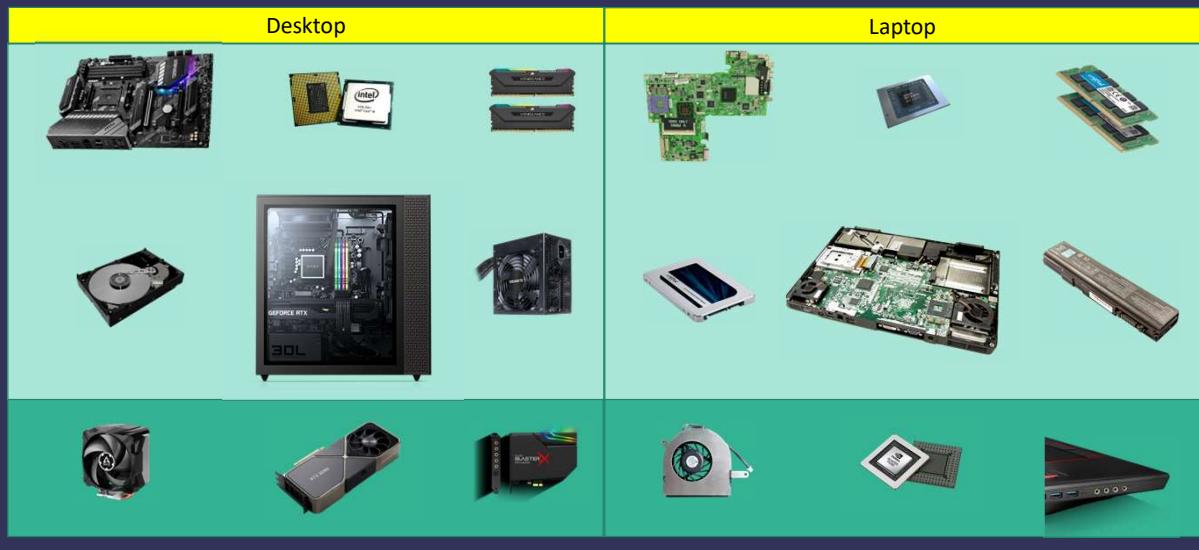


1



2

Inside the case



3

Inside the case



Motherboard



Processor



Cooling Device



Memory



Adapter



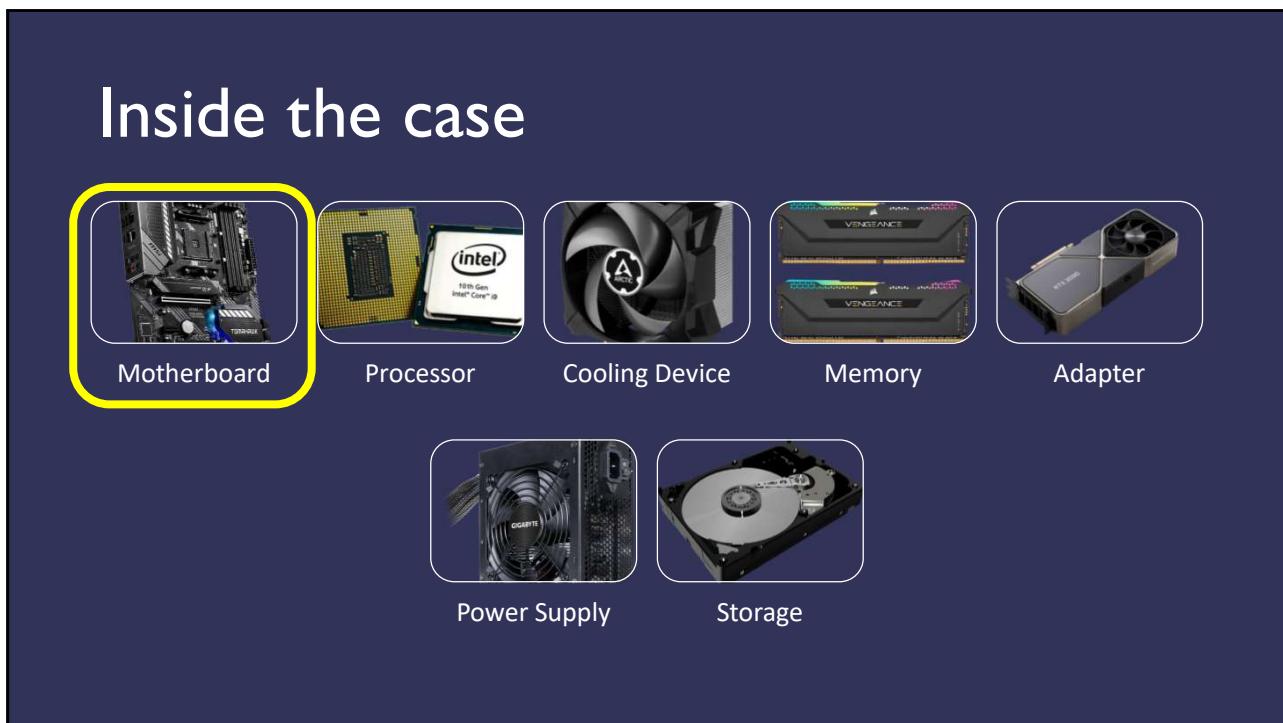
Power Supply



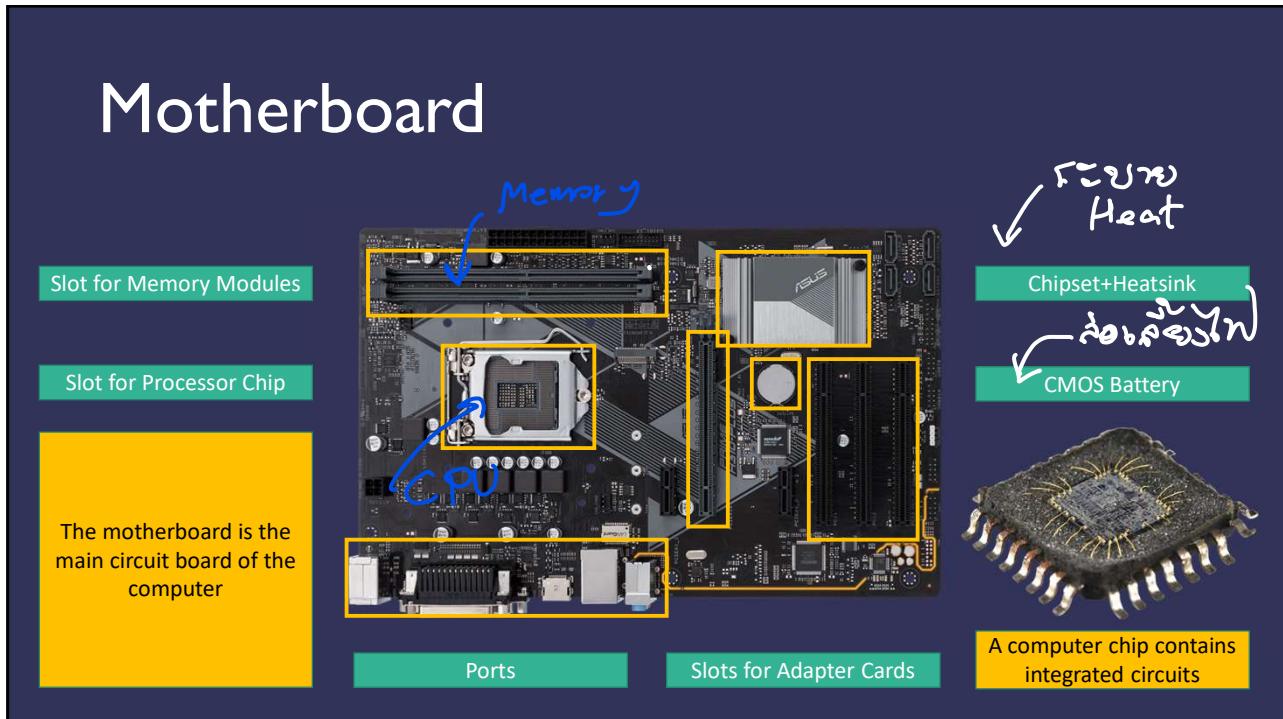
Storage

4

