

CS/COE0447

Computer Organization & Assembly Language

Chapter 3

Topics

- Negative binary integers
 - Sign magnitude, 1's complement, 2's complement
 - Sign extension, ranges, arithmetic
- Signed versus unsigned operations
- Overflow (signed and unsigned)
- Branch instructions: branching backwards
- Implementations of addition, multiplication, division
- Floating point numbers
 - Binary fractions
 - IEEE 754 floating point standard
 - Operations
 - underflow
 - Implementations of addition and multiplication (less detail than for integers)
 - Floating-point instructions in MIPS
 - Guard and Round bits

Arithmetic

- So far we have studied
 - Instruction set basics
 - Assembly & machine language
- We will now cover binary arithmetic algorithms and their implementations
- Binary arithmetic will provide the basis for the CPU's "datapath" implementation

