## // ProceduralTerrain

```
[Range( 5, 250)] public int CellSize = 10;

[Range(1, 20 )] public int Octaves = 5;
[Range(1f, 30f)] public float Scale = 3f;
[Range(0f, 1f)] public float Persistance = 0.5f;
[Range(0f, 4f)] public float Lacunarity = 2f;

private static int TerrainsGenerated = 0;
```

There is more to Lacunarity - which we will cover when stepping through the height equations

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```
float height11 = 0f;
float amplitude = 1f;
float frequency = 1f;
for (int i = Octaves; i > 0; i--) {
  float octave_x0 = x / Scale * frequency;
 float octave_z0 = z / Scale * frequency;
 float octave_x1 = (x + 1f) / Scale * frequency;
  float octave_z1 = (z + 1f) / Scale * frequency;
 height00 += Mathf.PerlinNoise(octave_x0, octave_z0) * amplitude;
  height01 += Mathf.PerlinNoise(octave_x0, octave_z1) * amplitude;
  height10 += Mathf.PerlinNoise(octave_x1, octave_z0) * amplitude;
  height11 += Mathf.PerlinNoise(octave_x1, octave_z1) * amplitude;
 amplitude *= Persistance;
  frequency *= Lacunarity;
int x0 = x * CellSize;
```