

Homework 1

1. For the 4-bit binary values in the table below, show the equivalent decimal values when the data is interpreted as unsigned binary or signed binary.

Binary	Unsigned	Signed
0b0000		
0b0001		
0b0111		
0b1000		
0b1001		
0b1111		

2. Fill in the table below, converting between binary, hexadecimal, and decimal as necessary.

Binary	Hexadecimal	Decimal
0b1011111011101111		48879
	0xDEAD	57005
0b111100000001011		61451
0b100000000	0x100	
	0x1000	
0b10100000000		

3. A microprocessor has a 12-bit program counter and a 12-bit instruction register. What was the exact maximum number of *bits* that could be needed in a program memory for this processor?
4. The Intel 8088 microprocessor was used in the original IBM Personal Computer. The 8088 had a 20-bit address bus. How many unique memory locations could be addressed?
5. Regarding the Cortex-M3. . .
- (a) What is the reset value of registers R0 through R12?
- (b) At reset, where does the initial value of R15 come from?