## What are the differences between RISC and CISC?

The purpose of both RISC and CISC architectures is to increase CPU performance, but they try to achieve that goal in different ways. 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.

The primary difference between RISC and CISC architecture is that RISC-based machines execute one instruction per clock cycle. In a CISC processor, each instruction performs so many actions that it takes several clock cycles to complete. In a RISC processor, every instruction also has a fixed memory size, which makes them easier to decode and execute. In a CISC machine, the instructions can be variable lengths, which increases the processing time.

**OR**

differences between RISC and CISC architecture are as follows:

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| **RISC** | **CISC** |
| Emphasis on software | Emphasis on hardware |
| Small number of fixed length instructions | Large number of instructions |
| Simple, standardised instructions | Complex, variable-length instructions |
| Single clock cycle instructions | Instructions can take several clock cycles |
| Heavy use of RAM | More efficient use of RAM |
| Low cycles per second with large code sizes | Small code sizes with high cycles per second |

Generation Of Computers

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| **Generation (Period)** | **Hardware Feature** | **Characteristics** | **Examples** |
| First Generation (1942-1956) | Vacuum tubes and valves as main processing element. Punch cards as input device. | Support machine language only. Very costly. Large size. Generate a lot of heat. Consume a lot of electricity. | ENIAC, EDVAC, IBM 701 |
| Second Generation (1956-1965) | Transistor as main processing device. Magnetic tapes as memory. | Batch operating system. Faster, smaller, and more reliable than 1st generation. Expensive. | IBM 7030, DCD 1604, Honeywell 400 |
| Third Generation (1965-1975) | ICs as main electronic component. Large capacity disc and magnetic tapes as memory. | Time sharing operating system. Faster, smaller, and more reliable. Relatively cheaper. | IBM 360, CDC 6600, PDP 8 |
| Fourth Generation (1975-1988) | ICs with VLSI technology as the main electronic component. Semiconductor memory. Magnetic tapes and floppy as portable memory. | Easier to update. Multiprocessing and GUI operating system. Object oriented programs. Small size and affordable. Easy to use. Easier to update. | Apple II, CRAY 1/2, VAX 9000 |
| Fifth Generation (1988-Till date) | ICs with ULSI technology. Large capacity hard disc with RAID support. Optical discs as portable storage device. Powerful servers, internet, cluster computing, etc. | Powerful. Cheaper and more reliable. Portable. Easy to use. Rapid software development is possible. | Desktops, Laptops, Notebooks, Chromebooks |

Micro Processor vs Micro Controller

A microprocessor is an electronic component that acts as a processing device in various computing systems such as computers, laptops, smartphones, etc. On the other hand, a microcontroller is a small microcomputer acts as a controlling device in different embedded systems such as washing machines, microwave ovens, etc.

Table Form

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| **Microprocessor** | **Microcontroller** |
| Microprocessors can be understood as the heart of a computer system. | Microcontrollers can be understood as the heart of an embedded system. |
| A microprocessor is a processor where the memory and I/O component are connected externally. | A microcontroller is a controlling device wherein the memory and I/O output component are present internally. |
| The circuit is complex due to external connection. | Microcontrollers are present on chip memory. The circuit is less complex. |
| The memory and I/O components are to be connected externally. | The memory and I/O components are available. |
| Microprocessors can’t be used in compact system. | Microcontrollers can be used with a compact system. |
| Microprocessors are not efficient. | Microcontrollers are efficient. |
| Microprocessors have a zero status flag. | Microcontroller doesn’t have a zero status flag. |
| Microprocessors have less number of registers. | Microcontrollers have more number of registers. |
| Microprocessors are generally used in personal computers. | Microcontrollers are generally used in washing machines, and air conditioners. |