

اللهم صلي وسلم وبارك على سيدنا محمد
وعليه وأصحابه أجمعين





مهم جداً

هذا الملف للمراجعة السريعة واخذ الملاحظات عليه فقط ،لانه يحتوي على اقل من 20٪ مما يتم شرحه في الفيديوهات
الاستعجال والاعتماد عليه فقط سوف يجعلك تخسر كمية معلومات وخبرات كثيرة

يجب عليك مشاهدة فيديو الدرس كاملا
لاتنسى عمل لايك ومشاركة القناة لتعلم الفائدة لجميع
لا تنسونا من دعائكم

ProgrammingAdvices.com

Mohammed Abu-Hadhoud





اساسيات مهنة لكل مبرمج

ما هو الكمبيوتر و ما هي مكوناتة ووظائفه ؟

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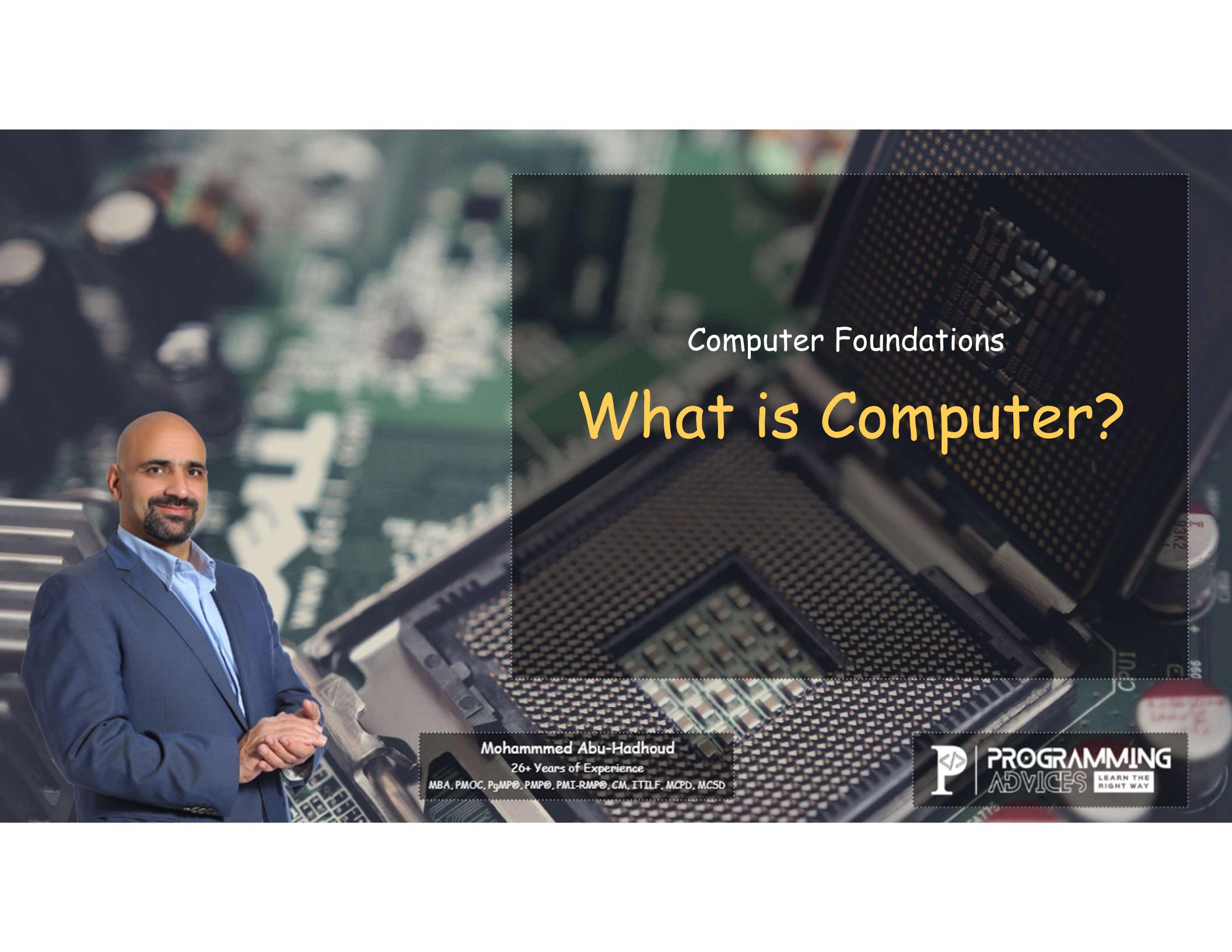
26+ Years of Experience

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PROGRAMMING
ADVICES

LEARN THE
RIGHT WAY



Computer Foundations

What is Computer?



