

Encoding HW

AJ

A) slide 48: iff most sig bit is 1,
then decimal value is neg. That's all.

$$\begin{aligned} B \quad 0110 \ 0011 &= (-1)^0 (64 + 32 + 2 + 1) \\ &= 99 \end{aligned}$$

$$\begin{aligned} 1011 \ 0010 &= (-1)^1 (32 + 16 + 2) \\ &= -50 \end{aligned}$$

$$\begin{aligned} 1111 \ 0011 &= (-1)^1 (64 + 32 + 16 + 2 + 1) \\ &= -115 \end{aligned}$$

$$\begin{aligned} 0101 \ 0011 &= (-1)^0 (64 + 16 + 2 + 1) \\ &= 83 \end{aligned}$$

$$63 = 32 + 16 + 8 + 4 + 2 + 1 = 0111111$$

$$-92 = -(64 + 16 + 8 + 4) = 11011100$$

$$100 = 64 + 32 + 4 = 01100100$$

$$-112 = -(64 + 32 + 16) = 11110000$$

[PART 1]

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A) slide 49. If most sig bit is 1, then decimal value is neg. If it is 0 then just add. If it is 1, then add value of the rest complemented.

$$B) \quad 1010 \quad 1010 = (-1)^1 (64+16+4+1) = -85$$

$$0111 \quad 0010 = (-1)^0 (64+32+16+2) = 114$$

$$1001 \quad 0101 = (-1)^1 (64+32+8+2) = -106$$

$$0011 \quad 1111 = (-1)^0 (32+16+8+4+2+1) = 63$$

$$58 = 32+16+8+2 = 00111010$$

$$-39 = -(\sim[32+4+2+1]) = 11011000$$

$$117 = 64+32+16+4+1 = 0110101$$

$$-75 = -(\sim[64+8+2+1]) = 10110100$$

[PART 2]

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A) Slide 51. To find neg, complement the binary value and add 1. You can also use the scan method.

$$B) \quad 1111 \ 1101 = -128 + 64 + 32 + 16 + 8 + 4 + 1 \\ = -3$$

$$0011 \ 0100 = 32 + 16 + 4 \\ = 52$$

$$1101 \ 0011 = -128 + 64 + 16 + 2 + 1 \\ = -45$$

$$0010 \ 1111 = 32 + 8 + 4 + 2 + 1 \\ = 47$$

$$-99 = -128 + 16 + 8 + 4 + 1 \\ = 1001 \ 1101$$

$$79 = 64 + 8 + 4 + 2 + 1 \\ = 0100 \ 1111$$

$$161 = 64 + 32 + 4 + 1 \\ = 0110 \ 0101$$

$$-123 = -128 + 4 + 1 \\ = 1000 \ 0101$$

[PART 3]