2



5



6

Inside the case



Motherboard



Processor



Cooling Device



Memory



Adapter



Power Supply



Storage

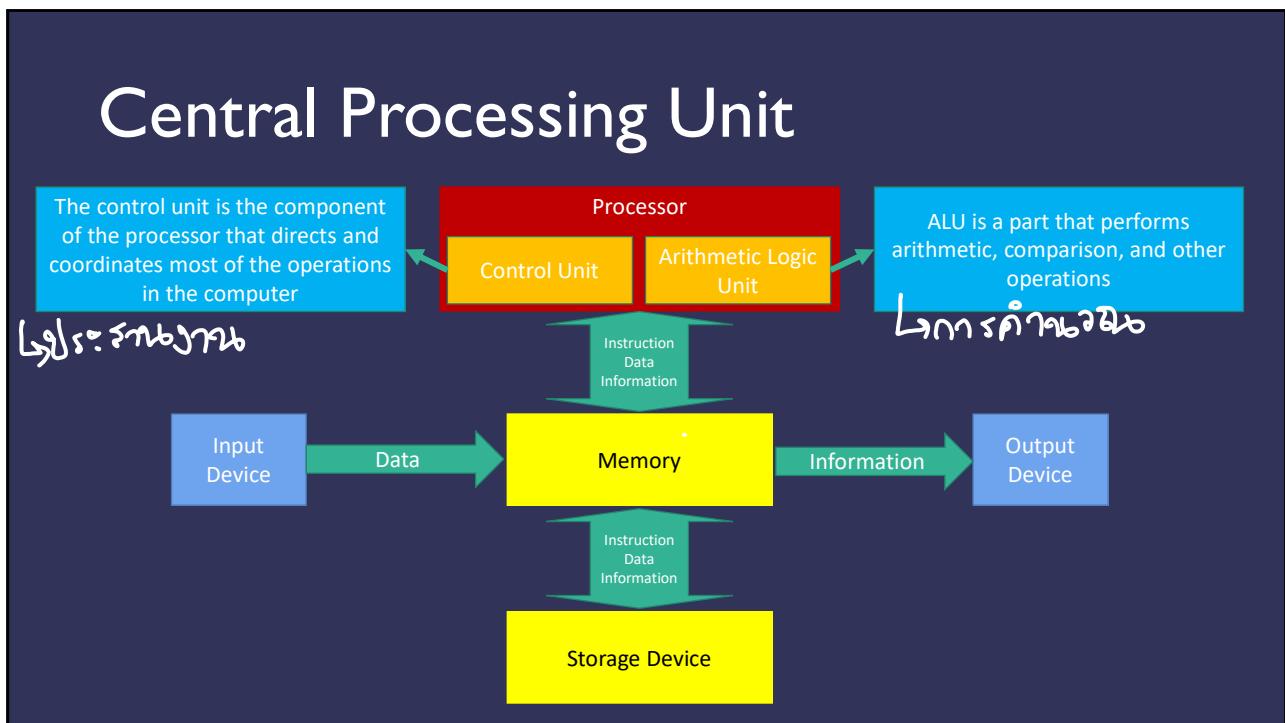
7

Central Processing Unit

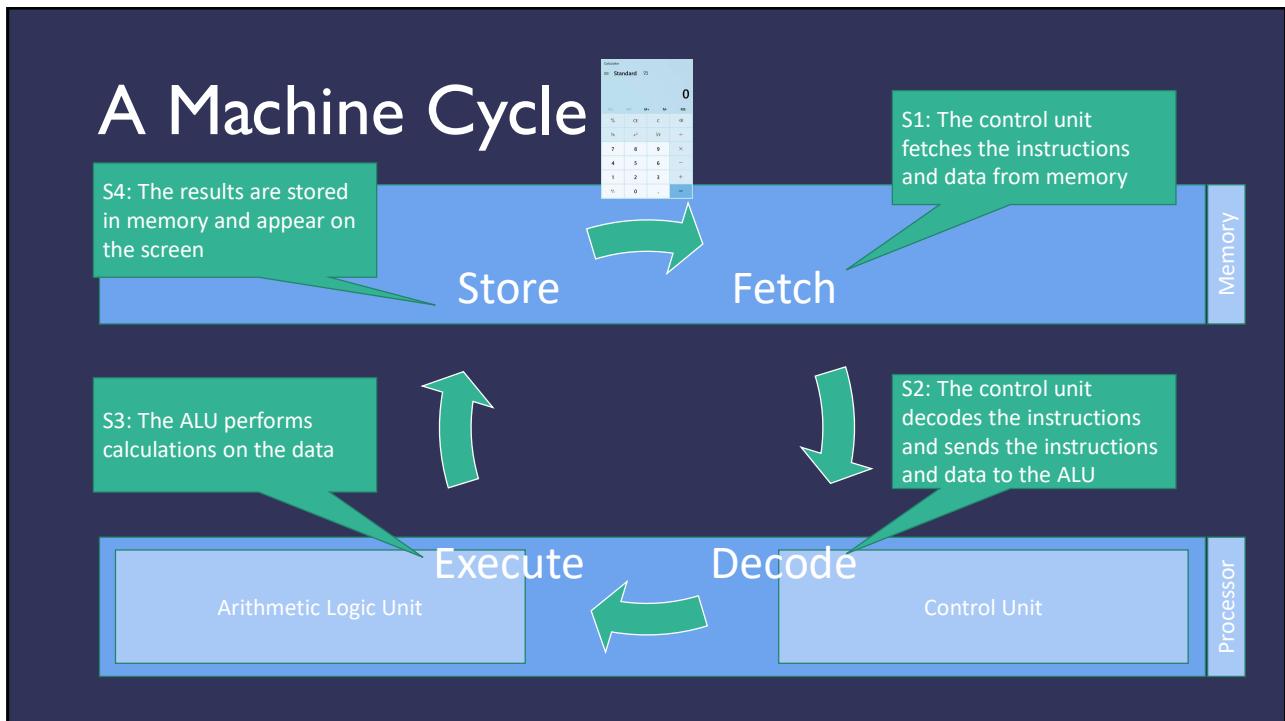
- The central processing unit (CPU), also known as the processor, interprets and carries out the basic instructions that operate a computer
- A single CPU performs as a multi-core processor
 - Two or more separate cores in a single one
- It consists of a control unit and an arithmetic logic unit (ALU)



