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ARM PROCESSOR

What is an ARM processor?

ARM, which is an acronym for ADVANCED RISC MACHINE, is a popular 32-bit processor.

An ARM processor is one of a family of CPUs based on the RISC (reduced instruction set computer) architecture developed by Advanced RISC Machines (ARM).

Initially ARM was known as Acorn RISC machine as 1985 Acorn Computer Ltd. Developed a processor based on a design on RISC principal published by few students in University of Berkley, USA.

Acorn merged up with Apple computers and VLSI technology group in 1990 and rename ARM as "Advanced RISC Machine".

The group came up with ARM6 and ARM7 in 1991 where ARM6 introduced first embeddable processor in this series and ARM7 came up with multimedia support which made it a huge success till date.

Why ARM?

ARM processors are extensively used in consumer electronic devices such as smartphones, tablets, multimedia players and other mobile devices, such as wearables. Because of their reduced instruction set, they require fewer transistors, which enables a smaller die size for the integrated circuitry (IC).

The ARM (architecture) has good performance per watt (MIPS per milliamp - Energy Efficiency, which is particularly important for Battery-operated Mobile Devices), and attractive prices. The licensing scheme for ARM intellectual property is the cause of success.

In 2011, the 32-bit ARM architecture was the most widely used architecture in mobile devices and the most popular 32-bit one in embedded systems.

In 2013, 10 billion were produced and "ARM-based chips are found in nearly 60 percent of the world's mobile devices".

Most powerful ARM

The Fujitsu A64FX is one of the most powerful Arm-based processors in the world, and the world's fastest supercomputer features over 150,000 of them. The beating heart of Fugaku, the world's fastest supercomputer, is the Fujitsu A64FX Arm-based processor.

ARM v/s its counterparts

ARM chips are usually slower than their Intel counterparts. This is largely due to the fact that they are designed to compute with low power consumption. While most users wouldn't notice a difference in their respective devices, Intel processors are designed for faster computing.

Trump card of ARM

ARM Processor is very affordable as it does not need expensive equipment's for its creation. When compare to other processors, it is created at much lesser price. This is why they are apt for making of low cost Mobile phones and other electronic devices.

They were initially designed for performing at lesser power. They even have lesser transistors in their architecture.

ARM performs single operation at a time. This makes it work faster. It has lower latency that is quicker response time.

The processor uses load store architecture that stores data in various registers (to reduce memory interactions).

Downside

It is not compatible with X86 hence cannot be used in Windows and the speeds are limited in some processors which might create problems.

ARM Processor needs very highly skilled programmers because of importance and complexity of execution (processor shows lesser performance when not executed properly.).