

# Difference Between RISC and CISC Processor

The main difference between RISC and CISC Processor is that one instruction is executed by RISC-based computers every clock cycle. However, each instruction in a CISC processor does so many operations that it takes multiple clock cycles to accomplish it.

RISC vs CISC Processor

Difference Between RISC and CISC Processor	
RISC	CISC
It has a programming unit that is hardwired.	A microprogramming unit is present.
The number of available instructions has decreased, and most are fairly basic.	There are numerous different instructions in the instruction set that can be utilized for intricate processes.
Optimization of performance with a focus on software.	Hardware is prioritized for performance optimization.
RISC processors have fewer instructions of set length.	There are several instructions.
RISC have heavy RAM usage	CISC have more effective RAM usage.
RISC includes instruction cycles on a single clock.	An instruction may require multiple clock cycles in CISC.
Simple instruction decoding is available on RISC.	The decoding of instructions in CISC is complicated.
To store the instruction, numerous register sets are needed.	To save the instruction, only one register set is needed.

## RISC and CISC Processor

Both the RISC and CISC processors aim to boost CPU performance in different ways. In general, RISC is viewed by many as being superior to CISC. The benefit of RISC over CISC is that developing a CPU is simpler, quicker, and less expensive, thanks to a less complex set of instructions. Below we have provided the difference between RISC and CISC processors along with a brief introduction about them.

### What is RISC?

Reduced Instruction Set Computer Processor, or RISC, is a microprocessor architecture that uses a small number of highly specialized instructions. Optimizing and reducing the number of instructions, it is designed to reduce the time required to execute instructions. This indicates that there is only one clock cycle needed for each instruction cycle, and there are three parameters in each cycle: fetch, decode, and execute.

Various complex commands are also carried out by the RISC processor by merging them into simpler ones. Because RISC devices use more transistors, they are easier to design and have shorter instruction execution times.

## What is CISC?

Complex Instruction Set Computer is the abbreviation for the Intel-created CISC. It has a sizable collection of complicated instructions that range in complexity from straightforward to highly specialized at the assembly language level, taking a long time to execute. In order to reduce the number of instructions in each program, CISC ignores the number of cycles in each instruction.

CISC places a strong emphasis on creating complex instructions directly in hardware because the hardware is almost always quicker than software. However, CISC chips consume fewer instructions than RISC chips, even though they are generally slower than RISC devices. VAX, AMD, Intel x86, and the System/360 are a few examples of CISC processors.

## Key Difference Between RISC and CISC Processor

Every instruction in a RISC processor also has a set memory size, which facilitates its decoding and execution. The instructions in a CISC processor might have different lengths, which lengthens the processing time. The key difference between RISC and CISC processors are given below.

- Instructions are easier to decode in RISC than in CISC, which has a more complex decoding process.
- Calculations in CISC require external memory, but they are not necessary for RISC.
- While CISC only has a single register set, RISC has numerous register sets.
- The execution time of a RISC computer is very low compared to a CISC computer, which is very high.
- While CISC code expansion does not cause issues, RISC code expansion might.