

Computer Hardware

ICD2O – Mr. Emmell

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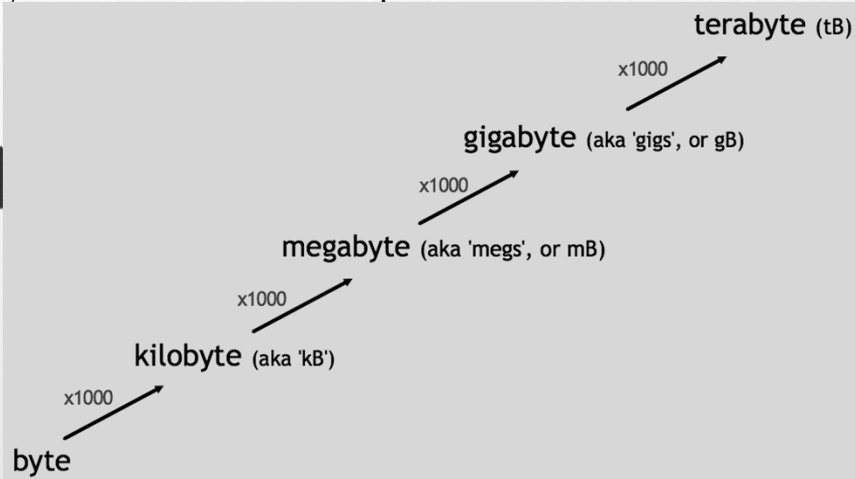
How much space on your “USB”?

How much RAM in your phone?

How much data can a BluRay hold?

