

# Computing Components

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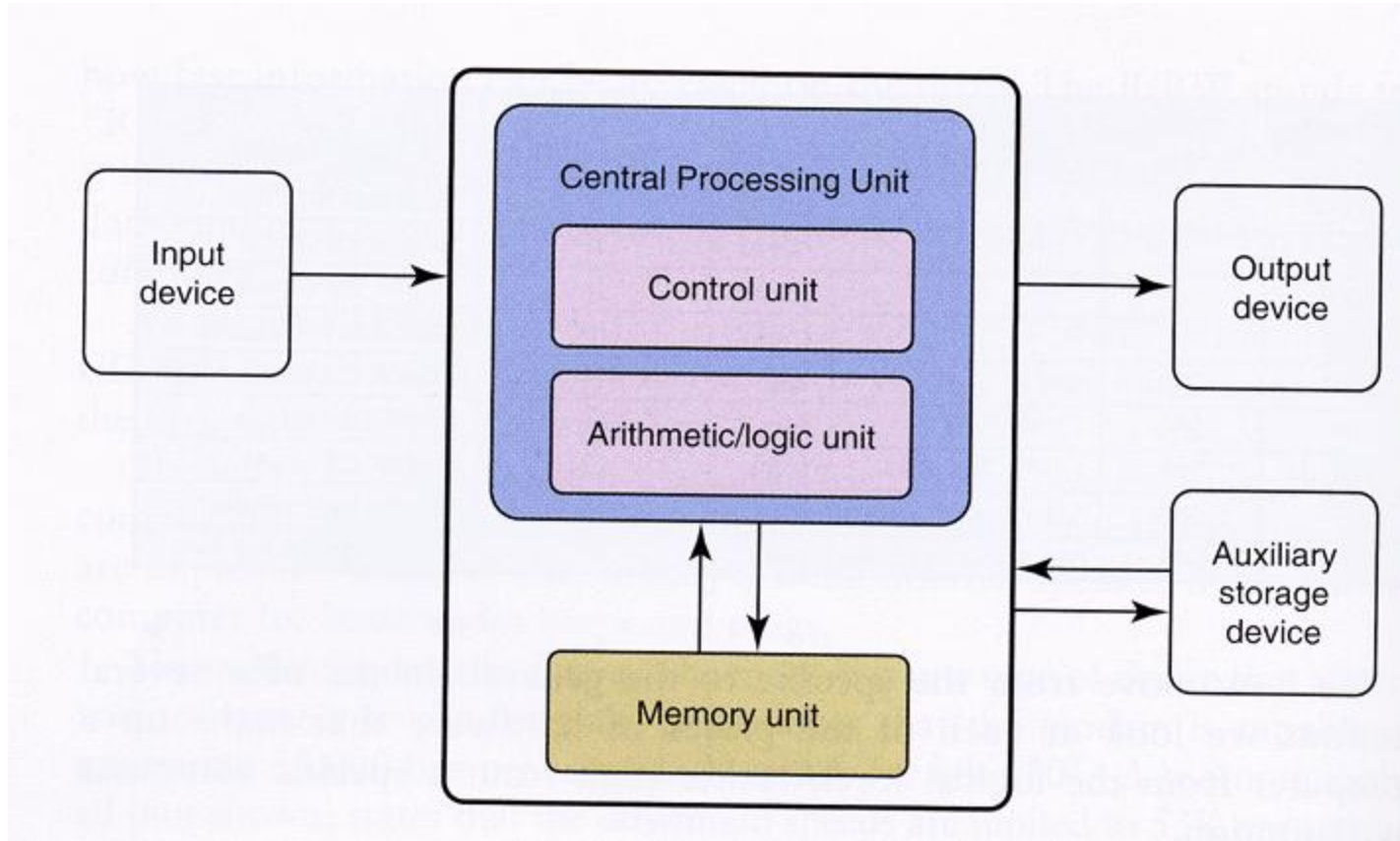
CSC 120.02: Introduction to Computer Science

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# Kilo, Mega, Giga...

