Data representation

# Exercises for the laboratory

1. What is the largest number you can store on:
   1. 7 binary digits?
   2. 11 binary digits?
   3. 10 binary digits?
2. Compute the decimal value of the following 2-complement numbers:
   1. (01101011)U2
   2. (11101011)U2
3. Compute the 8-position U2 code of the following numbers:
   1. 15
   2. -34
   3. -120
4. Compute the decimal value of the following numbers:
   1. mantissa=1011, exponent=110
   2. mantissa=011, exponent=100
   3. mantissa=0011, exponent=010
5. Write the following strings in ASCII:
   1. ROWER
   2. ZNAK
   3. BAOBAB
6. Write these colors in RGB, using binary numbers:
   1. Red
   2. Green
   3. Yellow
   4. Black

# Homeworks

1. What is the largest number you can store on: **(1 pkt)**
   1. 12 binary digits?
   2. 7 octal digits?
   3. 10 hexadecimal digits?
2. Find the necessary information and explain in your own words, what was the cause of the Arianne 5 rocket failure. **(1 pkt)**
3. Compute the decimal value of the following floating point numbers: **(1 pkt)**
   1. mantissa=111, exponent=101
   2. mantissa=110, exponent=010
   3. mantissa=101, exponent=110
4. Write your name and surname using the ASCII code (mind the uppercase letters). **(1 pkt)**
5. Write these colors in RGB, using binary numbers: **(1 pkt)**
   1. White
   2. Gray (any shade)
   3. Blue