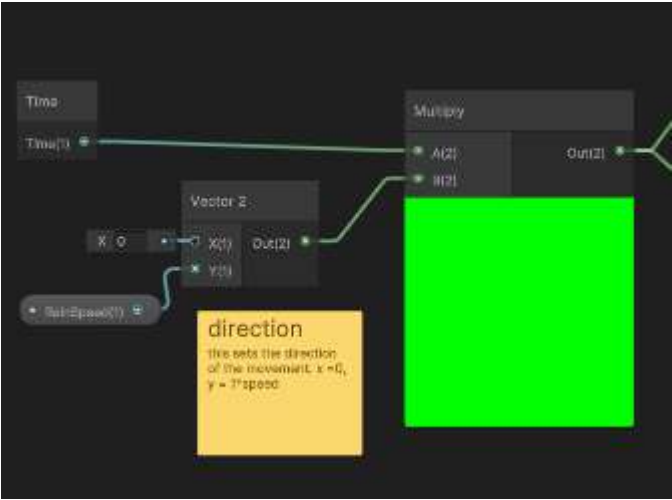
- The material shader is found under Shader Graphs/Raindrops_ShaderGraph.
- The material is basically a standard Lit material with added details modulating the surface appearance.
- The material consists of three key elements: a water drops, water streaks, and a water wash element.
- The material is using a lightweight triplanar projection.

Rain Streaks - graph group



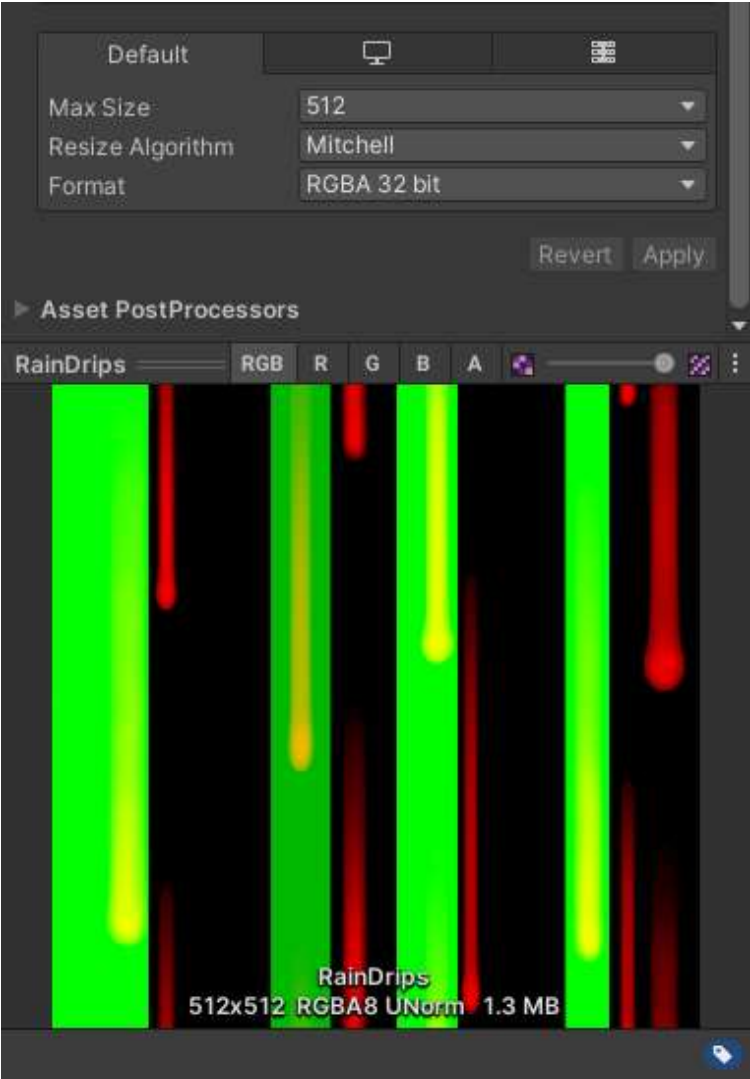
In the Raindrops_ShaderGraph, the effect assembly starts inside the group 'rain streaks'. By using the Swizzle node on the world position we get the world coordinates for the corresponding elements.