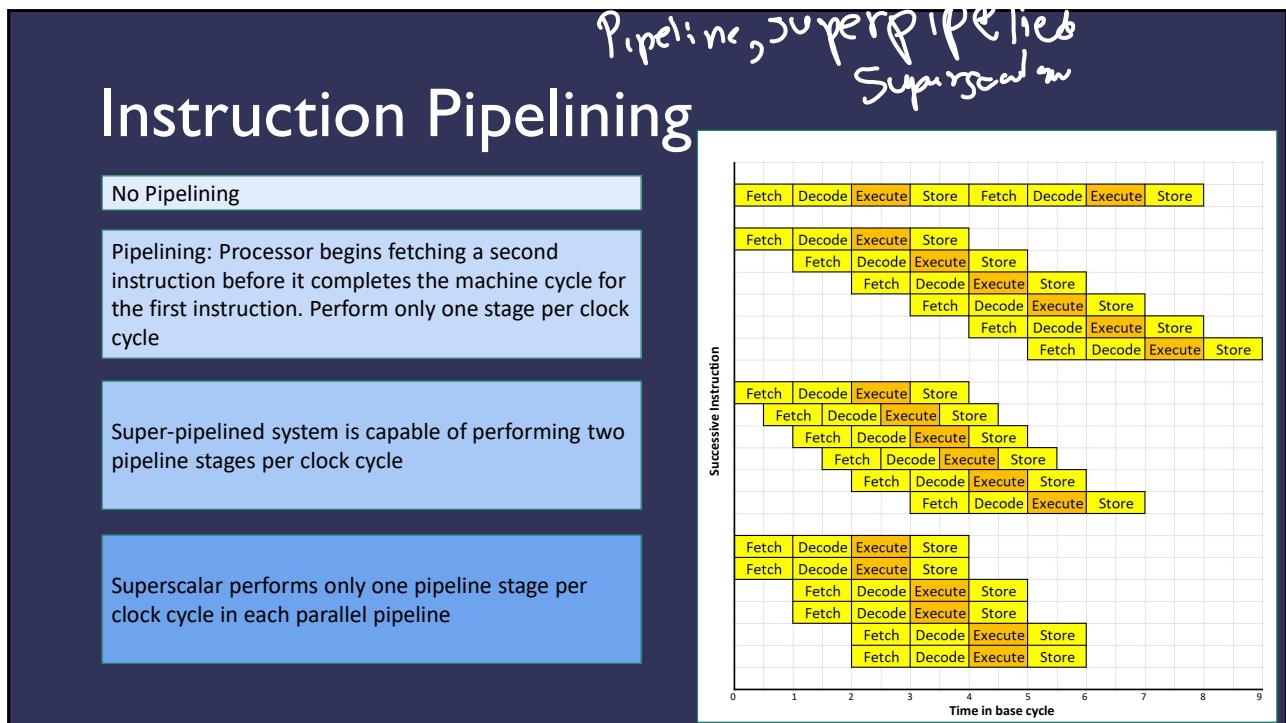
8



9



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Data Representation

Analog signals

There are continuous and vary in strength and quality



Digital signals

Digital signals are in one of two stages – On & Off



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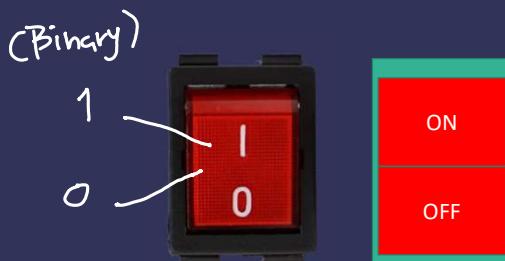
Data Representation

Most computers are digital that is the binary system

It is all 0's and 1's in the computer. We call them "bits"

Using two unique digits (0 and 1)

8 bits = 1 byte = 1 character



Characters								
2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	DEC
0	1	0	0	0	1	0	1	69
0	0	1	0	1	0	1	0	42
0	0	1	1	0	1	1	0	54

