// ProceduralTerrain

```
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;
```

Each octave will contribute to the total height of our quad's four vertices

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```
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for (int i = Octaves; i > 0; i--) {
  float octave_x0 =  x       / Scale * frequency;
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  float octave_x1 = (x + 1f) / Scale * frequency;
  float octave_z1 = (z + 1f) / Scale * frequency;
```

To determine the sample x0 location for the current octave…

```
  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;
```