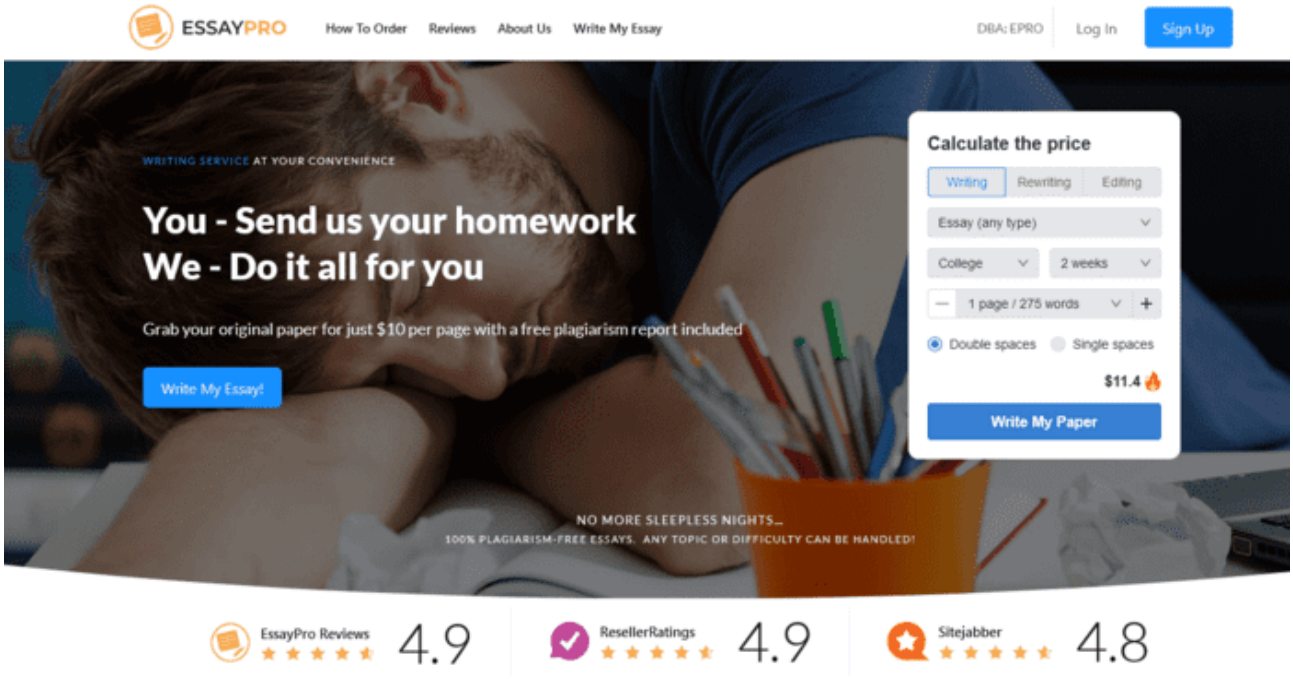
John von Neumann



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John von Neumann

Von Neumann, a mathematician designed the architecture model for a CPU. This model was a single storage structure to hold both the set of instructions on how to perform the computation and the data required or generated by the computation.

He designed it by treating the instructions in the same way as the data, a stored-program machine can easily change the instructions. In other words the machine is reprogrammable.

Von Neumann’s archtectre is still used it todays modern CPU’S.

The CPU

This diagram represents the structure of the Central Processing System.

Arithmetic Logic Unit

The ALU performs addition and subtraction, logic operations, masking, and shifting (multiplication and division).

Control Unit

The Control Unit is the heart of the computer. It controls and co-ordinates the systems operations. This contains the system clock, program counter and the instruction register. It also manages the signals from the control bus.

Registers

This is a form of high-speed memory which is contained inside of the CPU. All data must be represented in a register before it can be processed. Information is stored temporarily in the registers in which text or buffer positions or rectangles can be saved for later use.

Buses

A bus is a channel or path between the components in a computer.

Having a high-speed bus is important. A bus lets you connect computers components to the processor.

The advantage of a bus is that it makes parts more interchangeable. If you want to get a better graphics card, you simply unplug the old card from the bus and plug in a new one. If you want two monitors on your computer, you plug two graphics cards into the bus. And so on.

A PC usually has two buses. The first connects the CPU and the system memory. This is the fastest bus in the system. The second bus is the slower and it connects other devices, like the hard disk, CD drive,