

Computer Systems – Activities 2

UD 02. FUNCTIONAL ELEMENTS OF A COMPUTER



Computer Systems
CFGs DAW

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2022/2023

Versión:220729.2023

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Nomenclatura

A lo largo de este tema se utilizarán distintos símbolos para distinguir elementos importantes dentro del contenido. Estos símbolos son:



Importante



Atención



Interesante

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Activities-2

(Exercise 1) We have a computer with this instruction set:

Code	Instruction	Description
ENT M(m)	000mmmmm	Read data from keyboard to memory.
SAL M(m)	001mmmmm	Show data on screen from memory.
CAR R0, M(m)	010mmmmm	Store content a memory address in register R0.
ALM M(m), R0	011mmmmm	Store content of R0 in a memory address.
MOV Rx, Ry	1000xxyy	Copy content of RY to RX (<u>X, Y are register numbers</u>).
SUM Rx, Ry	1001xxyy	Add RX+RY and it is stored in RX.
RES Rx, Ry	1010xxyy	Subtract RX-RY and it is stored in RX.
MUL Rx, Ry	1011xxyy	Multiply RX * RY and it is stored in RX.
DIV Rx,Ry	1100xxyy	Divide RX / RY and it is stored in RX.

Following the instruction sequence:

```
00001011(A)  00001100(B) 00010001(C) 00011100(D) 01001011 10000100 01011100 10001100
01010001 10001000 10111110 10101101 01001100 10001000 10011110 01010001 10001000
11001110 10000011 01101101 00101101
```

Where A, B, C, D represents the input using the keyboard and their values are:

A=1

B=2

C=3

D=4

- a) What is the formula associated to A, B, C, D?
- b) What is the result shown on screen?
- c) What is the state of memory?
- d) If Program Counter (PC) initial value was 258... Which is its actual value?
- e) How many registers of general purpose (RX) has our architecture?

Share your solution and your doubts in the forum!!! If a classmate has problems with it, try to help him.