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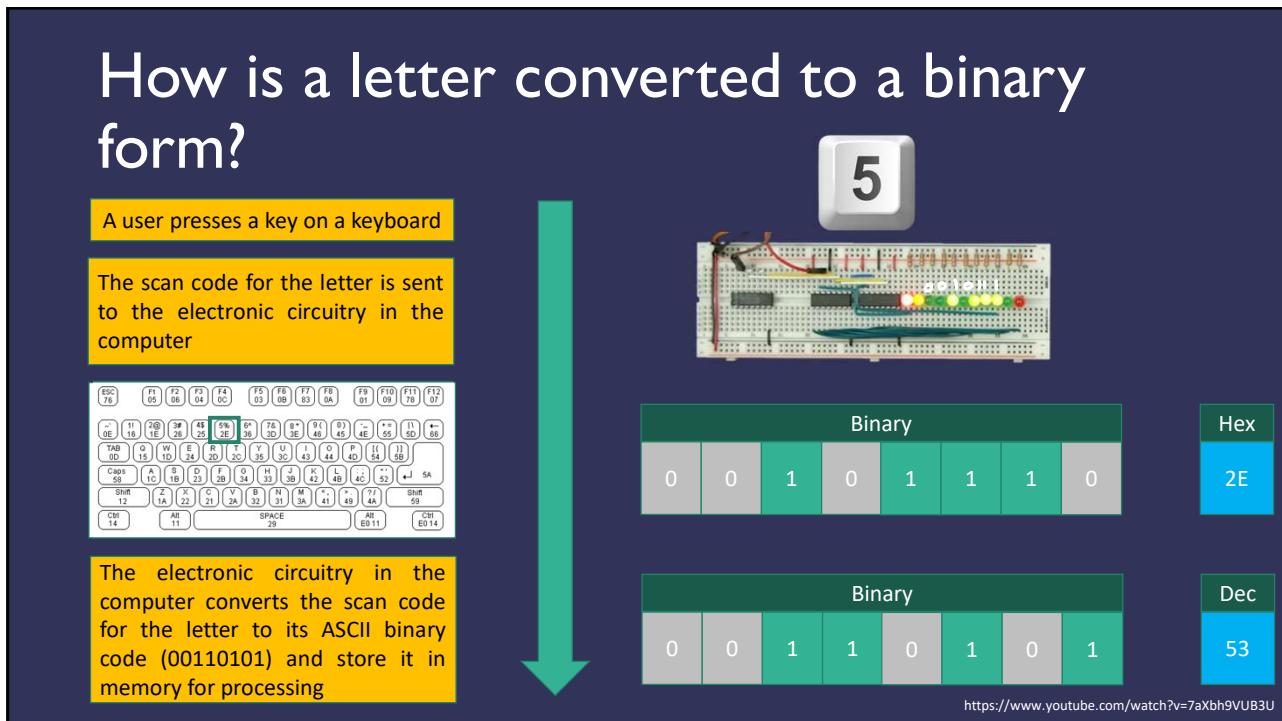
ASCII Table

