

Compare, distinguish and explain what is the difference between CISC and RISC processors. Comparison and Differences between RISC and CISC processors.

RISC - Reduced Instruction Set Computer

To execute each instruction, if there is separate electronic circuitry in the control unit, which produces all the necessary signals, this approach of the design of the control section of the processor is called RISC design. It is also called a hard-wired approach.

Examples of RISC processors

IBM RS6000, MC88100, DEC's Alpha 21064, 21164 and 21264 processors.

Features 1. Processors use a small and limited number of instructions. 2. Machines mostly use hardwired control unit. 3. Processors consume less power and are having high performance. 4. Each instruction is very simple and consistent. 5. Processors uses simple addressing modes. 6. Instruction is of uniform fixed length.

CISC - Complex Instruction Set Computer

If the control unit contains a number of microelectronic circuitry to generate a set of control signals and each micro-circuitry is activated by a microcode, this design approach is called CISC design.

Examples of CISC processors

Intel 386, 486, Pentium, Pentium Pro, Pentium II, Pentium III, Motorola's 68000, 68020, 68040, etc.

Features 1. Chips have a large amount of different and complex instructions. 2. Machines generally make use of complex addressing modes. 3. Different machine programs execute on a CISC machine. 4. Machines uses micro-program control unit. 5. Processors are having a limited number of registers.

Difference between CISC and RISC Processors

S.No.	CISC Processor	RISC Processor
1	CISC is an abbreviation of Complex Instruction Set Computer.	RISC is an abbreviation of Reduced Instruction Set Computer.
2	When an MCU supports many addressing modes for arithmetic and logical instructions and for memory accesses and data transfer instructions, the MCU is said to have CISC architecture.	When an MCU has an instruction set that supports one or two addressing modes for arithmetic and logical instructions and few for memory accesses and data transfer instructions, the MCU is said to have RISC architecture.
3	It can process a large number of complex instructions.	It can process a small number of instructions.
4	Instructions are of a variable number of bytes and take a varying amount of time for execution.	Instructions are of a fixed number of bytes and take a fixed amount of time for execution.
5	Slower, more complex hardware.	Faster, simpler hardware.
6	Fewer instructions per program	More instructions per program