16.317: Microprocessor Systems Design I

Spring 2012

Lecture 4: Key Questions

January 30, 2012

1. Explain the difference between logical and physical address in the 80386DX's real mode. How is a real mode physical address calculated?

2. What are the boundaries (min/max offsets) for every 80386DX segment? Why?

3. Can multiple logical addresses map to the same physical address?

4. **Example:** Given the following register values:

- CS = 0x1000
- SS = 0x2000
- DS = 0x3000
- ES = 0x4000
- IP = 0x0100
- ESP = 0x0002FF00
- EBP = 0x0000F000
- ESI = 0x0001000E
- EBX = 0xABCD1234

What physical addresses correspond to the following logical addresses?
- CS:IP

- SS:SP

- SS:BP

- DS:SI

- ES:BX

5. Describe the general organization and operation of the 80386DX stack, including how stack addresses are generated, what the purpose of the stack pointer is, and how data is placed on and removed from the stack.