Encoding HW

AJ

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

B) 0110 0011 $= (-1)^0(64+32+2+1)$
$= 99$

1011 0010 $= (-1)^1(32+16+2)$
$= -50$

1111 0011 $= (-1)^1(64+32+16+2+1)$
$= -115$

0101 0011 $= (-1)^0(64+16+2+1)$
$= 83$

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

$-92 = -1(64+16+8+4) = 11011100$

$100 = 64+32+4 = 01100100$

$-112 = -1(64+32+16) = 11110000$

[PART 1]

Encoding HW AJ

A) Slide 49. Iff most sig bit is 1, then decimal value is neg. If it is 0, just add. If it is 1, then you have to add value of the rest complement.

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

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

24 1001 0101 $= (-1)^1(64+32+8+2) = -106$

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

16+8 +4+1 $58 = 32+16+8+2 = 0111010$

$-39 = -1(\sim[32+4+2+1]) = 10110000$

$117 = (64+32+16+4+1) = 01110101$

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

[Part 2]

128-99

29

-64+16

-54+6

-50+2

-48

-64

-56

-52

96

-64

-48

16

Encoding HW

AJ

A) Slide 51. To find neg, ~~complement~~ the binary value and add 1. You can also use scan method [flip bits after the first 1 from right to left].

B) 1111 1101 → 0000 0011 (scan)

= 2 + 1 = 3

0011 0100 → 1100 1100 (scan)

= -128 + 64 + 8 + 4 = -52

1101 0011 → 0010 1101 (scan)

= 32 + 8 + 4 + 1 = 45

0010 1111 → 1101 0001 (scan)

= -128 + 64 + 16 + 1 = -47

-99 = -128 + 16 + 8 + 4 + 1

= 1001 1101 → 0110 0011 (reverse scan)

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79 = 64 + 8 + 4 + 2 + 1

= 0100 1111 → 1011 0001 (reverse scan)

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101 = 64 + 32 + 4 + 1

= 0110 0101 → 1001 1011 (reverse scan)

Ans

$-123 = -128 + 4 + 1$

$= 1000\ 0101 \rightarrow 0111\ 1011$ (reverse)