

Read “NVIDIA GeForce 8800 GPU Architecture Overview,” linked to the course references page, and answer the questions below.

Problem 1: The 8800 implements a *unified shader model*, meaning it uses the same processor for both vertex and fragment (pixel) processing. What is the advantage of doing so. *Hint: This is really easy and can be answered directly from the white paper.*

Problem 2: Describe at least two possible disadvantages of the unified shader model. These disadvantages might have outweighed the advantages in previous generation GPUs, which had separate (not unified) programmable shaders. *Hint: This question is harder and requires some understanding of computer architecture.*

Problem 3: The white paper describes texture filter and texture address units. What they do is straightforward, but how are they used? Are they: (1) programmable units (like the stream processors) with a (possibly secret) instruction set of their own, (2) functional units (like floating-point ALUs) which are used using stream-processor instructions, (3) state machines that are operated using special control registers (like DMA controllers), (4) just subroutines that run on stream processors using ordinary stream processor instructions (like system calls or library functions), or (5) something else.

Your answer should indicate what you are basing your conclusion on (page number, etc) and how sure you are it is correct. The answer may range from an educated guess to a precise answer based on a source. Feel free to find sources other than the NVIDIA white paper.