Final Overview

Basic Information

1

Final Information

- 2 hours
- 150 points
- May contain multiple choice and short answer questions

2

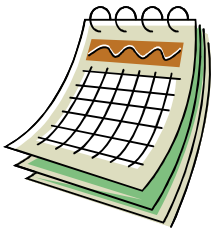
What Will Be Covered

- Exam will cover all parts
- Lab activities
- No question will be asked that is not in the lecture notes
- Download from: *athena.csus.edu/~cookd/35*

3

Exam Time & Date

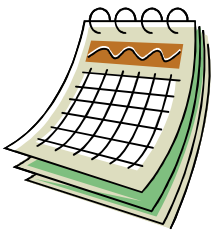
- Section 4 (MW 9am)
  - Wednesday
  - December 16
  - 8:00 am - 10:00 am
- Section 7 (MW 3pm)
  - Monday
  - December 14
  - 3:00 pm - 5:00 pm



4

Exam Time & Date

- Section 1 (TR 12pm)
  - Tuesday
  - December 15
  - 12:45 pm - 2:45 pm



5

Exam Format

- Canvas supports multiple choice and fill in the blank
- If you fill in an answer – use lowercase (they are case sensitive)
- Bring scratch paper!

6

Canvas & Apple Safari

- Apple Safari is an excellent web browser, however…
- Student's have reported malfunctions when using Canvas – in particular, *images do not work properly*

7

Canvas & Apple Safari

- The Final will make use of multiple images
- So please use:
  - Firefox
  - Edge
  - Chrome

8

Exam Format

- You can enter the Zoom lecture during the exam
- This is also so I can talk to the class if necessary and you can ask questions
- You don't have be on camera

9

Processor Basics

Part 1

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Part 1 – Important to Understand

- Binary numbers
- Hexadecimal numbers
- How text is stored
- Control Logic Unit
- Execution Unit

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Part 1 – Important to Understand

- ALU
- Registers
- Encoding basics
- The Clock

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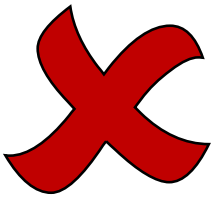
Part 1 – Don't Worry About

- EBCDIC and the details of Unicode
- ASCII character code values
- ASCII backspace combos



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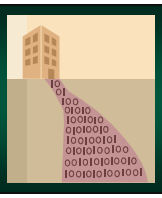

Memory Basics

Part 2

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Part 2 – Important to Understand

- Memory is an array
- Addresses
- von Neuman Architecture
- Accessing Data:
  - load
  - store
  - transfer

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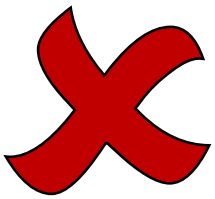
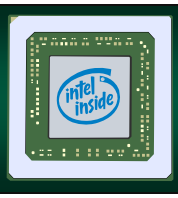
Part 2 – Don't Worry About

- Example processors



16



Introduction to the x64

Part 3

17

Part 3 – Important to Understand

- x64 registers
- The basic x64 instructions
  - mov
  - lea
  - etc…

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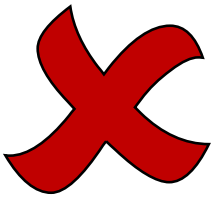
Part 3 – Don't Worry About

- History of the Intel x86



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Programs

Part 4

Part 4 – Important to Understand

- Program language generations
- Compilers
- Assemblers
- Linkers
- Assembly basics
- UNIX

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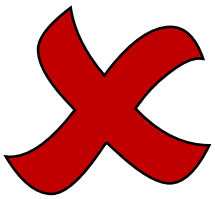
Part 4 – Don't Worry About

- AT&T vs Intel syntax



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Buffers & Addressing

Part 5

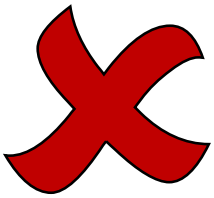
Part 5 – Important to Understand

- Buffers
- Directives that create storage (buffers)
- Endianess

24

Part 5 – Don't Worry About

- Example files (with various endianness)
- Gulliver's Travels



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Control Logic

Part 6

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Part 6 – Important to Understand

- Unconditional jump
- Conditional jumps
- If Statements
- While Statements
- Do Statements
- Switch Statement

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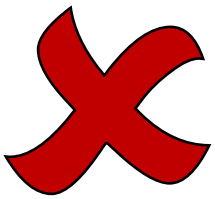
Part 6 – Don't Worry About

- *Know it all*



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The Arithmetic Logic Unit

Part 7

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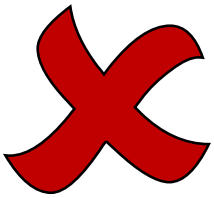
Part 7 – Important to Understand

- Sign-magnitude
- One's complement
- Two's complement
- Multiplication
- Division
- Sign Extension
- Flags

30

Part 7 – Don't Worry About

- *Know it all*



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Addressing Modes

Part 7

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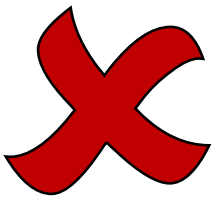
Part 7 – Important to Understand

- Immediate
- Direct
- Indirect
- Tables
- Buffer Overflow

33

Part 7 – Don't Worry About

- *Know it all*



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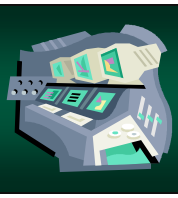

Operating Systems

Part 9

35

Part 9 – Important to Understand

- System stack
- Privileged vs User mode
- Interrupts
- Vector Table
- API

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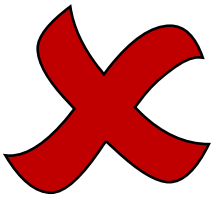
Part 9 – Don't Worry About

- The actual UNIX system call codes



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Design Principles

Part 10

38

Part 10 – Important to Understand

- Moore's Law
- CISC vs RISC
- Why CISC is not currently favored
- Instruction Execution
- Pipelining

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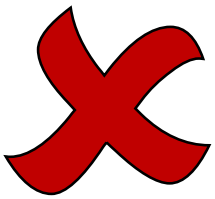
Part 10 – Don't Worry About

- Example processors



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