// MinTuts/Procedural Terrain.shader

```
Shader "MinTuts/Procedural Terrain" {
  SubShader {
    Pass {
      CGPROGRAM

        #pragma vertex   vert
        #pragma fragment frag

        #include "UnityCG.cginc"

        struct v2f {
          float4 pos  : SV_POSITION;
          float3 wpos : POSITION1;
        };

        v2f vert(float4 vertex : POSITION) {
          v2f o;

          o.pos  = UnityObjectToClipPos(vertex);
          o.wpos = mul(unity_ObjectToWorld, vertex);

          return o;
        }

        float4 frag(v2f i) : COLOR {
          float  p = i.wpos.y * 0.015;
          float3 y = float3(p, p, p);

          return float4(y, 1);
        }

      ENDCG
    }
  }
}
```

Here we are defining the **frag** function…
specified by the **#pragma** definition
from earlier
This function has a *single* argument…
of the type **v2f**…
with a **semantic** filter of **COLOR**…
and returns a **float4** (*representing the 4 color channels: red, green, blue, and alpha/transperancy*)

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        float4 frag(v2f i) : COLOR {
          float  p = i.wpos.y * 0.015;
          float3 y = float3(p, p, p);

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        }

      ENDCG
    }
  }
}
```

The first thing we do is *convert* **i.wpos.y** (***i.wpos**' vertical axis*) to a value *between 0 and 1*

Well… between 0 and 1.5 in our case

To "normalize" (*convert to a value between 0 and 1*) **i.wpos.y** we would need to *multiply* it by 0.01 (*the minimum value for our vertical axis is 0 and the maximum value is 100, so multiplying **i.wpos.y** by 0.01 shrinks the value space to the range 0 - 1*)

I chose 0.015 because I think it looks better in this case

NOTE: Cases like this are pretty rare; typically you want to ensure your **normalize**d value *never goes above 1*