American Standard Code For Information Interchange

CHAR	DEC	Decimal	Hexadecimal	Binary	Octal Char	Decimal	Hexadecimal	Binary	Octal Char	Decimal	Hexadecimal	Binary	Octal Char
E	69	69	45	01000101	B	69	45	01000101	B	69	45	01000101	B
*	42	42	2A	00101010	A	42	2A	00101010	A	42	2A	00101010	A
6	54	54	36	01000110	6	54	36	01000110	6	54	36	01000110	6
	0	0	0	00000000	0	0	00000000	0	0	0	00000000	0	0
	1	1	1	00000001	1	1	00000001	1	1	1	00000001	1	1
	2	2	2	00000010	2	2	00000010	2	2	2	00000010	2	2
	3	3	3	00000011	3	3	00000011	3	3	3	00000011	3	3
	4	4	4	00000100	4	4	00000100	4	4	4	00000100	4	4
	5	5	5	00000101	5	5	00000101	5	5	5	00000101	5	5
	6	6	6	00000110	6	6	00000110	6	6	6	00000110	6	6
	7	7	7	00000111	7	7	00000111	7	7	7	00000111	7	7
	8	8	8	00001000	8	8	00001000	8	8	8	00001000	8	8
	9	9	9	00001001	9	9	00001001	9	9	9	00001001	9	9
	10	A	A	00001010	10	A	00001010	10	A	A	00001010	10	A
	11	B	B	00001011	11	B	00001011	11	B	B	00001011	11	B
	12	C	C	00001100	12	C	00001100	12	C	C	00001100	12	C
	13	D	D	00001101	13	D	00001101	13	D	D	00001101	13	D
	14	E	E	00001110	14	E	00001110	14	E	E	00001110	14	E
	15	F	F	00001111	15	F	00001111	15	F	F	00001111	15	F
	16	10	10	00000000	10	10	00000000	10	10	10	00000000	10	10
	17	11	11	00000001	11	11	00000001	11	11	11	00000001	11	11
	18	12	12	00000010	12	12	00000010	12	12	12	00000010	12	12
	19	13	13	00000011	13	13	00000011	13	13	13	00000011	13	13
	20	14	14	00000100	14	14	00000100	14	14	14	00000100	14	14
	21	15	15	00000101	15	15	00000101	15	15	15	00000101	15	15
	22	16	16	00000110	16	16	00000110	16	16	16	00000110	16	16
	23	17	17	00000111	17	17	00000111	17	17	17	00000111	17	17
	24	18	18	00000000	18	18	00000000	18	18	18	00000000	18	18
	25	19	19	00000001	19	19	00000001	19	19	19	00000001	19	19
	26	1A	1A	00000010	20	1A	00000010	20	1A	1A	00000010	20	1A
	27	1B	1B	00000011	21	1B	00000011	21	1B	1B	00000011	21	1B
	28	1C	1C	00000100	22	1C	00000100	22	1C	1C	00000100	22	1C
	29	1D	1D	00000101	23	1D	00000101	23	1D	1D	00000101	23	1D
	30	1E	1E	00000110	24	1E	00000110	24	1E	1E	00000110	24	1E
	31	1F	1F	00000111	25	1F	00000111	25	1F	1F	00000111	25	1F
	32	20	20	00000000	26	20	00000000	26	20	20	00000000	26	20
	33	21	21	00000001	27	21	00000001	27	21	21	00000001	27	21
	34	22	22	00000010	28	22	00000010	28	22	22	00000010	28	22
	35	23	23	00000011	29	23	00000011	29	23	23	00000011	29	23
	36	24	24	00000100	30	24	00000100	30	24	24	00000100	30	24
	37	25	25	00000101	31	25	00000101	31	25	25	00000101	31	25
	38	26	26	00000110	32	26	00000110	32	26	26	00000110	32	26
	39	27	27	00000111	33	27	00000111	33	27	27	00000111	33	27
	40	28	28	00000000	34	28	00000000	34	28	28	00000000	34	28
	41	29	29	00000001	35	29	00000001	35	29	29	00000001	35	29
	42	2A	2A	00000010	36	2A	00000010	36	2A	2A	00000010	36	2A
	43	2B	2B	00000011	37	2B	00000011	37	2B	2B	00000011	37	2B
	44	2C	2C	00000100	38	2C	00000100	38	2C	2C	00000100	38	2C
	45	2D	2D	00000101	39	2D	00000101	39	2D	2D	00000101	39	2D
	46	2E	2E	00000110	40	2E	00000110	40	2E	2E	00000110	40	2E
	47	2F	2F	00000111	41	2F	00000111	41	2F	2F	00000111	41	2F

<https://commons.wikimedia.org/wiki/File:ASCII-Table.svg>

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Inside the case



Motherboard



Processor



Cooling Device



Memory



Adapter



Power Supply



Storage

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Cooling Device

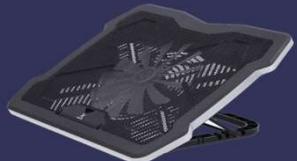
A processor chip generates heat that could cause the chip to malfunction or fail. Cooling device is necessary.



Heat Sink



Liquid Cooling Technology



Cooling Pad

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Inside the case



Motherboard



Processor



Cooling Device



Memory



Adapter



Power Supply



Storage

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Memory

- Memory consists of electronic components that store instructions waiting to be executed by the processor, data needed by those instructions, and the results of processing the data
- Each location in memory has an address

ක්‍රියා තේව්‍ය සේවක

Volatile Memory

Loses its contents when power is turned off, for examples, RAM

ක්‍රියා තේව්‍ය සේවක

Non-volatile Memory

Does not lose contents when power is removed, for examples, ROM, flash memory, CMOS

Instruction තුළ තැබූ ඇත්තා හෝ නො ඇත්තා

20

Volatile Memory - Random Access Memory (RAM)

Speed
SRAM > DRAM

SRAM	
Static RAM (SRAM)	DRAM
<p>SRAM is a semiconductor memory.</p> <p>It stores data for as long as power is supplied in the system.</p> <p>It is much faster and consume less power than DRAM.</p> <p>It is mostly used as a cache memory for the CPU.</p>	<p>DRAM is made up of a transistor and a capacitor within an integrated circuit. Data bits are stored in the capacitor.</p> <p>It is much cheaper than SRAM. DRAM has a higher storage capacity.</p> <p>It is widely used as a computer's main memory.</p>



