LOD with Adaptive Tessellation

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Motivation

- Learn how to use the new graphics pipeline
- Greater performance
- Little if no online material available
- Easier implementation than most cpu LODs

Objective

- Given a terrain height map, render the according poligonal mesh.
- Pass only a coarse quad grid to the GPU
- Use the adaptive tesselation to refine the quads
- Calculate lighting

Issues found

- Continuity between adjacent Quads
- Normals need to be calculated in the GPU
- Lighting can cause intense popping effects with adaptive LOD

Solutions

- Calculate separate Tesselation Factors for the edges and the center of the quad. So the edge that connects 2 quads must have the same factor for both quads.
- Calculate normals in the Domain shader(adjacency information)
- Use per-pixel lighting based on the height that the pixel would have with maximum tesselation level regardless of current tesselation factor.