

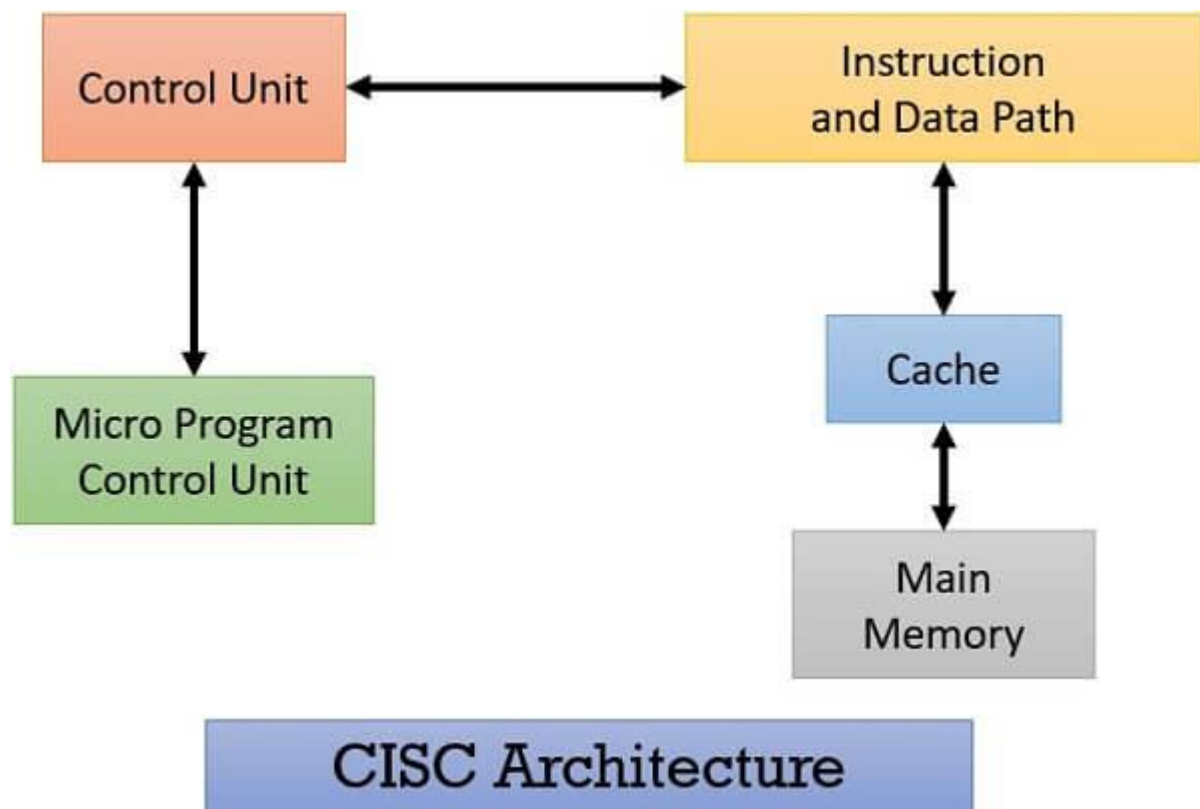
CISC VS RISC: PRICE COMPARISON

1. CISC

CISC is an abbreviation for Complex Instruction Set Computer. CISC processors were evolved in the 1970s before the evolution of RISC (Reduced Instruction Set Computers) processors. During this period the computer memory uses to be 'small' and 'very expensive'.

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CISC processors were helpful in simplifying the code and making it shorter in order to reduce the memory requirement. In a CISC processor, a single instruction has 'several low-level operations'. This makes the CISC instructions short but 'complex'.

