


Final Overview

Study Guide

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Exam Information

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



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What Will Be Covered

- Exam will cover Parts 1 to 9
- Lab activities
- Project
- No question will be asked that is not in the lecture notes
- Download from: athena.ecs.csus.edu/~dcook/35

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Exam Time & Date

- Section 1:
 - Wednesday, May 18th
 - 8:00 am – 10:00 am
- Section 12:
 - Tuesday, May 17th
 - 10:15 am – 12:15 pm




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What you need to bring

- Exam booklets will be provided for the Final
- So, you only need to bring a pen or pencil
- **No** electronics allowed
- **No** notes allowed



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Data & Memory

Part 1

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Part 1 – Important to Understand

- Binary numbers
- Hexadecimal numbers
- How text is stored
- Memory is an array
- Addresses!



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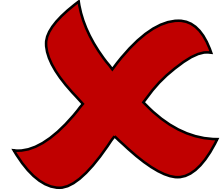
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Part 1 – Don't Worry About

- History of the Hindu-Arabic system
- EBCDIC and the details of Unicode
- History of ASCII
- ASCII character code values



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Processors

Part 2

Part 2 – Important to Understand

- Control Logic Unit
- Execution Unit
- ALU
- Registers
- Encoding Basics



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Part 2 – Important to Understand

- Accessing Data (load, store, transfer)
- x64 registers
- The basic x64 instructions



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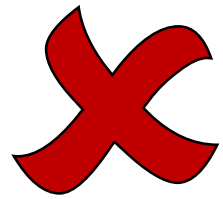
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Part 2 – Don't Worry About

- Example processors
- History of the Intel x86




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Programs

Part 3

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Part 3 – Important to Understand

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

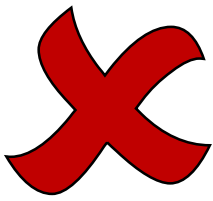


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Part 3 – Don't Worry About

- AT&T vs Intel syntax



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Buffers & Direct Storage

Part 4

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Part 4 – Important to Understand

- Buffers
- **mov** vs. **lea**
- Endianness

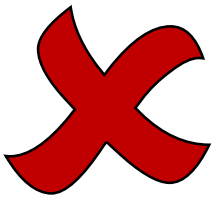


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Part 4 – Don't Worry About

- Example file types – this was just to convey a warning of inconsistency



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Control Logic

Part 5

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Part 5 – Important to Understand

- Unconditional Jumps
- Conditional Jumps
- If Statements
- While Loops
- Switch Statements



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Part 5 – Don't Worry About

- *Know it all*



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Arithmetic Logic Unit

Part 6

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Part 6 – Important to Understand

- Binary Math
- Signed numbers
- Sign extension
- Intel multiplication
- Intel division
- Flags
- How Compare Works

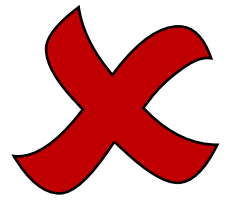


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Part 6 – Don't Worry About

- The individual flags
- The Unsigned Jumps (but understand why there are two sets).



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Addressing Modes

Part 7

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Part 7 – Important to Understand

- Immediate
- Direct
- Indirect
- Tables

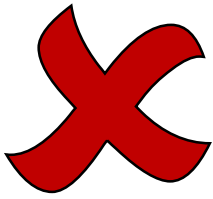


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Part 7 – Don't Worry About

- Buffer Overflow
(in the lecture notes, but not covered in class)



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Operating Systems

Part 8

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Part 8 – Important to Understand

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

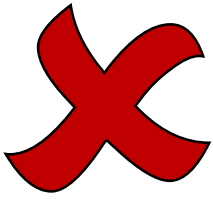


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Part 8 – Don't Worry About

- The actual UNIX system call codes



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Design Principles

Part 9

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Part 9 – Important to Understand

- CISC vs RISC
- Why CISC is not currently favored

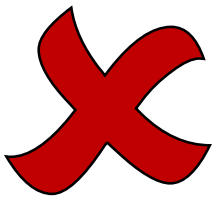


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Part 9 – Don't Worry About

- Example processors
- Different operand systems



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