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# ARM ARCHITECHTURE

ARM stands for Advanced RISC Machine. ARM is the set of instruction set architecture (ISA), which determines what basic instructions a processor comes with, what kind of software it can run natively ; without the use of emulation. And has a deep implications for performance and efficiency potential. ARM architectures represent a different approach to how the hardware for a system is designed when compared to more familiar sever architectures . ARM is a family of RISC instruction set architectures (ISAs) for computer processors. ARM Ltd. Develops the ISAs and licenses them to other companies, who build the physical devices that use the instruction set. It also designs and licenses cores that implements these ISAs.

The ARM was first used in 1983 and originally stood for Acorn RISC Machine . Acorn computers first RISC processor was used in the original A CORN Archimedes and was one the first RISC processors used In small computers.

ARM architecture are the most common electronic design in the world , even though x86 is more common in the sever market. ARM architectures are used in almost all smartphone designs as well as in other small mobile devices and laptops

## USES OF ARM ARCHITECTURE

Advanced RISC Machine (ARM) Processor is considered to be a family of Central Processing Unit that are used in the following

1. MUSIC PLAYERS
2. SMARTPHONES
3. WEARABLES
4. TABLETS
5. Other CONSUMER ELECTRONIC DEVICES

## FACTS ABOUT ARM ARCHITECURE

ARM processors are the first commercially used Reduced Instruction Set Computer. ARM architecture is unique company of its nature for the following features it has : its Advance Reduced instruction Set Computing (RISC) machine and it is 32 bit RISC instruction set computer.

ARM processor can execute many more millions of instructions per second than Intel processors. By stripping out unneeded instructions and optimizing pathways, an Arm processor can deliver outstanding performance while using much less energy than a CISC – based processor.

Due to their low costs, power consumption and heat generation, ARM processors are useful for light, portable, battery-powered devices, including smartphones, laptops, and tablet computers , as well as embedded systems .

ARM processor need to be designed with the efficiency and compatibility of all their component. Special use cases aside ARM chip typically perform better and have higher power efficiency on smaller devices .

ARM CPUs are the leading smartphone processor IP on the market today. 99% of premium smartphones are powered by ARM.

## BENEFITS OF ARM ARCHITECTURE

1. WORK FASTER : ARM performs single operation at a time. This makes it work faster. It has lower latency that is quicker response time.
2. ARM processor are designed so that they can be used in cases of multiprocessing systems where more than one processor are used to process information
3. FLEXIBILITY
4. LOW PRICE
5. EFFICIENT

Due to their flexibility ,small size, efficiency and low price ARM processors are a great choice of infrastructure. You can use ARM processors in routers, high-performance storage solutions, certain types of servers.

# WHAT IS CISC and RISC

A Complex Instruction Set Computer(CISC/SISK) is a computer architecture in which single instructions can execute several low-level operations (such as a load from memory, an arithmetic operation , and a memory store )or are capable of multi-step operations or addressing modes within single instructions.

The fundamental goal of CISC is that a single instruction will be handle all evaluating , loading , and storing operations , similar to how a multiplication command will handle evaluating , loading, and storing data, which is why its complicated

1. A computer in which individual instructions may perform many operations and take many cycles to execute in contrast with reduced instruction set computer.

RISC “Reduced Instruction Set Computer” CISC “Complex Instruction Set computer” Both RISC and CISC can be seen as different “schools of thought” about how to design a processor’s instruction set architecture (ISA), or architecture

A RISC is a type of microprocessor architecture that utilizes a small, highly-optimized set of instructions rather than the highly-specialized set of instructions typically found in other architectures

CISC is most often used in AUTOMATION DEVICES whereas RISC is used in video and image processing applications. When microprocessors and microcontroller were first being introduced, they were mostly CISC. This was largely because of the lack of software support present for RISC development.

Some examples of CISC processors include :

1. Intel x86 CPUs
2. System/360
3. VAX
4. PDP-11
5. Motorola 6800 family
6. AMD

Some example of RISC processors include :

1. Alpha
2. ARC
3. ARM
4. AVR
5. MIPS
6. PIC

Generally speaking , RISC is seen by many as an improvement over CISC . The argument for RISC over CISC is that having a less complicated set of instructions makes designing a CPU easier , cheaper and quicker . s