LAB\_0 : IDE Familiarization Van Nguyen

**1/- Registers - PC, SP, SR, and remaining registers** :

Registers is a part of CPU, needed for the basic operation of the CPU, they are a set of 16 registers designated R0 – R15 needed to decode the instructions and implement them.

The generous set of 16 registers is characteristic of a reduced instruction set computer (RISC).

* The first four registers ( **R0 - R3** ) have dedicated functions with alternative names, such as the program counter ( PC/R0 ), stack pointer ( SP/R1 ), status register ( SR/CG1/R2 ), and constant generator ( CG2/R3 ).
* The remaining 12 registers ( **R4 - R15** ) are general-purpose working registers. Words or bytes can be written to CPU registers, but the byte behavior is different from main memory: The destination is always the low byte, and the high byte is cleared (reset to 0).

A screenshot of a computer

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View 🡪 Registers 🡪 Register 1

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**2/- Z, N, C, V flags :**

The Z, N, C, V flags to been contained in the Status Register (SR) – The status register stores the state and control bits or flags.

C – Carry flag indicates that the last ALU operation produced a carry.

Z – Zero flag indicates that the last ALU operation resulted in 0.

N – Negative flag indicates that the last ALU operation resulted in a value < 0.

V – Overflow flag indicates that the last ALU operation on a signed variable overflowed the signed variables range.

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**3/- RAM :** ( Random-Access Memory )

* RAM: SRAM, DRAM = volatile.
* Volatile: Loses its contents when power is removed
* Read or written with equal ease.

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**4/- FLASH :**

* Nonvolatile memory : Retains its contents when power is removed and is therefore used for the program and constant data.
* Flash memory is the most common type of memory. It has largely superseded electrically erasable, programmable ROM (EEPROM)
* Flash memory must be erased before it can be written.

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