Movement



Time*Direction makes the side projections scroll downwards. Movement speed is controlled with the 'RainSpeed' Property.

The rain texture

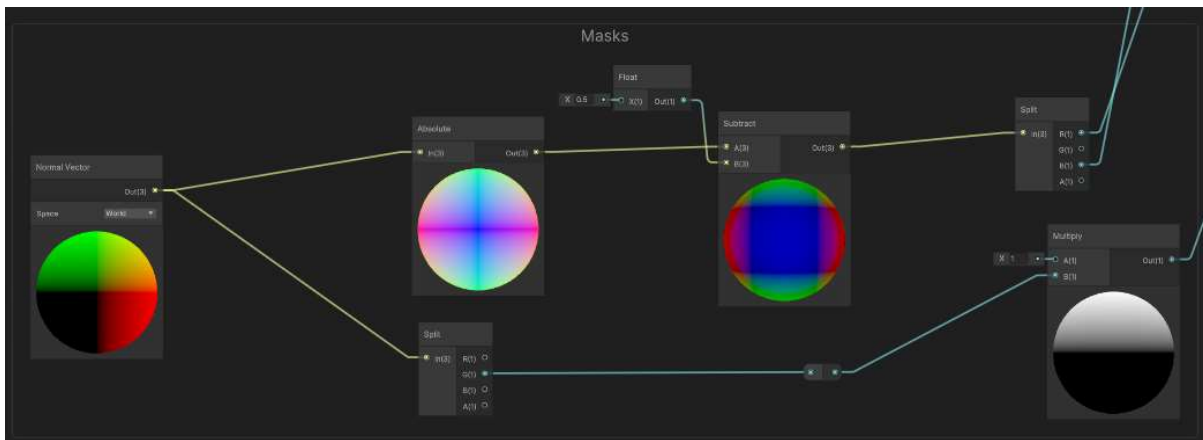


Red Channel contains the water streaks. Green channel is used with the 'RainAmount' property to mask out water streaks with lower 'RainAmount' values.

The format is set to RGBA 32bit so the image remains uncompressed. This is to reduce possible artifacts and pixelation. Using a small image resolution keeps the file size in check.

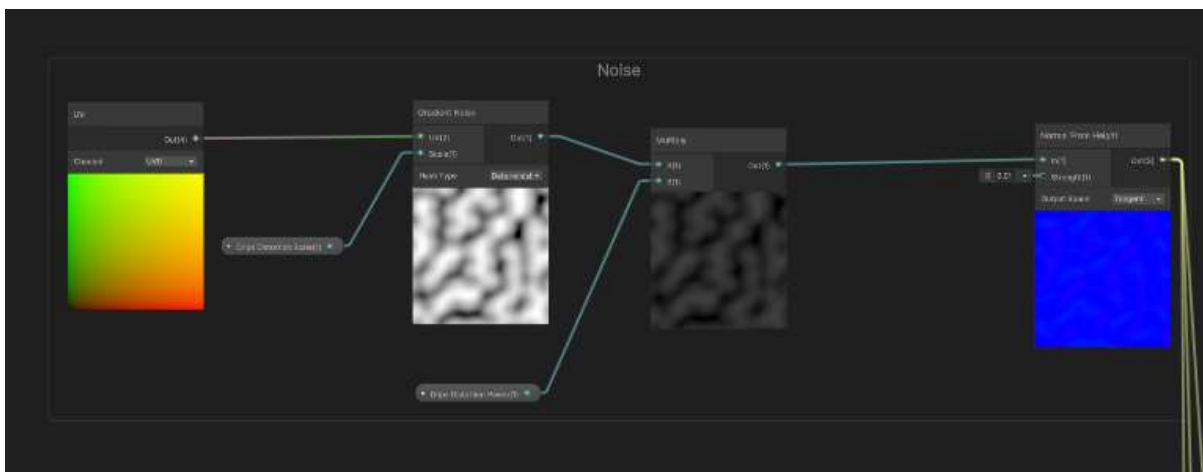
Masks - graph group

Inside the 'Masks' group: using the 'Split'-node, we access the World Normal Vector channels. By using the 'Lerp'-node the channels are used to isolate the projections to their corresponding planes.



