

October 12

- No class Thursday 14 October (Fall Break!)
- GB gone 17 through 20 October
- Review for 2nd Exam on Tuesday 19 October
- Ask Questions!

10/12/2004

Comp 120 Fall 2004

1

Chapter 1

- Computer Abstractions
- Input/Output/Memory/Datapath/Control
- *Instruction Set Architecture*
 - “This interface enables *implementations* of varying cost/performance to run identical software”

10/12/2004

Comp 120 Fall 2004

2

Chapter 2 Performance

- Only complete and reliable measure is TIME
- CPU execution time is the product of 3 basic measurements of different levels in the computer: instruction count, CPI, clock cycle time
- Any measure that summarizes performance should reflect execution time.

10/12/2004

Comp 120 Fall 2004

3

Chapter 3 Instructions

Two key principles:

1. Instructions are represented as numbers
2. programs can be stored in memory and accessed just like numbers

Instruction Formats: R, I, J

Operations on Registers.

Load and Store operations.

Sign extension.

Conditional and unconditional jump.

Register use conventions.

Function Calls.

10/12/2004

Comp 120 Fall 2004

4

Chapter 4 Arithmetic

- Bit patterns have no inherent meaning
- They may represent
 - instructions
 - signed integers
 - unsigned integers
 - floating point numbers
 - characters
 - etc.
- What is represented depends on the instruction
- Computer numbers have limited size and precision
- 2's complement addition and subtraction
- Multiply and divide
- ALU made of gates
- Gates made of switches and wires

10/12/2004

Comp 120 Fall 2004

5

Exam Details

- Open Book, Open Notes
- 10 Questions, 100 points, 20% of total grade
- 7 Questions about arithmetic and it's implementation
- 1 about instructions
- 1 about representation
- 1 about performance

10/12/2004

Comp 120 Fall 2004

6