Amanda Lewis

COSC 2331-01

1. Real Mode and Protected Mode:
   * Real:
     + 8086/8088
     + Also called unprotected mode of memory architecture
     + Nothing to stop it from giving a segment value
     + Two programs can access the same memory space
   * Protected:
     + 80386
     + Protected segmentation
     + Segment register must use descriptor table to access memory, which enables it to stop two programs from using the same space
     + Data can be stored in hard drive and brought to RAM when needed
2. CISC vs. RISC
   * Complex Instruction Set Computing vs. Reduced “”
   * CISC is easier to program while RISC is more work for the programmer
   * CISC takes more time while RISC is faster
   * With CISC, operands have to be in the memory, while in RISC, operands come from register only.
   * RISC is easier to pipeline
3. Execution Cycle and Pipelining
   * Execution cycle takes five steps: Instruction Fetch, Instruction Decode, Operand Fetch, Instruction Execute, and Write Back
   * Each step takes one clock cycle to execute
   * With Pipelining, a second cycle can begin at IF as soon as the first cycle moves to ID, and cycle time is reduced drastically when you have multiple cycles
   * Pipelining only works when the second instruction is independent of the outcome of the first instruction
4. Physical address space is 216, address locations in hex go from Ox 0 through Ox F
5. The 16-bit registers for 8086 go from AX (AH/AL), BX (BX/BL), CX (CH/CL), DX (DH/DL), BP, SI, DI, and SP. The AH/AL represents the two registers used by 8086 to make up for the 20-bit address bus and the 16-bit registers. One register is the segment which holds the first four bits, and the second register is called the offset, which holds the last hex in its own bit. These two bits must be added together to get the memory address. The 32-bit registers are EAX, EBX, ECX, EDX, ESI, EDI, EBP, ESP. These registers hold the smaller 16-bit registers with the same suffices, but they have double the space.