The individual projections are combined with ‘Add’-nodes.

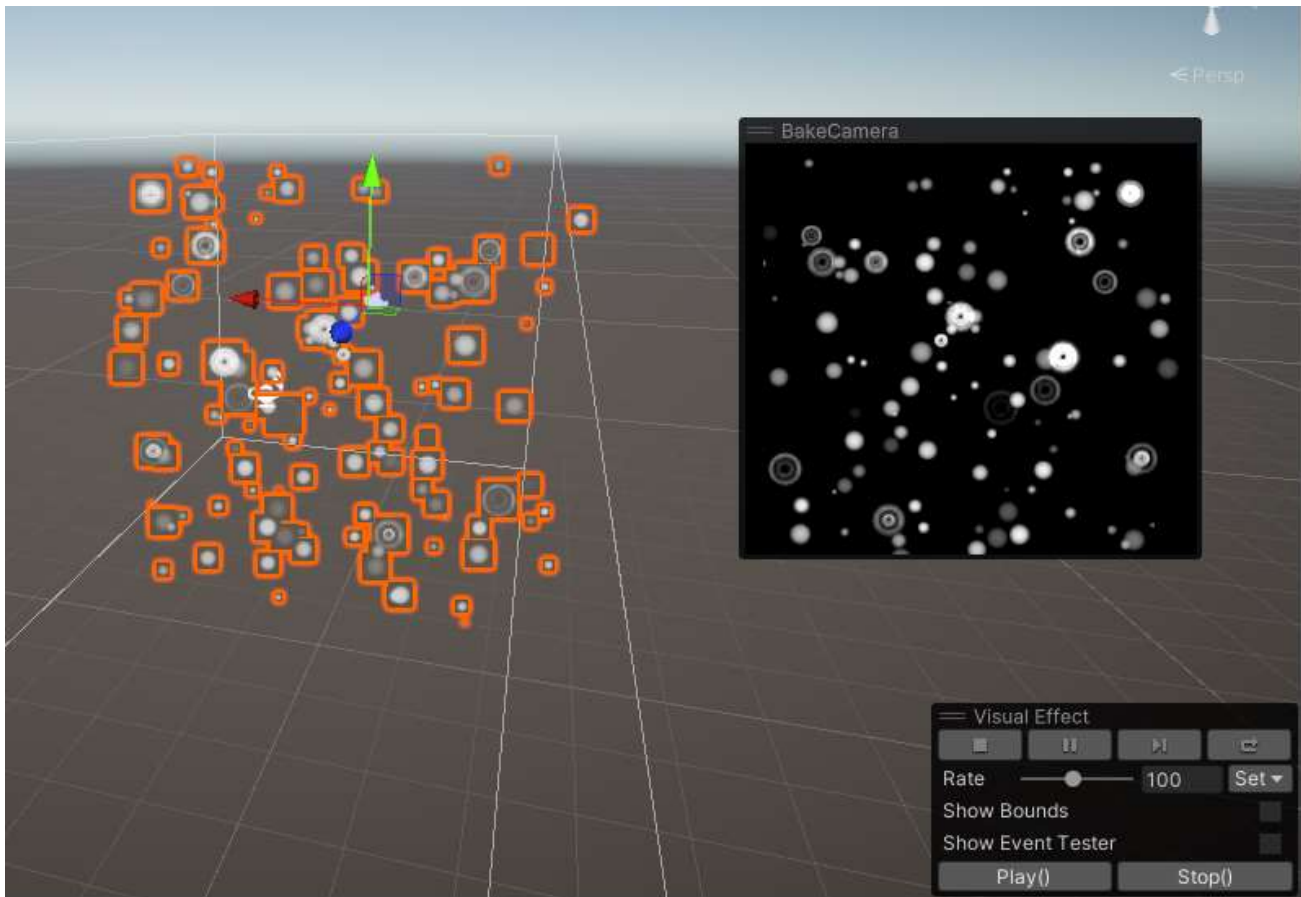
Noise - graph group



Gradient noise is used with the 'DripDistortionScale' and 'DripDistortionPower' properties to warp the coordinates for more watery looks.

