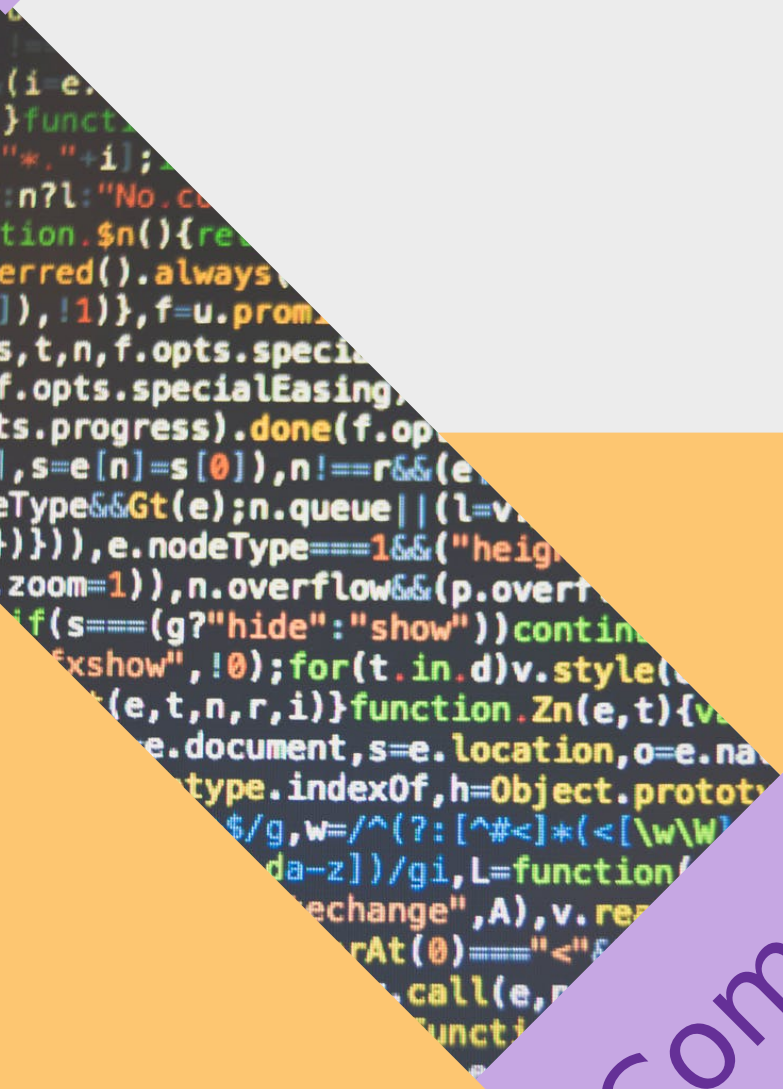
Curs 2020-2021



Computer Systems
Activities

IES Jaume II El Just
Tavernes de la Valldigna

1. Convert the following values in decimal form:

   (a) $110,01_2$
   (b) 107_8
   (c) $2A3_{16}$
   (d) 1160_8
   (e) $110011,101_2$
   (f) $AAF0_{16}$

2. Convert the following values to binary code:

   (a) $10,75_{10}$
   (b) 715_8
   (c) $1AD8_{16}$
   (d) $255,324_{10}$ (4 bits in the fractional part)
   (e) 253_8
   (f) $F321_{16}$

3. Convert the following values to octal code:

   (a) 16_{10}
   (b) 100110_2
   (c) $AC2_{16}$
   (d) $52,623_{10}$ (3 digits in the fractional part)
   (e) 110010_2
   (f) $12E5_{16}$

4. Convert the following values to hexadecimal code:

   (a) 853_{10}
   (b) 110100_2
   (c) 135_8
   (d) $32,623_{10}$ (3 digits in the fractional part)
   (e) 110001_2
   (f) 2375_8

5. In the following numbers, convert each one to the indicated bases:

   (a) $10001111_2 \Rightarrow$ Decimal base
   (b) $1727_8 \Rightarrow$ Hexadecimal
   (c) $1001101_2 \Rightarrow$ Hexadecimal
   (d) $5AD01_{16} \Rightarrow$ Octal
   (e) $1048_{10} \Rightarrow$ Binary Code
   (f) $524_8 \Rightarrow$ Hexadecimal
   (g) $1A0C4_{16} \Rightarrow$ Decimal
   (h) $3014_{10} \Rightarrow$ Octal

6. Add the numbers 89 and 25 in binary code.

7. Express in binary code the following: signed magnitude, one' complement, two's complement, and the number 83_{10} and the number -83_{10} with 8 bits.

8. Depending on the following systems, what number is expressed in binary code 10001011_2.

   - binary code
   - signed magnitud
   - one' complement
   - two's complement

9. If we use 8 bits in order to represent information, what is the range of representation that would have the following systems of representation:

   - binary code
   - signed magnitud
   - one' complement
   - two's complement

10. We are using fixed point. The most significant 4 bit (leftmost) represent the whole part and the other 4 bits for the real part. What number is represented in: 10101100.

11. Express the following quantities of the following cases:

(a) 46 GB $\Rightarrow MB$

(b) 1000000 TB $\Rightarrow PB$

(c) 40000000 PB $\Rightarrow ZB$

(d) 1 TB $\Rightarrow KB$

12. Express in your own words the difference between analogic signals and digital signals