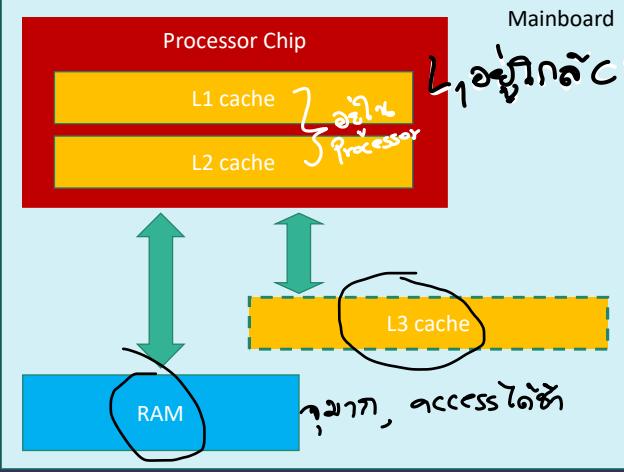
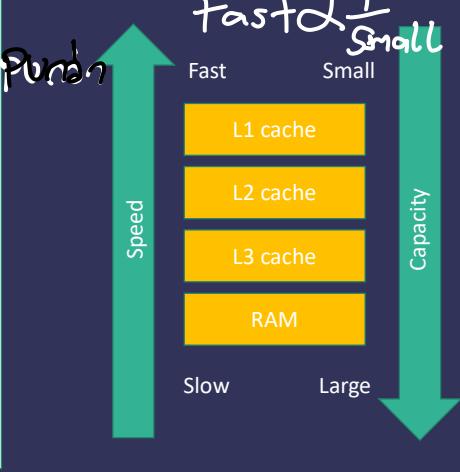


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Memory Cache

- ගේපිංසුලක්ස්තමෙන්ඩ් ප්‍රියා

- It speeds the processes of the computer because it stores frequently used instructions and data

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Non-volatile Memory - Read Only Memory (ROM) ປະເທດການໂຄງການໄຟຟ້າ

ROM	ເລີຍ serial ທັງໝົດ	(ບູ້ອຸ້ນ?) BIOS
It refers to memory chips storing permanent data and instructions by manufacturer.	ໄກຕົວຈຳນວດ The microprocessor can read from ROM, but it cannot write to it or modify it.	ບູ້ອຸ້ນ → ROM ແຫວຍ It stands for Basic Input/Output System, pronounced as bye-oss.
It contain special instructions for the computer, that are <u>always there</u> because they're not erasable.	ມານີ ROM ໄດ້ ມານີ BIOS ໄດ້	ມານີ Preset ກໍ່ຕົວການ

23

Electrically Erasable Programmable Read-Only Memory (EEPROM) SIM Card



It is called “flash memory”

It can be erased electronically and rewritten

Most computers use flash memory to hold their start-up instructions because it allows the computer to update its contents easily.

Flash memory chips store data and programs on many mobile devices and peripheral devices, such as smartphones, portable media players.

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Complementary Metal–Oxide–Semiconductor (CMOS) technology

It uses battery power to retain information when the power to the computer is off.

- Computer settings

Low consuming power

Slower than RAM

CMOS & BIOS

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Access Time

Access time is the amount of time it takes the computer processor to read data from the memory.

The access time of memory may be represented in either ns (nanoseconds).

The lower the time, the better or faster the computer should perform.

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Inside the case



Motherboard



Processor



Cooling Device



Memory



Adapter



Power Supply



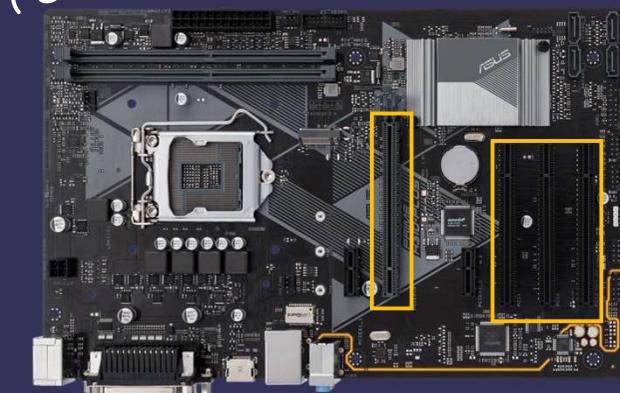
Storage

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Adapters

సాధనార్థమై

Adapter లను నీరు Expansion slot



Adapter Card

It enhances functions of a component of a desktop or system unit and/or provides connections to peripherals

Expansion slot

It is a socket on a motherboard that hold an adapter card. There are a few expansion slots (Peripheral Component Interconnect: PCI) in a motherboard.

