

Homework Assignment 1:

1. Find the binary expansions of unsigned decimal numbers: 98, 255
 2. Find the decimal expansions of unsigned binary numbers: 00101111, 11110000
 3. Find the hexadecimal expansion of decimal numbers: 2019, 2048, 9999
 4. Find the decimal expansion of the hexadecimal numbers: 1111, 3F1D, FFFE
 5. Compute these in 8-bit unsigned binary: $116+121$, $99+99$, $100+149$
 6. Compute these in 8-bit Two's-Complement: $99-1$, $116-121$, $121-19$
 7. The **unary** number system has only one symbol, let's call it x. Express the following decimal integers in unary: 0, 1, 2, 12
 8. The ternary number system has 3 symbols 0, 1, 2, and the basis is 3. In this number system, the ternary number 1212 is equal to $1*3^3+2*3^2 + 1*3^1 + 2*3^0 = 27+18+3+2=50$ in decimal. What are the decimal equivalents of the ternary numbers 2121, 2011?
 9. A rectangular core memory system has 16×24 bits. How many bytes is it? How many words is it, if word size is 16 bits? How many words is it, if word size is 32 bits?
 10. A picture has 1024×2048 pixels. If 3 bytes is used to represent the red, green and blue intensities of each pixel, how many bits does the picture require?
-