Cycle Time Encyclopedia Article

Cycle Time

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Cycle Time

The term cycle is applied to computer **hardware** in several different ways. Most fundamentally, there is the clock cycle, which determines the maximum rate at which any device in the computer can change its state. There are also instruction cycles, an instruction cycle being the complete round of events necessary to execute a single instruction at the machine-language level (e.g., instruction fetch, instruction decode, operand fetch, write result, etc.). The term cycle time refers specifically to the time required to **access** an item of information in a random-access **memory** chip. The cycle time of a memory chip is the time from the beginning of one access (i.e., the reading out or reading in of a binary word) to the beginning of the earliest possible next access. The components of cycle time include the latency of the chip and any transfer time involved. For a read cycle, a chip's latency is the time from the presentation of valid address and control signals at the chip's inputs to the appearance of valid **data** at the chip's outputs; transfer time is the time required to transmit the accessed data to its first destination. The definitions of latency and transfer time for a write cycle are similar.