# Mock Exam Q4 Part C-1

Height maps are another texturing technique related to normal maps. Research and implement height maps in a shader

Height map is a grey scale image. Each pixel values serve as a “height”.

There are different ways that we can use a Height map.

One way is to adjust the vertex value based on the value of the uv texture of the Height map.

Text

Description automatically generated with low confidence

This is a common way to generate a terrain.

A picture containing indoor, bed, bedclothes, colorful

Description automatically generated

See HeightMapVertexShader code.

The above method modify the vertex value directly to create a 3D effect.

Another way to create the 3D effect is to “trick” the eye by using parallax mapping.

See textbook page 422

Diagram

Description automatically generated

The basic idea is that instead of reading the texture value directly at T0 (the uv value), the true height should be read at T’. However it is not so easy to easy to get the value of T’, one easy was is to use the value of T1 instead (see equation 16.10).

Text

Description automatically generated

See the NormalMappedShader code.