

ELE 455/555  
Spring 2016

Homework 10

Due 5/3/2016

Beginning of class

1) Identify each of the following as related to graphics processing

a) 3D mesh

b) Vertex

c) Fragment

d) Pixel

2) Describe each of the following as related to graphics processing

a) Vertex Shader

b) Geometry Shader

c) Pixel Shader

d) Texture Shader

3) How many concurrent threads should the Nvidia Kepler architecture support (max)

4) Given the specifications below – provide the expected maximum Floating Point performance for each case:

a) Arithmetic Intensity = 8FLOPs/Byte, Peak Memory BW = 16GB/s  
Peak FP performance = 16GFLOPS/s

b) Arithmetic Intensity = 1FLOPs/Byte, Peak Memory BW = 8GB/s  
Peak FP performance = 32GFLOPS/s

5) Given the specifications below – provide the expected maximum Floating Point performance for each case:

Original arithmetic Intensity = 2FLOPs/Byte, Peak Memory BW = 8GB/s, Peak FP performance = 32GFLOPS/s

a) If you modified the problem to include additional instructions related to an N-body problem, would you expect the peak FP performance to go up, down or stay the same?

a) If you modified the problem to include additional instructions related to a Sparse matrix problem, would you expect the peak FP performance to go up, down or stay the same?