

COMPUTER SCIENCES

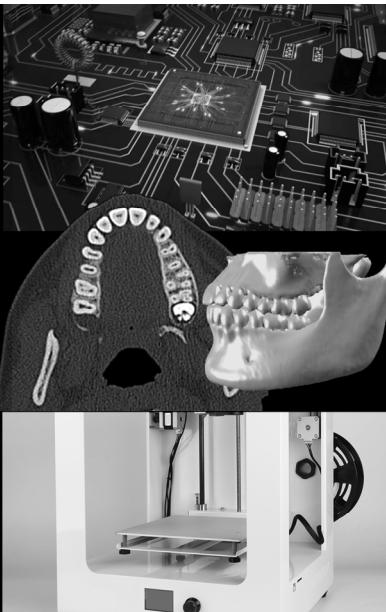
CUSTOMIZE YOUR COMPUTER - DIY
(DEMANDS, PERFORMANCE VS PRICE)

Chia-Feng Lu 盧家鋒

Department Of Biomedical Image And
Radiological Sciences, NYCU
Ext. 67308
alvin4016@nycu.edu.tw

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Computer assembly

- Computer Case
- Step 1: Component selection
- Step 2: Hardware and driver installation

Please download handouts from (Week 7)
http://cflu.lab.nycu.edu.tw/CFLu_course_CompSci.html

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CASE 機殼

- Case selection
 - Case size and expandability
 - Ease of assembly and disassembly
 - Case material and heat dissipation
 - Front panel connection ports
 - Exterior Design

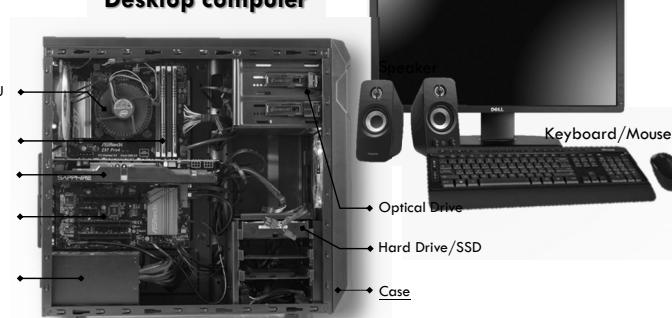


It is not recommended to use the power supply included in the case!

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Computer Assembly - DIY

Desktop computer



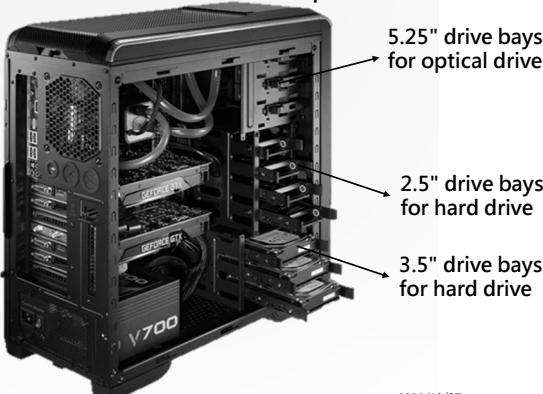
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Case Size And Expandability

- Sufficient size for expansion and to facilitate heat dissipation



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Ease Of Assembly And Disassembly

- Screw-free, cassette design, no scratching



http://www.coolermaster.com/case/mid-tower/cm693/

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- Modular design allows for more flexible use of space



Case Material And Heat Dissipation

- Aluminum/aluminum-magnesium alloy for better heat dissipation
- Cooling hole design and possibility of adding cooling fan
- Clean the case!



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Front Panel Connection Ports

- Convenient for users to connect external devices such as headphones, microphones, USB devices, etc.
- Must be connected to the motherboard with the cable for the front panel.



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DIY STEP 1: COMPONENT SELECTION

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TO MAKE A RIGHT CHOICE

On a limited budget...