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That whole B/KB/MB/GB/TB

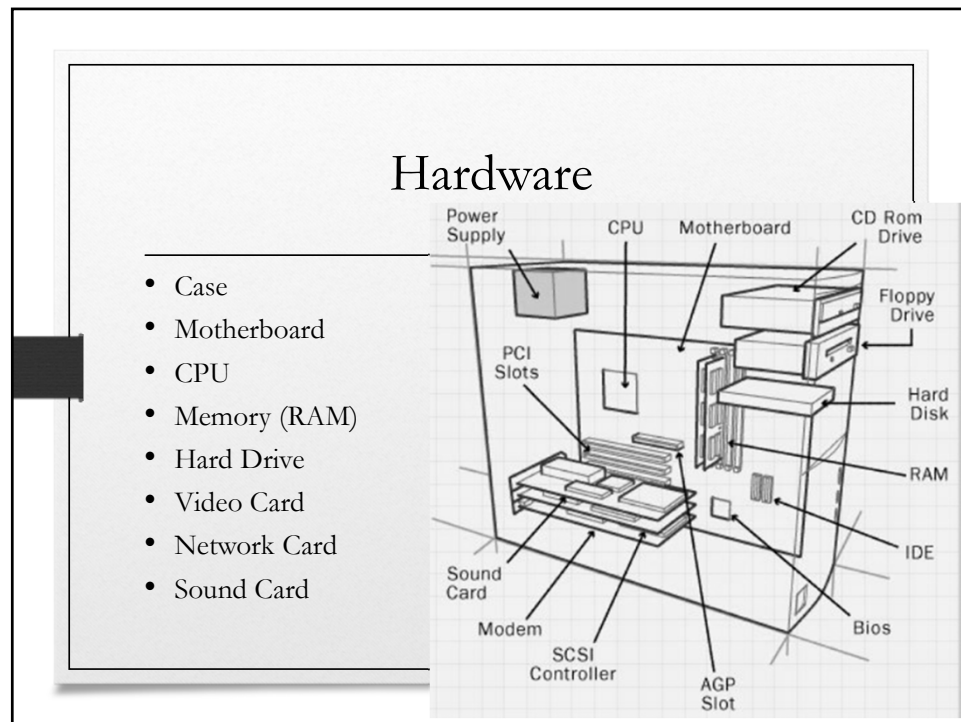


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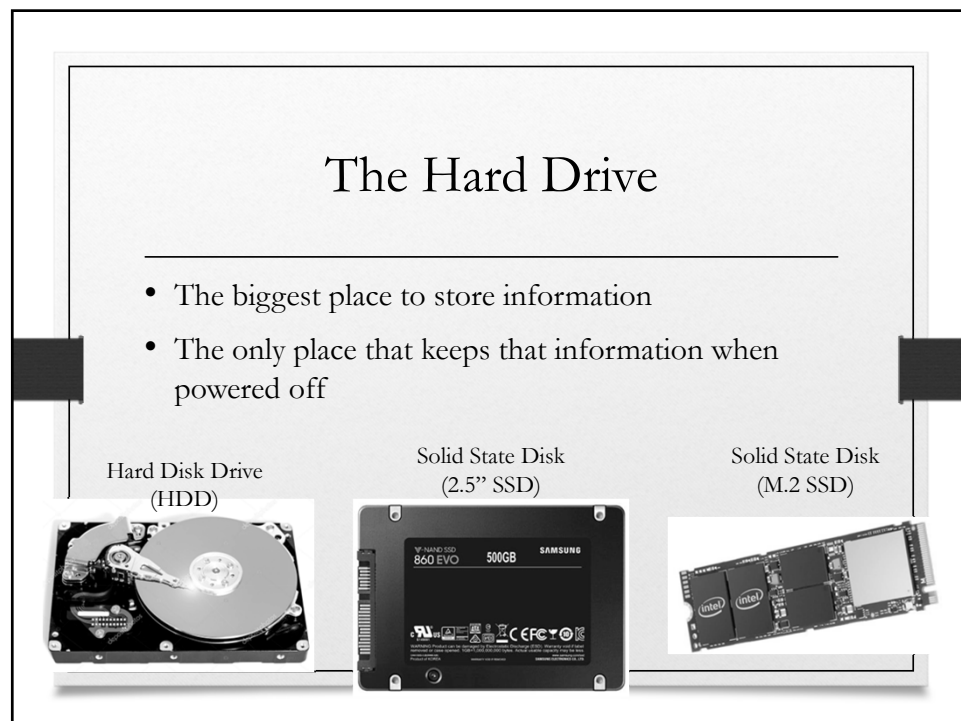
That whole B/KB/MB/GB/TB thing...

- So how many Bytes in 1 MB?
 - Each Megabyte has 1000 Kilobytes
 - $1 * 1000 = 1000$ Kilobytes
 - Each Kilobyte has 1000 bytes
 - $1000 * 1000 = 1\,000\,000$ bytes
- So how many Megabytes in 1.5 Terabytes?
 - $1.5 * 1000 \text{ (into G)} * 1000 \text{ (into M)} = 1\,500\,000$ Megabytes

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The Hard Drive

- Physical Interface? SATA or M.2
- **Speeds:** M.2 > 2.5" SSD > HDD
- **Physical Size:** SATA HDD > SATA SSD > M.2
- **Available Capacities:** SATA HDD > (M.2 / SATA SSD)

MANY Different capacities!

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Solid State vs. Spindle Hard Drive



1TB
SSD
\$100

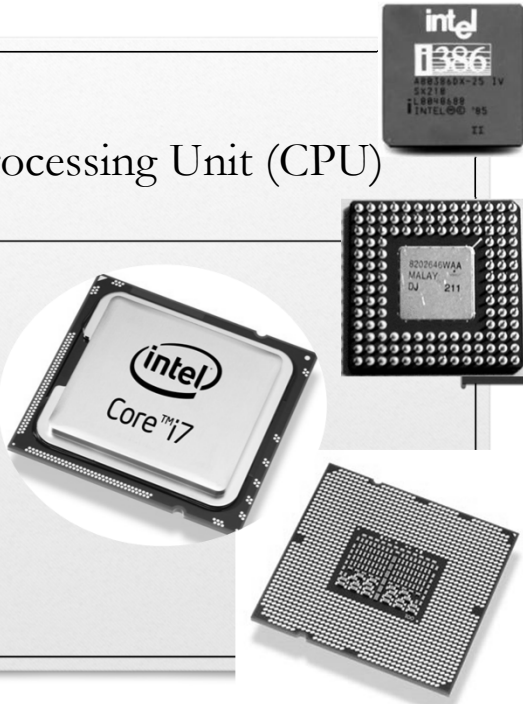


8TB HDD
\$150

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The Central Processing Unit (CPU)

