

16.317: Microprocessor Systems Design I

Spring 2012

Lecture 5: Key Questions

February 1, 2012

1. 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.

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

- SS = 0x3170
- SP = 0xFFFFE (Stack is initially empty)
- EAX = 0x12345678
- EBX = 0xDEADBEEF
- ECX = 0x0000FFFF
- EDX = 0x11223344

What is the state of the stack and the registers after the following sequence?

- PUSH AX
- PUSH BX
- PUSH CX
- POP DX
- PUSH AX
- POP BX
- POP AX
- PUSH DX

3. Describe the organization of the 80386DX I/O address space

4. What are the advantages of having isolated I/O? What are the disadvantages?

5. What is the general process used to convert a high-level program to low-level machine code?
6. What are the different general types of instructions we'll use?
7. What is the general structure of an assembly language statement?