What is a motherboard?

The motherboard is the backbone that ties the computer's components together at one spot and allows them to talk to each other. Without it, none of the computer pieces, such as the CPU, GPU, or hard drive, could interact. Total motherboard functionality is necessary for a computer to work well

Difference between Register and Memory

1. Register :

Registers are the smallest data holding elements that are built into the processor itself. These are the memory locations that are directly accessible by the processor. It may hold an instruction, a storage address or any kind of data such as a bit sequence or individual characters. For example, an instruction may specify that the contents of two defined registers be multiplied together and then placed in a specific register.

Example: Accumulator register, Program counter, Instruction register, Address register, etc.

2. Memory :

Memory is a hardware device used to store computer programs, instructions and data. The memory that is internal to the processor is a primary memory (RAM), and the memory that is external to the processor is a secondary memory (Hard Drive). Memory can also be categorized on the basis of volatile and non-volatile memory. Volatile memory is memory that loses its contents when the computer or hardware device loses power. RAM (Random Access Memory) is an example of volatile memory. Non-volatile memory is the memory that keeps its contents even if power gets lost. EPROM is an example of non-volatile memory.

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Dr.Nader الخفاجي, [11/24/2022 9:58 PM]

Processor register

A processor register (CPU

register) is one of a small set of data holding places that are part of the computer processor. A register may hold an instruction, a storage address, or any kind of data (such as a bit sequence or individual characters). Some instructions specify registers as part of the instruction.

Register are used to quickly accept, store, and transfer data and instructions that are being used immediately by the CPU, there are various types of Registers those are used for various purpose. Among of the some Mostly used Registers named as AC or Accumulator, Data Register or DR, the AR or Address Register, program counter (PC), Memory Data Register (MDR) ,Index register,Memory Buffer Register.

These Registers are used for performing the various Operations. While we are working on the System then these Registers are used by the CPU for Performing the Operations. When We Gives Some Input to the System then the Input will be Stored into the Registers and When the System will gives us the Results after Processing then the Result will also be from the Registers. So that they are used by the CPU for Processing the Data which is given by the User. Registers Perform:-

1)    Fetch: The Fetch Operation is used for taking the instructions those are given by the user and the Instructions those are stored into the Main Memory will be fetch by using Registers.

2)    Decode: The Decode Operation is used for interpreting the Instructions means the Instructions are decoded means the CPU will find out which Operation is to be performed on the Instructions.

3)    Execute: The Execute Operation is performed by the CPU. And Results those are produced by the CPU are then Stored into the Memory and after that they are displayed on the user Screen.

Types of Registers are as Followings

MAR stand for Memory Address Register

This register holds the memory addresses of data and instructions. This register is used to access data and instructions from memory during the execution phase of an instruction. Suppose CPU wants to store some data in the memory or to read the data from the memory. It places the address of the-required memory location in the MAR.

Program Counter

The program counter (PC), commonly called the instruction pointer (IP) in Intel x86 microprocessors, and sometimes called the instruction address register, or just part of the instruction sequencer in some computers, is a processor register

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Register – What is Registers? Types of Registers

By Dinesh Thakur

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It is a 16 bit special function register in the 8085 microprocessor. It keeps track of the the next memory address of the instruction that is to be executed once the execution of the current instruction is completed. In other words, it holds the address of the memory location of the next instruction when the current instruction is executed by the microprocessor.

Accumulator Register

This Register is used for storing the Results those are produced by the System. When the CPU will generate Some Results after the Processing then all the Results will be Stored into the AC Register.

Memory Data Register (MDR)

MDR is the register of a computer’s control unit that contains the data to be stored in the computer storage (e.g. RAM), or the data after a fetch from the computer storage. It acts like a buffer and holds anything that is copied from the memory ready for the processor to use it. MDR hold the information before it goes to the decoder.

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MDR which contains the data to be written into or readout of the addressed location. For example, to retrieve the contents of cell 123, we would load the value 123 (in binary, of course) into the MAR and perform a fetch operation. When the operation is done, a copy of the contents of cell 123 would be in the MDR. To store the value 98 into cell 4, we load a 4 into the MAR and a 98 into the MDR and perform a store. When the operation is completed the contents of cell 4 will have been set to 98, by discarding whatever was there previously.

The MDR is a two-way register. When data is fetched from memory and placed into the MDR, it is written to in one direction. When there is a write instruction, the data to be written is placed into the MDR from another CPU register, which then puts the data into memory.

The Memory Data Register is half of a minimal interface between a micro program and computer storage, the other half is a memory address register.

Index Register

A hardware element which holds a number that can be added to (or, in some cases, subtracted from) the address portion of a computer instruction to form an effective address. Also known as base register. An index register in a computer’s CPU is a processor register used for modifying operand addresses during the run of a program.

Memory Buffer Register

MBR stand for Memory Buffer Register. This register holds the contents of data or instruction read from, or written in memory. It means that this register is used to store data/instruction coming from the memory or going to the memory.

Data Register

A register used in microcomputers to temporarily store data being transmitted to or from a peripheral device.

type of register

Some of the commonly used registers are:

AC ( accumulator )

DR ( Data registers )

AR ( Address registers )

PC ( Program counter )

MDR ( Memory data registers )

IR ( index registers )

MBR ( Memory buffer registers )

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between DRAM and SRAM?

SRAM (static RAM) is a type of random access memory (RAM) that retains data bits in its memory as long as power is being supplied. Unlike dynamic RAM (DRAM), which must be continuously refreshed, SRAM does not have this requirement, resulting in better performance and lower power usage

The difference between RAM and ROM:

RAM, which stands for random access memory, and ROM, which stands for read-only memory, are both present in your computer. RAM is volatile memory that temporarily stores the files you are working on. ROM is non-volatile memory that permanently stores instructions for your computer

1-What is a CPU?

 Central Processing Unit (CPU), the abbreviation used for a central processing unit generally called a processor is a unit through which a computer interacts with various applications and programs installed within a system. To implement this processor requires data and instructions, which are accessed through the register and memory.

 A register is a unit inside the CPU that stores all those transactions and instructions that are required by the CPU for the process to continue executing. However, the memory is located outside the CPU architecture but it is also used for the purpose of storing the instructions that the regis وانتter wفill need at runtime.

ماهو السجل

2-record definition:

أنواع بعض السجلات

3-Some types of records

ما هي الذاكرة

4-What is the memory?

ما الفرق بين السجل والذاكره

الاختلافات. بين السجل والذاكره

5-Differences between log and memory

كيف تعمل السجلات والذاكره معا