1. Understand your needs

3. Find the best option



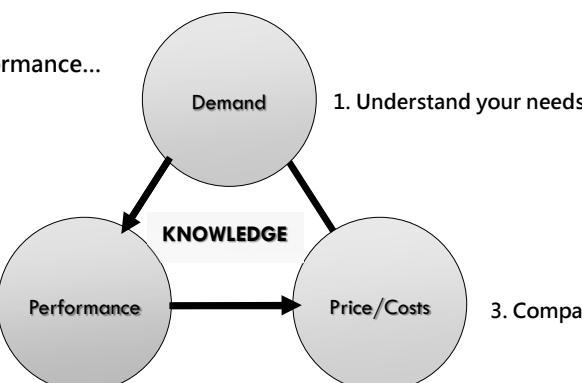
2. Compare price online

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TO MAKE A RIGHT CHOICE

In the pursuit of performance...



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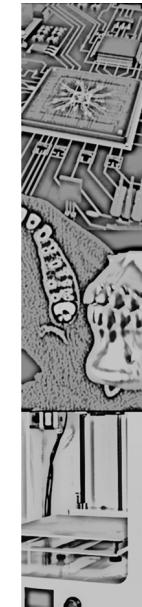


Group Discussion – User Demands



Types	Groups
General home user	1,6,11,16
Computer teacher in high school	2,7,12,17
Youtuber	3,8,13,18
Radiologist	4,9,14,19
AI software engineer	5,10,15,20

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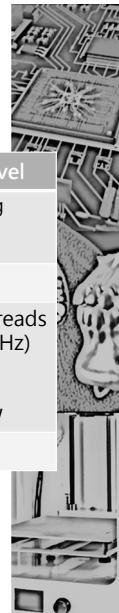


Central Processing Unit (CPU)

	Entry level	Economical level	Business level	High-end level
Applications	Social media, emails	Entertainment, office processing	Video editing, commercial usage	Engineering calculation, gamer
Model	Intel Celeron	AMD R3	Intel i5	Intel i7
Specifications	2 cores/2 threads 3.4GHz 4MB Cache UHD710 TDP 46W	4 cores/8 threads 3.8GHz (4.0GHz) 4MB Cache No build-in GPU TDP 65W	6 cores/12 threads 3.0GHz (4.6GHz) L3 18MB UHD770 TDP 65W	12 cores/20 threads 3.6GHz (5.0GHz) L3 25MB UHD770 TDP 125W
Price	~1900	~3000	~6800	~13100

The recommended CPU purchase price is about 20%~30% of the total budget.

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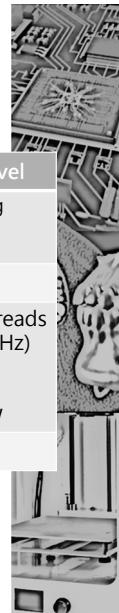


Memory Module

	Entry level	Economical level	Business level	High-end level
Applications	Social media, emails	Entertainment, word processing	Video editing, commercial usage	Engineering calculation, gamer
Model	DDR4	DDR4	DDR5	DDR5
Specifications	8 GB DDR4 module 3200 MHz Life-time warranty	8 GB DDR4 module 3200 MHz Life-time warranty	8 GB x 2 DDR5 module 4800 MHz Life-time warranty	16 GB x 4 DDR5 module 4800 MHz Life-time warranty
Price	600	600	2000	7200

- Memory price fluctuates a lot.
- >3GB, should be used with 64-bit operating system.

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Motherboard

	Entry level	Economical level	Business level	High-end level
Applications	Social media, emails	Entertainment, word processing	Video editing, commercial usage	Engineering calculation, gamer
Model	H610M-K	B550M-K	B660-G	Z690-P
Specifications	LGA 1700 socket Intel H610 chipset DDR4 x 2, dual PCI-E 3.0 x 1 SATA 6GB x 4 M.2 x 1 Micro ATX	AM4 socket AMD B550 chipset DDR4 x 4, dual PCI-E 3.0, 4.0 x 1 SATA 6GB x 4 M.2 x 2 Micro ATX	LGA 1700 socket Intel B660 chipset DDR5 x 4, dual PCI-E 3.0, 4.0, 5.0 SATA 6GB x 4 M.2 x 2 Wi-Fi 6, BT v5.2 Micro ATX	LGA 1700 socket Intel Z690 chipset DDR5 x 4, dual PCI-E 3.0, 4.0, 5.0 SATA 6GB x 4 M.2 x 3 ATX
Price	2900	2900	6000	6500

