

## Exercises 1.1: Numeral systems

1. Below, there is a famous movie quote in binary (1 byte per character). What film is it?  
01001001 00100000 01110100 01101000 01101001 01101110 01101011 00100000  
01110100 01101000 01101001 01110011 00100000 01101001 01110011 00100000  
01110100 01101000 01100101 00100000 01100010 01100101 01100111 01101001  
01101110 01101110 01101001 01101110 01100111 00100000 01101111 01100110  
00100000 01100001 00100000 01100010 01100101 01100001 01110101 01110100  
01101001 01100110 01110101 01101100 00100000 01100110 01110010 01101001  
01100101 01101110 01100100 01110011 01101000 01101001 01110000 00101110
2. Transform the following numbers:
  - a. 0x43 from hexadecimal to binary and then to decimal
  - b. 0000000110011001 from binary to hexadecimal and then to decimal
  - c. 43 from decimal to binary and then to hexadecimal
  - d. -53 from decimal to binary (two's complement)
  - e. 0xA0F3 from hexadecimal to binary
  - f. 147 from decimal to binary
3. Imagine a computer in which integers are stored using 6 bits. How many different signed integers could be represented? What is the range of signed integers that can be represented with 6 bits (assuming that negative numbers are encoded using two's complement)?
4. The following binary number corresponds to an ASCII message, using one byte per character. Find out the equivalent hexadecimal representation; and then, using an ASCII table, find out the real string.  
0110 1110 0110 1111 0111 0100 0110 0001
5. Find the ASCII code of the characters A, B, F, and Z; and then, determine how many characters are between Z and the others. How to convert from lowercase to uppercase letters using the ASCII code?
6. Find the ASCII code (in hexadecimal) for the following message: *Let the force be with you.*

7. What is the hidden message?

01001100	01110101	01101011
01100101	00100000	01001001
00100000	01100001	01101101
00100000	01111001	01101111
01110101	01110010	00100000
01100110	01100001	01110100
01101000	01100101	01110010