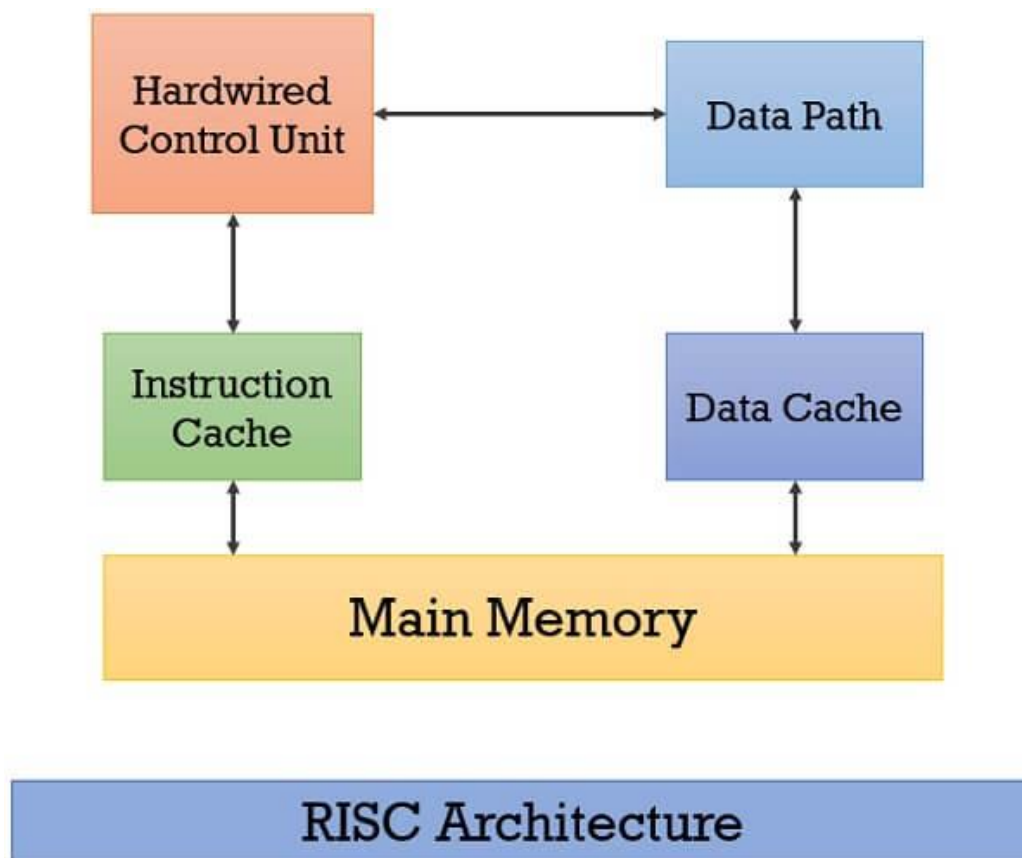


2. RISC

RISC is an abbreviation of Reduced Instruction Set Computer. RISC processor has 'instruction sets' that are simple and have simple 'addressing modes'. A RISC style instruction engages "one word" in memory. Execution of the RISC instructions are faster and take one clock cycle per instruction.

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Although the forerunners of RISC computers were seen in 1960. But, due to the popularity of CISC microprocessors which were implemented by the manufacturers in calculators, video games, stereos, etc; RISC architecture was overshadowed. According to modern concept dates RISC computers were particularly introduced in the 1980s.



3. Comparison

CISC (Complex Instruction Set Computing) and RISC (Reduced Instruction Set Computing) are two different processor architectures, each with its strengths and weaknesses. Let's compare them in terms of their definitions, characteristics, and potential impact on software and hardware prices:

Definition

- CISC: CISC processors have a complex instruction set, which means they support a wide variety of instructions with variable lengths and complexities. Each instruction can perform multiple tasks, including memory access and arithmetic/logic operations.
- RISC: RISC processors have a reduced instruction set, which means they have a simplified set of instructions that are generally uniform in length and perform simple, basic operations. RISC processors rely on executing instructions more efficiently in a pipelined manner.

Characteristics

- CISC:
 - Large instruction set, including both simple and complex instructions.
 - Single CISC instruction can perform multiple low-level tasks, potentially reducing the number of instructions required to accomplish a task.
 - Emphasis on hardware complexity to handle complex instructions.
 - Often found in older processors like x86 family.
 - Examples include Intel Pentium, Intel Core, and AMD processors.
- RISC:
 - Small, simple, and uniform instruction set.
 - Instructions execute in one clock cycle (or a few clock cycles).
 - Simplified hardware design, favoring pipelining and parallelism.
 - Emphasis on optimizing software algorithms for efficient execution.
 - Often used in modern processors like ARM and MIPS architectures.

4. Price Comparison

Software Price

- CISC: CISC architectures can potentially reduce software development complexity due to their support for complex instructions. Certain tasks may require fewer lines of code, leading to potentially shorter development time and reduced software costs.
- RISC: RISC architectures generally require more lines of code to achieve the same functionality due to their simplified instruction set. This could lead to longer development time and potentially higher software costs.

Hardware Price

- CISC: CISC processors tend to have more complex hardware structures to support a wide variety of instructions. This complexity can lead to higher manufacturing costs, and thus, CISC-based processors might be relatively more expensive in terms of hardware price.
- RISC: RISC processors have a simplified and streamlined hardware design, which can lead to reduced manufacturing costs and lower hardware prices compared to CISC processors.

Overall Cost Impact

- The cost impact of choosing between CISC and RISC architectures depends on various factors, such as the specific use case, application requirements, and manufacturing technologies. In modern times, the cost difference between CISC and RISC processors has become less significant due to advancements in manufacturing processes and the development of more efficient architectures.
- In terms of software, while CISC architectures might reduce development time in some cases, modern software development tools and optimizations can help bridge the gap between CISC and RISC architectures.
- In summary, the cost differences between CISC and RISC architectures (both in terms of software and hardware) are not as pronounced as they used to be. The choice between the two often revolves around performance considerations, power efficiency, and application-specific requirements rather than cost considerations alone.