CIS450 Computer Architecture
Lab 4 quiz
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Notes: This quiz is closed book, closed notes, closed neighbor. Bring a blank sheet of paper to write down your answers. I will select several (but not all) of the questions below for you to answer in class.

1. **Briefly** define the following and discuss their major tradeoffs (advantages/costs). What problem are they addressing?
    a. Pipelining
    b. %rdi
    c. %esp
    d. Stack frame
    e. Address alignment
    f. Caller save / callee save
2. Why use the `lea` instruction for mathematical operations when it is designed for calculating memory addresses? What limitations does it have?
3. How are 1D & 2D arrays represented in memory?
4. How is nested array element access performed?
5. How is multi-level array element access performed?
6. What is `assert()` and why do we use it?
7. What happens in a procedure call?
8. How does the stack make recursion work?
9. Describe what `8(%ebp)` is using normal compiler conventions in IA32.
10. Why is x86-64's passing of arguments to procedures significantly faster than IA32?