VFX-Graph

The top projection is using a render texture 'RenderTextureWaterDroplets' baked from a particle effect 'RainFX'. The vfx is found under the 'BakeCamera' item in the scene hierarchy.

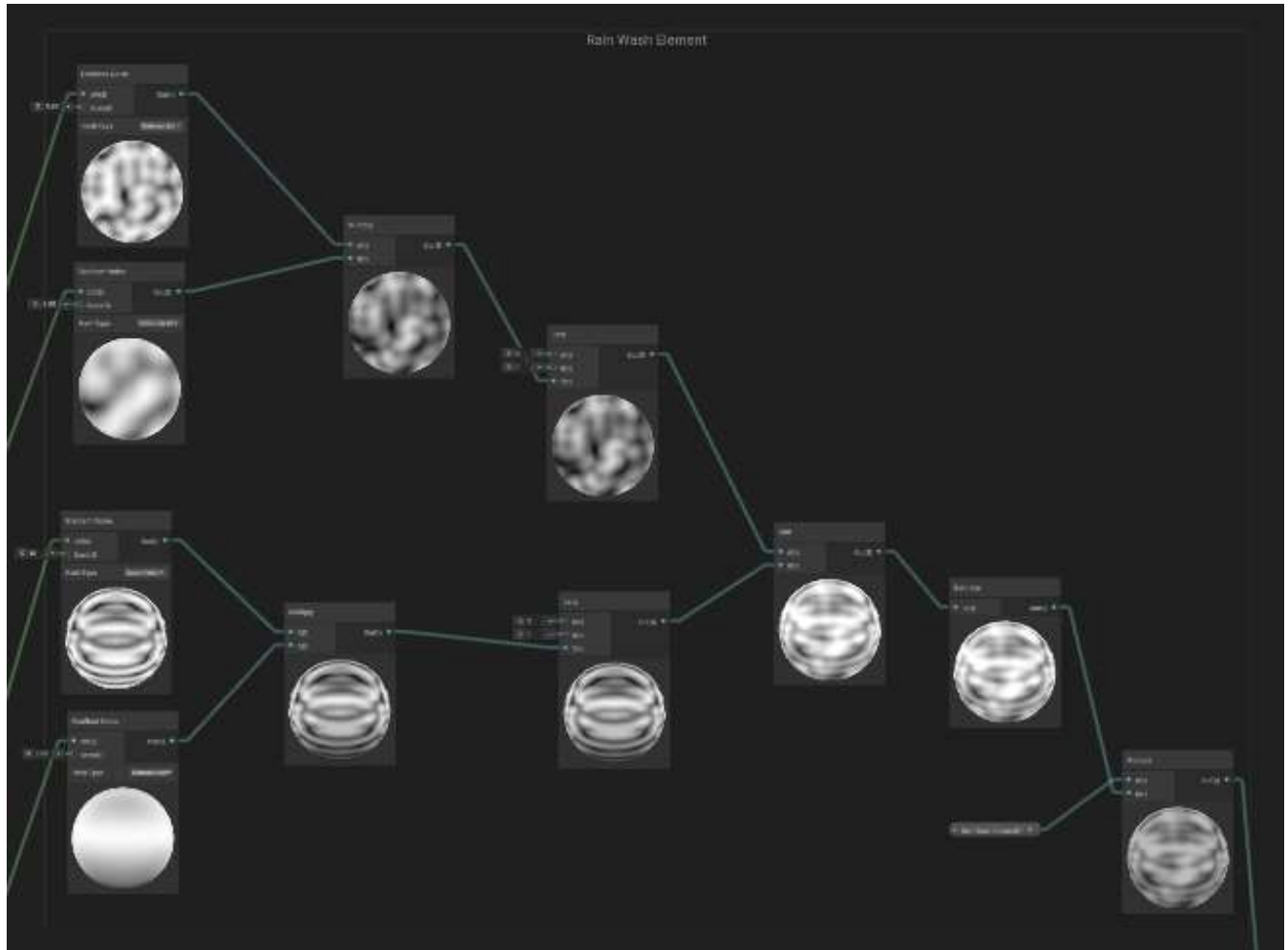


The VFX is basically just spawning blobs and rings sprites, which fade out over time.

