30 November

- 2 classes to go
- Nutrition Survey
- Questions
- Course survey
- CCR

Questions

- What distinguishes CISC from RISC?
- What about "BIG" constants?
- What's up with Endians?

4.14

What is 0x8FEFC000 if it represents:

- A 2's complement integer?
- An unsigned integer?
- A float?
- An instruction?

4.14

What is 0x8FEFC000 if it represents:

- A 2's complement integer?

  The sign bit is 1, so this is a negative number. We first take its two's complement.

  A = 1000 1111 1110 1111 1100 0000 0000 0000

  –*A* = 0111 0000 0001 0000 0100 0000 0000 0000

  = 2^30 + 2^29 + 2^28 + 2^20 + 2^14

  = 1,073,741,824 + 536,870,912 + 268,435,456 + 1,048,576 + 16,384

  = 1,880,113,152

  A = –1,880,113,152

- An unsigned integer?
- A float?
- An instruction?

4.14

What is 0x8FEFC000 if it represents:

- A 2's complement integer?
- An unsigned integer?

  A = 8*FEF*C000

  = 8 * 16^7 + 15 *16^6 + 14 *16^5 + 15 *16^4 + 12 *16^3

  = 2,147,483,648 + 251,658,240 + 14,680,064 + 983,040 + 49,152

  = 2,414,854,144

- A float?
- An instruction?

4.14

What is 0x8FEFC000 if it represents:

- A 2's complement integer?
- An unsigned integer?
- A float?

  s = 1

  exponent = 0001 1111 = 31

  significand = 110 1111 1100 0000 0000 0000

  (–1)^S * (1 + significand) * 2 ^(exponent–127) = –1x1.1101 1111 1x2^–96

  = –1 * (1 + 13 * 16^–1 + 15 * 16^–2 + 2^–9) *2^–96

  = –1.873 * 2^–96

  = –2.364 * 10^–29

- An instruction?

4.14

What is 0x8FEFC000 if it represents:

- A 2's complement integer?
- An unsigned integer?
- A float?
- An instruction?

  Opcode (6 bits) = 100011 = lw
  RS (5 bits) = 11111 = 31
  RT (5 bits) = 01111 = 15
  Address (16 bits) = 1100 0000 0000 0000
  Address is negative so 2's complement is 0100 0000 0000 0000
  Address = -2^14 = -16384
  LW 15, -16384(31)

Quick Review

- Performance
- Assembly language programming
- Representation
- Arithmetic
- Logic gates
- Multiplication/Division
- Floating Point
- Control
- Pipelining
- Cache
- VM
- I/O, Interrupts, OS

What is next in courses?

- Comp 160 Digital Logic
- Comp 140 Compilers
- Comp 142 Operating Systems
- Comp 130 Files and Databases
- Comp 181 Models of Language and Computation

Classes to go

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