- Be sure to purchase a CPU compatible chipset
- Sufficient types and numbers of backplane I/O ports

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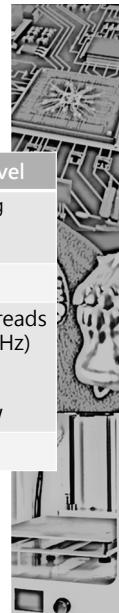


Graphics Card

	Entry level	Economical level	Business level	High-end level
Applications	Social media, emails	Entertainment, word processing	Video editing, commercial usage	Engineering calculation, gamer
Model	CPU build-in	GT1030-2GD5	GTX1660-6GD6	RTX3060Ti-8GD6
Specifications	UHD710	NVIDIA GeForce GT1030 GPU GDDR5 2GB PCI-E 3.0 CUDA Core 384 D1H1 (4K) 75W	NVIDIA GeForce GTX1660 GPU GDDR6 6GB PCI-E 3.0 CUDA Core 1408 D1H1P1 (8K) + 1 x 8-pin power	NVIDIA GeForce RTX3060 GPU GDDR6 8GB PCI-E 4.0 CUDA Core 4864 H1P3 (8K) + 1 x 8-pin power
Price	0	2900	6000	13000

- When a new generation chip is launched, the price of the previous generation usually drops significantly
- Be sure to check whether the video output port meets the demand.

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Price Comparison & Bargain

- Do check the price on the Internet.
- Confirm the model specifications before paying.

Bargain

- Little room for bargains if you only buy few components.
- Buy all kinds of parts and components from the same store.
- Request free accessories (keyboards, mouse, speakers...) on demand.

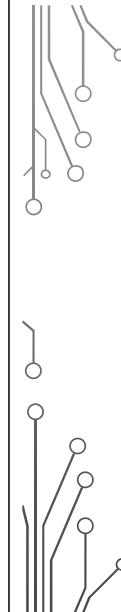
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DIY STEP 2: HARDWARE AND DRIVER INSTALLATION

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DIY References

- How to build a gaming PC: a beginner's guide
 - Instruction videos → [links](#)
- [阿咪愛教學] 硬體組裝DIY·圖解安裝流程
 - 開箱到安裝步驟照片 → [連結](#)
- [痞客邦3C - MiLo BLOG]圖解DIY組裝電腦全過程
 - 安裝步驟照片 → [連結](#)

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Computer Components

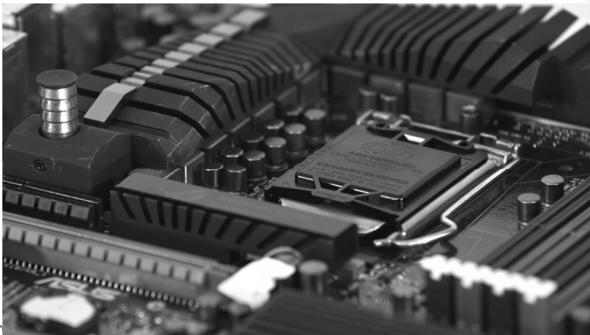


[阿咪愛教學] 硬體組裝DIY·圖解安裝流程

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DIY STEP 1: INSTALL CPU



Youtube @ Techquickie
<https://youtu.be/5qczGR4KMnY>

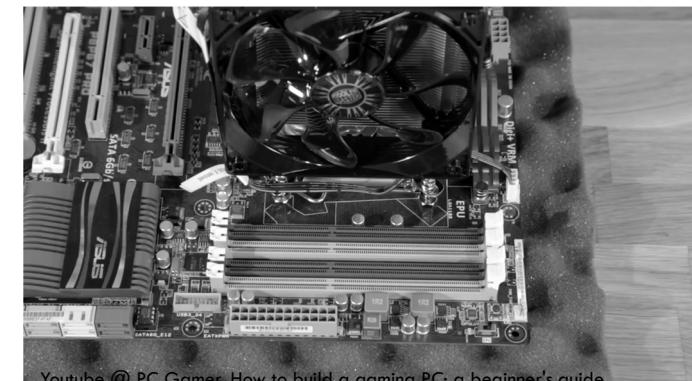
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[阿啾愛教學] 硬體組裝DIY-圖解安裝流程
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DIY STEP 2: INSTALL RAM