Rain Wash Element - Group

Inside the group 'Rain Wash Element' we have two sets of Gradient Noise -nodes. Multiplying two noise patterns you get something that resembles water flowing down. The top row is for the XY-projection and the lower part for the ZY.

This result is added after the other projections.



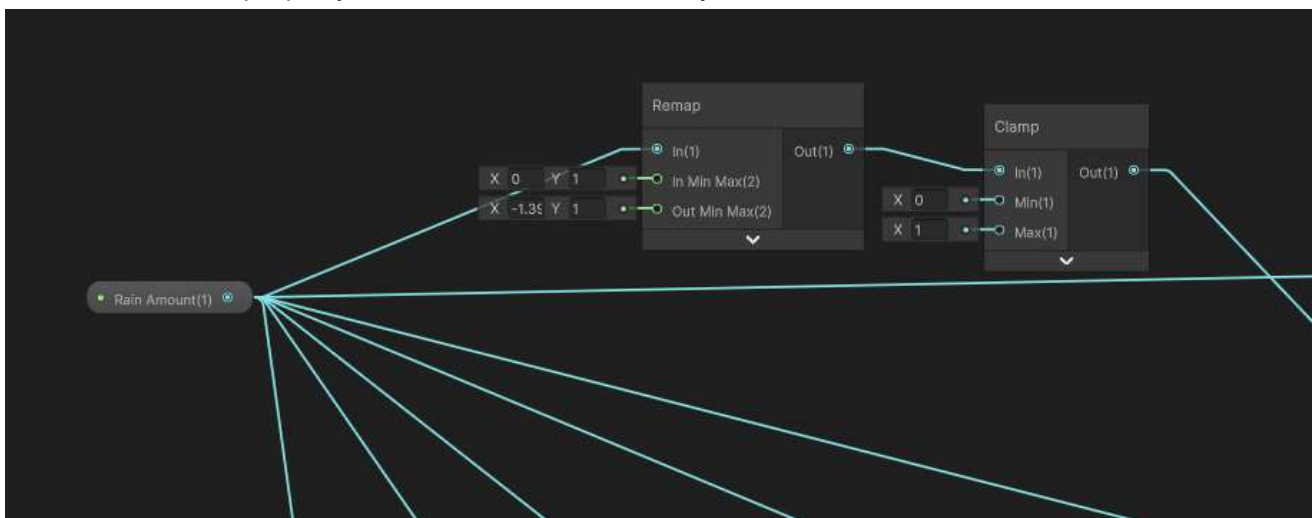
Base Material Properties

The 'BaseColor + Rain Darken' - group has a control for darkening the albedo for the affected area.

The 'Base Smoothness + Rain Smoothness' - group contains the smoothness modulation for the rain affected area. The resulting smoothness is also affected by the RainSmoothness and RainAmount properties.

The 'Base Normal + Rain Normal' - group converts the effect from height to normal and combines it with the base material normals.

The 'RainAmount' property controls the overall visibility of the effect.



The Remap and Clamp setup is a way to get the different elements appear gradually.

RainAmount < 30: only droplets appear

RainAmount < 60: droplets and water streaks

RainAmount > 60: droplets and streaks and wash effect visible. This also increases the Base Material Smoothness.

Further optimization

- The sliders and floats don't have proper limits and its easy to mess things up.
- The VFX graph implementation is pretty useless in its current state. It adds unnecessary clutter to the scene and the top projection could be entirely done via Shadergraph.
- The VFX graph has two particle systems but I'm pretty sure you could get away with one.
- The rain texture has an unused blue channel.
- The graph contains many individual saturate -nodes, which possibly could be reduced with better channel management.
- The 'Rain Wash Element' -group could easily work with less Gradient nodes.
- There's some inconsistencies with material parameters.
 - Controls for individual smoothness and global smoothness could be more consistent.
 - Effect scaling and tiling requires a lot of manual adjusting.
- Causes a lot of flickering with post processing enabled.
- The RainAmount property with the remap adjustment is not good. I'm sure there's a node for this.

Time Spent

It took me 4 work days to get going with the shader graphs and finish this. Most of the time was spent on watching tutorials on youtube.

Cheers!

-JP