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Lab 2

[Questions]

1. Convert signed binary to decimal

0111 0110 =

(0 * 2^0) + (1 * 2^1) + (1 * 2^2) + (0 * 2^3) + (1 * 2^4) + (1 * 2^5) + (1 * 2^6) + (0 * 2^7)

= 64 + 32 + 16 + 4 + 2 = **118**

1001 0001 =

(-1 * 2^7) + (0 * 2^6) + (0 * 2^5) + (1 * 2^4) + (0 * 2^3) + (0 * 2^2) + (0 * 2^1) + (1 * 2^0)

= -128 + 16 + 1 = **-111**

2. Convert signed decimal to binary

98

Quotient	Remainder
98 / 2 = 49	0
49 / 2 = 24	1
24 / 2 = 12	0
12 / 2 = 6	0
6 / 2 = 3	0
3 / 2 = 1	1
1 / 1	1

= **0110 0010**

- 46

46 / 2 = 23	0
23 / 2 = 11	1
11 / 2 = 5	1
5 / 2 = 4	1
4 / 2 = 2	0
2 / 2 = 1	0

1 / 2 = 0	1

0100 1110 → 10110001 + 1 = **10110010**

3. Convert signed decimal to hexadecimal
105

105 / 16 = 6	9
6 / 16 = 0	6

= **69**

- 82
convert to binary

82 / 2 = 41	0
41 / 2 = 20	1
20 / 2 = 10	0
10 / 2 = 5	0
5 / 2 = 2	1
2 / 2 = 1	0
1 / 2 = 0	1

= 0101 0010 --> 1010 1101 + 1 = 1010 1110 = **AE**

4. Convert signed hexadecimal to decimal
3456 = (3 * 16^3) + (4 * 16^2) + (5 * 16^1) + (6 * 16^0) = **13398**
A82C = 1010 1000 0010 1100 --> 0101 0111 1101 0011 + 1 --> 0101 0111 1101 0100

= (0 * 2^15) + (-1 * 2^14) + (0 * 2^13) + (1 * 2^12) + (0 * 2^11) + (1 * 2^10) + (1 * 2^9) + (1 * 2^8) + (1 * 2^7) + (1 * 2^6) + (0 * 2^5) + (1 * 2^4) + (0 * 2^3) + (1 * 2^2) + (0 * 2^1) + (0 * 2^0)

= **-10,284**