Microprocessors\_vs\_Microcontroller

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Microprocessors are integrated circuits (ICs) that simply contain the CPU, or computing power, such as Intel's Pentium 1,2,3,4, core 2 duo, i3, and i5. These microprocessors lack on-chip peripherals including ROM, RAM, and other storage devices. To make them work, a system designer must include them externally. Microprocessor applications include desktop computers, laptops, notepads, and other devices.

However, this is not true with microcontrollers. A microcontroller is a single chip that includes a CPU, a fixed amount of RAM, ROM, and other peripherals. It is occasionally referred to as a "tiny computer" or "computer on a chip." Today, a variety of vendors develop microcontrollers with a large selection of capabilities that are offered in various versions. Manufacturers include TI, Microchip, Freescale, Philips, Motorola, ATMEL, and others.

Microcontrollers are made to carry out particular jobs. Applications that are specific define the connection between input and output. Depending on the input, processing is required before delivering the output. For instance, keyboards, mice, washing machines, digital cameras, pen drives, microwaves, mobile phones, watches, and so forth. Since the programs are relatively specialized, they can be incorporated on a single chip because they only require a tiny amount of resources like RAM, ROM, I/O ports, etc. The size and price are thereby decreased.

Where tasks are general in nature, such as in the development of software, games, websites, photo editing, document creation, etc., microprocessors find these uses. In certain situations, the connection between input and output is not clear. They demand a lot of RAM, ROM, I/O ports, and other resources.

In comparison to the microcontroller, the microprocessor has a much higher clock speed. While modern microprocessors do complicated operations at speeds beyond 1GHz, microcontrollers typically work at speeds between a few MHz and 30 to 50 MHz.