Power of 10	Power of 2	Value of Power of 2	Prefix	Abbreviation	Derivation
$10^3$	$2^{10}$	1,024	kilo	K	Greek for thousandth
$10^6$	$2^{20}$	1,048,576	mega	M	Greek for large
$10^9$	$2^{30}$	1,073,741,824	giga	G	Greek for giant
$10^{12}$	$2^{40}$	-	tera	T	Greek for monster
$10^{15}$	$2^{50}$	-	peta	P	Greek prefix for five

# von Neumann Architecture



# The Fetch-Execute Cycle

- Fetch the next instruction
- Decode the instruction
- Get data if needed
- Execute the instruction

# RAM and ROM

- RAM: Random Access Memory
- ROM: Read-Only Memory

# Magnetic Disks

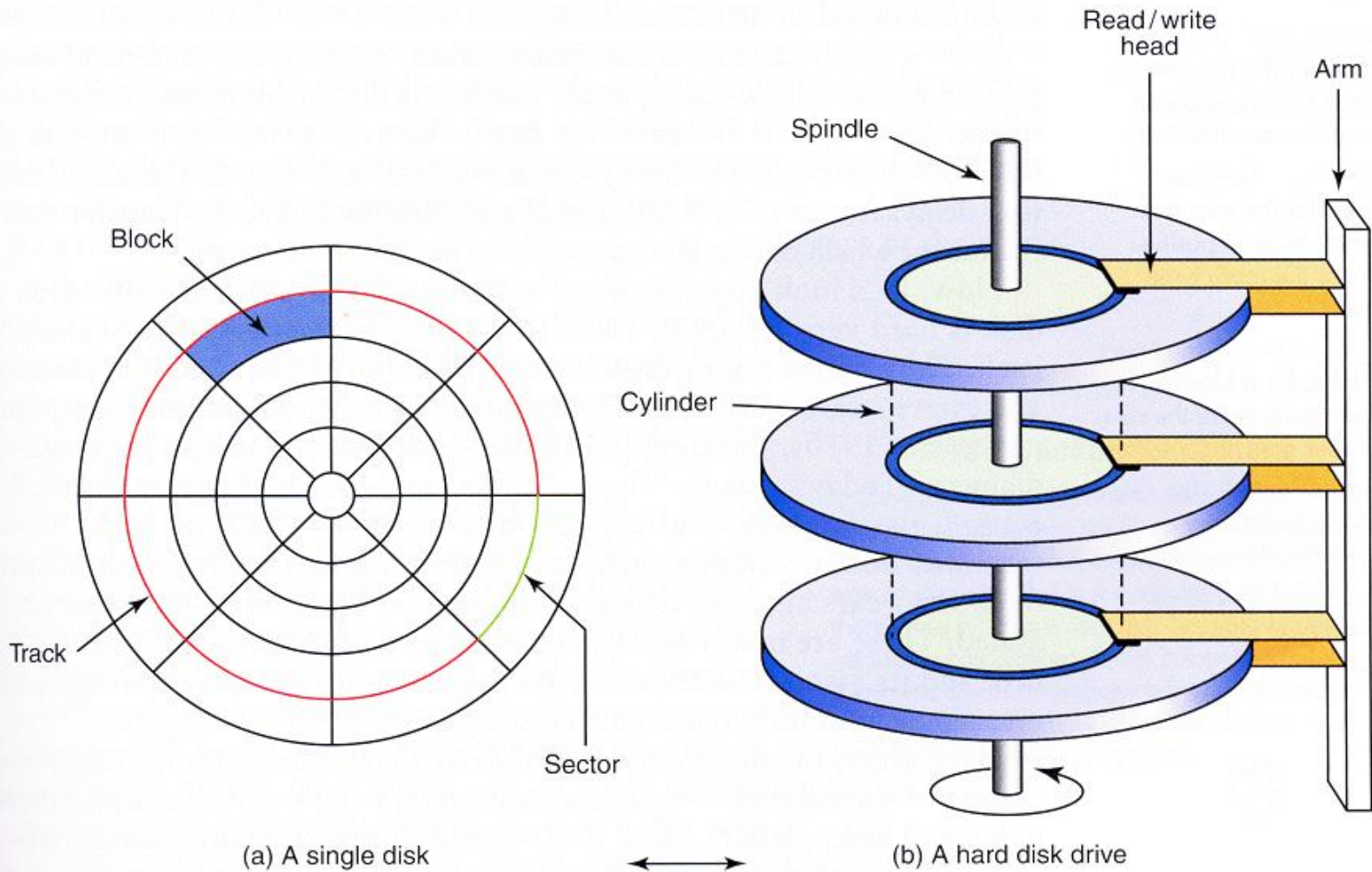


Figure 5.5 The organization of a magnetic disk

# Measures of Disk Drive's Efficiency

- *Seek time* is the time it takes for the read/write head to get positioned over the specified track
- *Latency* is the time it takes for the specified sector to spin to the read/write head
- *Access time* = *Seek time* + *Latency*. This is the time it takes for a block to start being read
- *Transfer rate* is the rate at which data is transferred from the disk to memory

# Non-von Neumann Architectures

- *Synchronous processing*: Multiple processors apply the same program in lock-step to multiple data sets
- *Pipelining processing*: Multiple processors are arranged in tandem, where each contributes one part of an overall computation
- *A shared memory configuration*: Multiple processors share a global memory