- The 'brain' of the computer
- The part of the computer that :
 - Does calculations
 - Moves data around (into and out of memory)
 - Sends requests to other devices
- A snapshot of history:
 - 80386 (275,000 transistors, 1985)
 - 80486
 - Pentium
 - Pentium Pro, 2,3,4
 - Core
 - Core 2
 - Core i7 (781 million transistors, 2008)
 - Core i7 (3.2 billion transistors, 2016)
 - Core i7 (29 billion transistors, 2019)



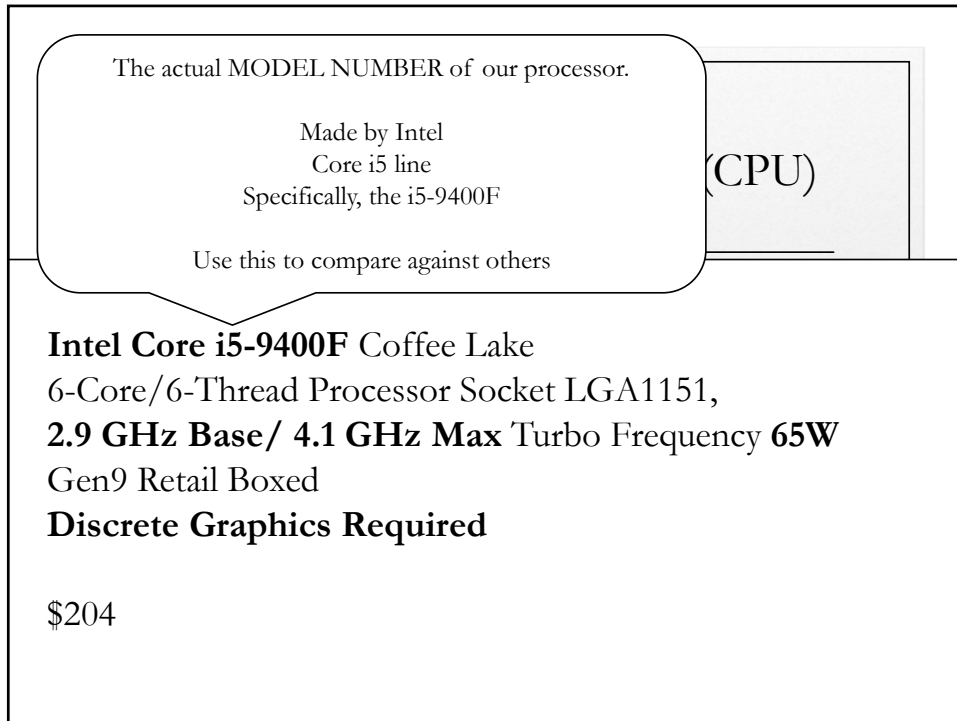
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The Central Processing Unit (CPU)

Intel Core i5-9400F Coffee Lake
 6-Core/6-Thread Processor Socket LGA1151,
2.9 GHz Base/ 4.1 GHz Max Turbo Frequency **65W**
 Gen9 Retail Boxed
Discrete Graphics Required

\$204

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The actual MODEL NUMBER of our processor.

