

Sistemas Informáticos (Computer Systems)

Unit 01. Activities 02



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UNIT 01. ACTIVITIES 02

1. EXERCISE 01

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	Load content from a memory address to register R0.
ALM M(m), R0	011mmmmm	Store content from R0 to a memory address.
MOV Rx, Ry	1000xxyy	Copy content of RY to RX (X, Y are register numbers).
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 (simulating machine code):

```
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 that is provided using the keyboard and their values are:

A=1; B=2; C=3; D=4

- What is the formula associated to A, B, C, D?
- What is the result shown on screen?
- What is the state of memory?
- If Program Counter (PC) initial value was 258... Which is its actual value?
- 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 :)