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Adapter Cards

It comes with "Plug and Play" capability – the computer automatically can recognize peripheral devices as you install them



Graphics Processing Unit



Sound Card

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Adapter

Dongle

A USB adapter enhances functions of a mobile computer and/or provides connections to peripheral devices



Bluetooth



Mobile Broadband Modem

30

Buses ප්‍රභාවන්/උරුම්පිටියා

Bus	Physical Types of Buses
It allows the various devices both inside and attached to the system unit to communicate with each other	System bus (Front-side bus): it connects processor to main memory Processor → Main memory (RAM, ROM)
Data bus – transfers only data	Backside bus: it connects processor to cache Processor → Cache
Address bus – transfers only address that store data	Expansion bus: it connects processor to peripherals Processor → Peripherals
The width (word size) indicates the number of bits that can be transmitted at once. A 32-bit bus will share 32 bits of data. That is equivalent to 4 bytes (1 byte = 8-bit)	

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Inside the case



Motherboard



Processor



Cooling Device



Memory



Adapter



Power Supply



Storage

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Power Supply

- The power supply or laptop AC adapter converts the wall outlet AC power into DC power
- Mobile computers and devices can run using either a power supply or batteries
 - Batteries typically are rechargeable lithium-ion batteries



Desktop



Laptop

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Inside the case



Motherboard



Processor



Cooling Device



Memory



Adapter

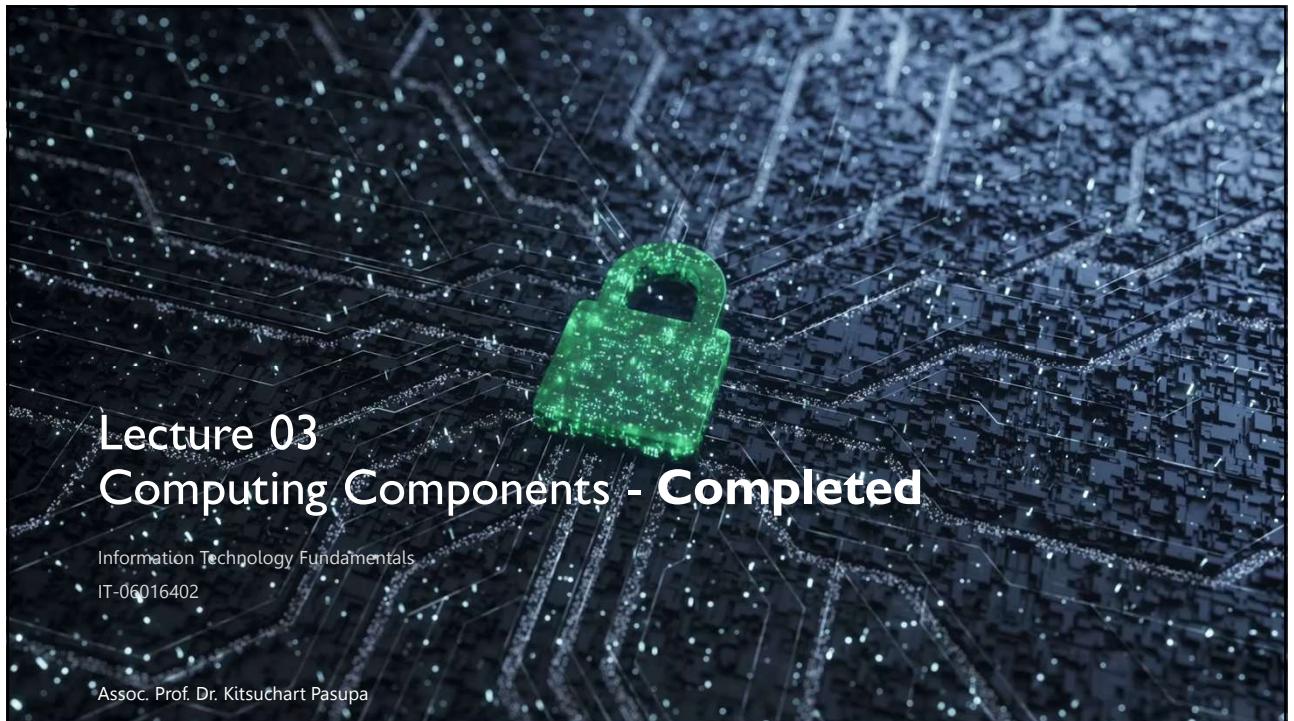


Power Supply



Storage

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