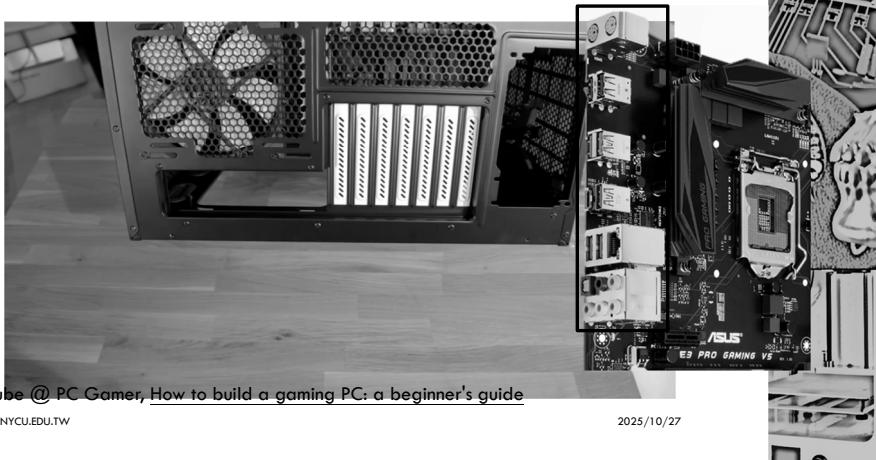


Dual-channel architecture

Youtube @ PC Gamer, [How to build a gaming PC: a beginner's guide](#)

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DIY STEP 3: INSTALL THE IO SHIELD



Youtube @ PC Gamer, [How to build a gaming PC: a beginner's guide](#)

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DIY STEP 4: INSTALL THE MOTHERBOARD



Youtube @ PC Gamer, [How to build a gaming PC: a beginner's guide](#)

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DIY STEP 5: INSTALL POWER SUPPLY



Youtube @ PC Gamer, [How to build a gaming PC: a beginner's guide](#)

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DIY STEP 6: CONNECT POWER & WIRES



Youtube @ PC Gamer, [How to build a gaming PC: a beginner's guide](#)

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DIY STEP 7: INSTALL HDD

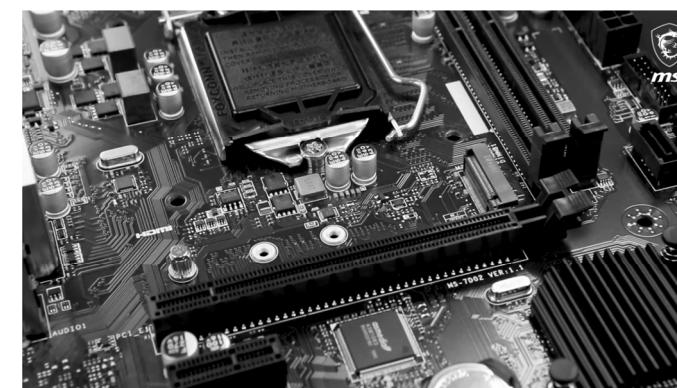


Youtube @ PC Gamer, [How to build a gaming PC: a beginner's guide](#)

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DIY STEP 8: INSTALL SSD



Youtube @ MSI How-to Channel, [MSI® HOW-TO install M.2 SSD correctly](#)

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DIY STEP 9: PLUG IN SATA POWER



Youtube @ PC Gamer, [How to build a gaming PC: a beginner's guide](#)

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DIY STEP 10: INSTALL GRAPHICS CARD



Youtube @ PC Gamer, [How to build a gaming PC: a beginner's guide](#)

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After The Hardware Installation Is Completed Power on and Trouble Shooting!

- Install the operating system
- Install drivers for each component
 - Order: motherboard, graphics card (CPU, memory, hard disk, CD-ROM drive do not need to be installed)
 - Method 1: Put in the driver CD
 - Method 2: Download the latest drivers from the official website
- Partition hard drives, set up networks, and install anti-virus software

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THE END

ALVIN4016@NYCU.EDU.TW

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