

CS 271 Computer Architecture and Assembly Language
Self-Check for Lecture #3 Solutions

1. How many bits in 35 MiB ? 35×2^{20} (Bytes) $\times 8$ (bits per Byte) = 293 601 280 bits

The remaining questions refer to the IA-32 architecture discussed in Lecture #3.

2. What is the width of the internal bus? 32 bits
3. What is the size of the general-purpose registers? 32 bits
4. Which of the following are valid 8-bit register references?
YES AL refers to the 8 low-order bits of EAX
YES DH refers to the 8 high-order bits of the 16 low-order bits of EDX
NO SH not allowed. This would be ambiguous, because we have ESP, ESI, and SS registers.
NO EL can't divide the ES register
5. Why does protected mode prevent programs from changing the EIP register directly?
The EIP contains the memory address of the next instruction to be fetched. Since the programmer ordinarily will not know the absolute address where any of the instructions are stored, protected mode restricts access to EIP, and allows it to be changed only by the operating system/.