CSE378 Midterm Review

- Moore's Law -- What are the two versions?
- Is Moore's Law a law?
- Explain what an instruction set architecture is [ISA]
- What do the terms RISC and CISC mean?

MIPS ISA

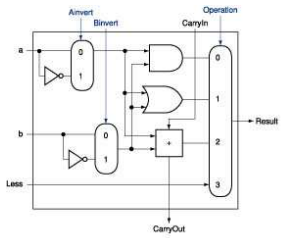
- Give the uses of the fields of an R-type instruction:
- [31-26], [25-21], [20-16], [15-11], [10-6], [5-0]
- Give the numbers of two registers whose use is specified in the ISA
- Give the numbers of two registers whose use is agreed-on by programming language convention
- Give the numbers of two registers whose use is agreed-on by programming convention
- Explain big-endian and little-endian memory layout

More MIPS

- Explain the difference between instructions performing "signed" and "unsigned" arithmetic
- Explain the operation of the MIPS memory operations: Load and Store
- What is a "pseudo-op" or "pseudo instruction"?
- How is it that the add and subtract instructions can have the same opcode?
- Explain how to load a full word constant into register $4

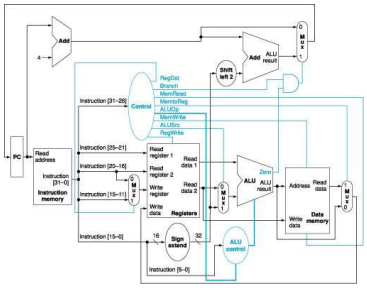
ALU Bit-slice

- Give the control signals for NOR
- What value does "Less" get assigned?
- Write a poem about the beauty of 2s-complement math



Load Word

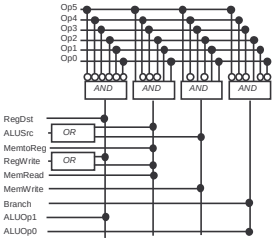
- Give the control line settings for LW



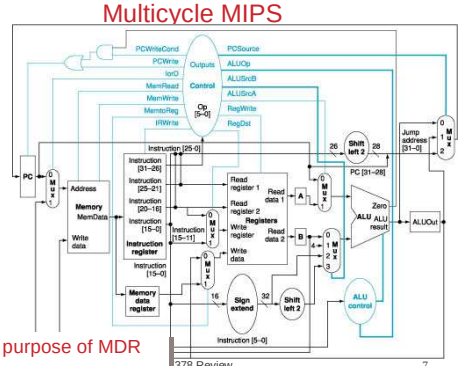
Decoding SW

- Explain what changes if SW's opcode were 110000, and the "don't cares" were to be 1

Signal	R-type	lw	sw	beq
Op5	0	1	1	0
Op4	0	0	0	0
Op3	0	0	1	0
Op2	0	0	0	1
Op1	0	1	1	0
Op0	0	1	1	0
RegDest	1	0	X	X
ALUSrc	0	1	1	0
MemtoReg	0	1	X	X
RegWrite	1	1	0	0
MemRead	0	1	0	0
MemWrite	0	0	1	0
Branch	0	0	0	1
ALUOp1	1	0	0	0
ALUOp0	0	0	0	1



Multicycle MIPS



- Explain purpose of MDR
- Give control for 2nd cycle