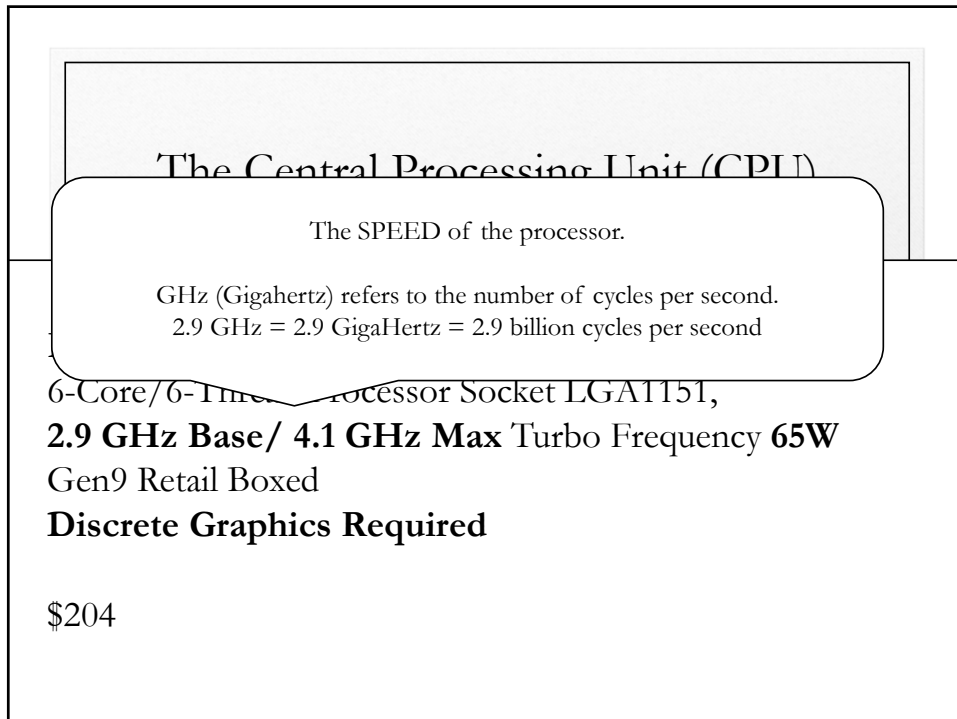
Made by Intel
Core i5 line
Specifically, the i5-9400F

Use this to compare against others

Intel Core i5-9400F Coffee Lake
6-Core/6-Thread Processor Socket LGA1151,
2.9 GHz Base/ 4.1 GHz Max Turbo Frequency **65W**
Gen9 Retail Boxed
Discrete Graphics Required

\$204

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The Central Processing Unit (CPU)

The SPEED of the processor.

GHz (Gigahertz) refers to the number of cycles per second.
2.9 GHz = 2.9 GigaHertz = 2.9 billion cycles per second

6-Core/6-Thread Processor Socket LGA1151,
2.9 GHz Base/ 4.1 GHz Max Turbo Frequency **65W**
Gen9 Retail Boxed
Discrete Graphics Required

\$204

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The Central Processing Unit (CPU)

Intel Core i5-12400, 6-Core/12-Thread, 2.9 GHz Base/4.7 GHz Max Turbo Frequency **65W**, Gen9 Retail Boxed, **Discrete Graphics Required**, \$204

The POWER consumed by this processor

65 Watts

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The Central Processing Unit (CPU)

Intel Core i5-12400, 6-Core/12-Thread, 2.9 GHz Base/4.7 GHz Max Turbo Frequency **65W**, Gen9 Retail Boxed, **Discrete Graphics Required**, \$204

Means there is no graphics card built in

This system requires a separate video card

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HOW It's Made

- <https://www.youtube.com/watch?v=Cg-mvrG-K-E>
- <https://www.youtube.com/watch?v=SeGqCl3YAaQ>

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Random Access Memory (RAM)

- The temporary working area where data and programs are stored, that have either recently been used or are currently being run.
- Much faster to read from and write to than the other kind of storage in a computer
- RAM can be compared to a person's short-term memory and the hard disk to the long-term memory.

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Random Access Memory (RAM)

\$30-\$200

- Much smaller than a hard disk.

