**Homework 8: x86 Processor**

CS 200

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by

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**Answer each of the following questions based on Chapter 2 of the Irvine textbook.**

**1. What are the IA-32 processor’s three basic modes of operation?**

Protected mode, real-address mode, and system management mode.

**2. Name all eight 32-bit general-purpose registers.**

EAX, EBX, ECX, EDX, ESI, EDI, EBP, ESP

**3. Name all six segment registers.**

CS, DS, SS, ES, FS, GS

**4. What special purpose does the ECX register serve?**

The ECX register is used as a loop counter.

**5. Besides the stack pointer (ESP), which other register points to variables on the stack?**

The stack segment also points to variables on the stack

**6. Name at least four CPU status flags.**

Carry flag (CF), Overflow flag (OF), Sign flag (SF), Zero flag (ZF), Auxiliary flag (AF), Parity flag (PF)

**7. Which flag is set when the result of an unsigned arithmetic operation is too large to fit**

**into the destination?**

The Carry flag

**8. Which flag is set when the result of a signed arithmetic operation is either too large or too small to fit into the destination?**

The Overflow flag

**9. Which flag is set when an arithmetic or logical operation generates a negative result?**

The Sign flag

**10. Which part of the CPU performs floating-point arithmetic?**

The FPU performs floating-point arithmetic