

# **16.317: Microprocessor Systems Design I**

Fall 2012

Lectures 15-16: Key Questions

October 12 & 15, 2012

1. What are the major differences between real mode and protected mode?
2. What are the benefits offered by protected mode operation on the 80386?

3. Describe the difference between global and local memory.

4. Explain the purpose and general organization of descriptors.

5. Explain the general memory address calculation used in protected mode.

6. Explain the purpose and format of selectors.

7. Describe the descriptor tables used on the 80386DX.

8. Describe the global descriptor table register (GDTR).

9. GDTR questions:

a. What is the GDT base address and limit if

- GDTR = 123400000FFH?

- GDTR = FEDC1AB20007H?

- GDTR = AABB11221F0FH?

b. What is the size of the GDT and number of descriptors it holds in each of the examples above?

c. What is the maximum GDT size and number of descriptors?

10. Show how selectors and the GDTR are used to access global memory.

11. Show the process used for local memory accesses on the 80386.

12. Describe the interrupt descriptor table and its purpose.

13. Describe the process of task switching and the structures used in task switching on the 80386.