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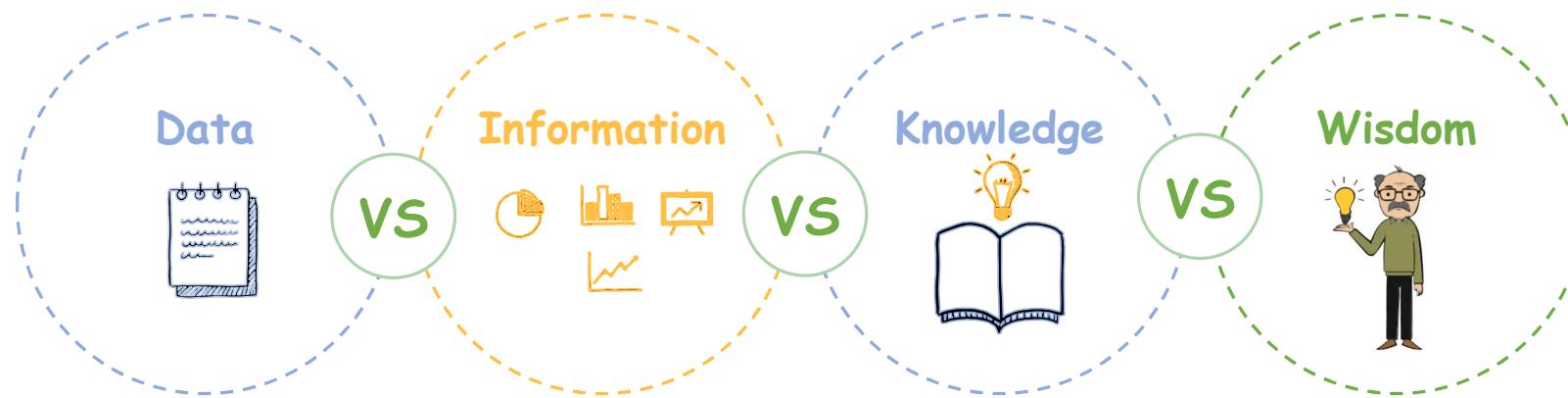
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Before we know what is computer?

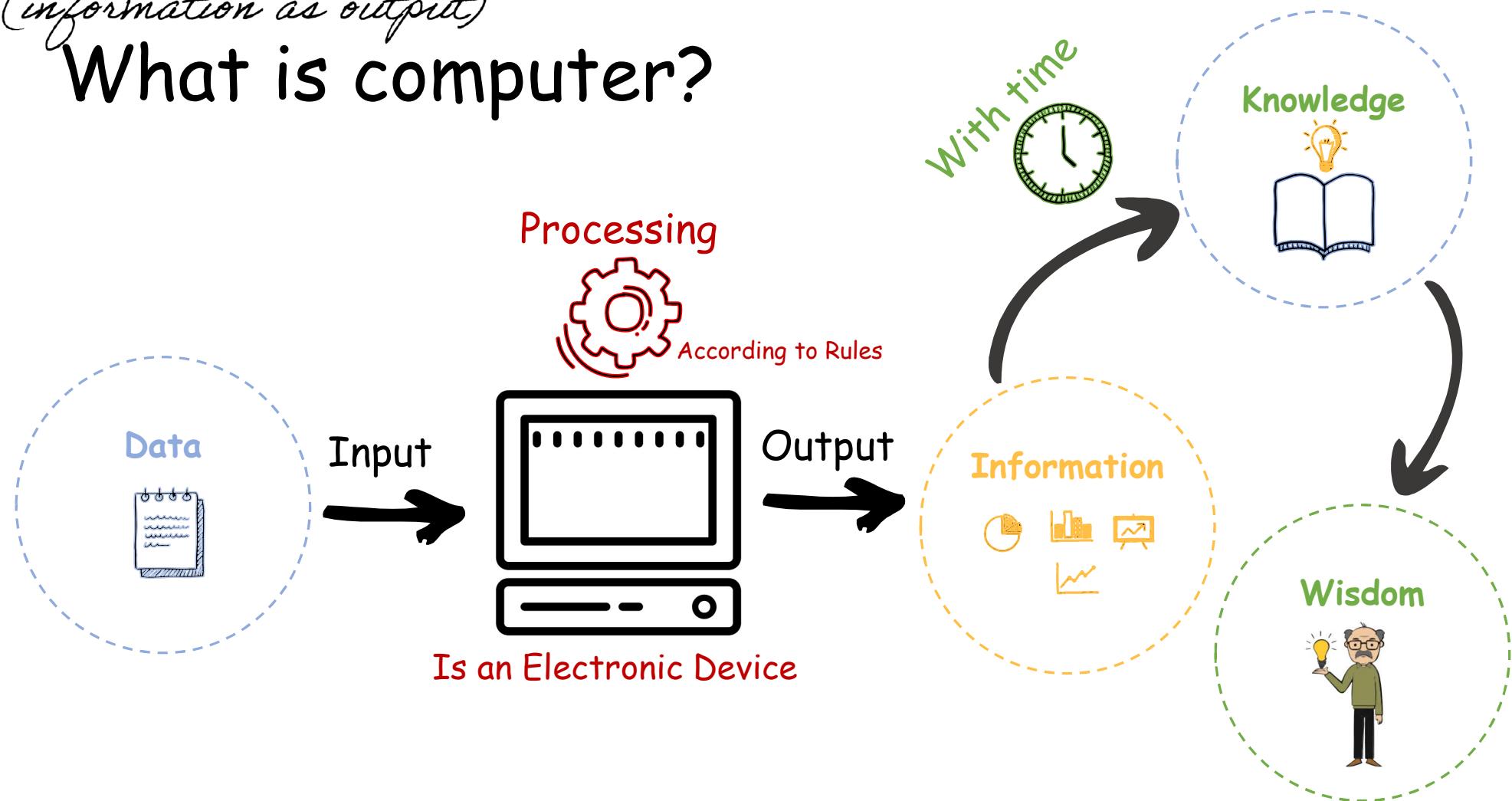
Let us remember...

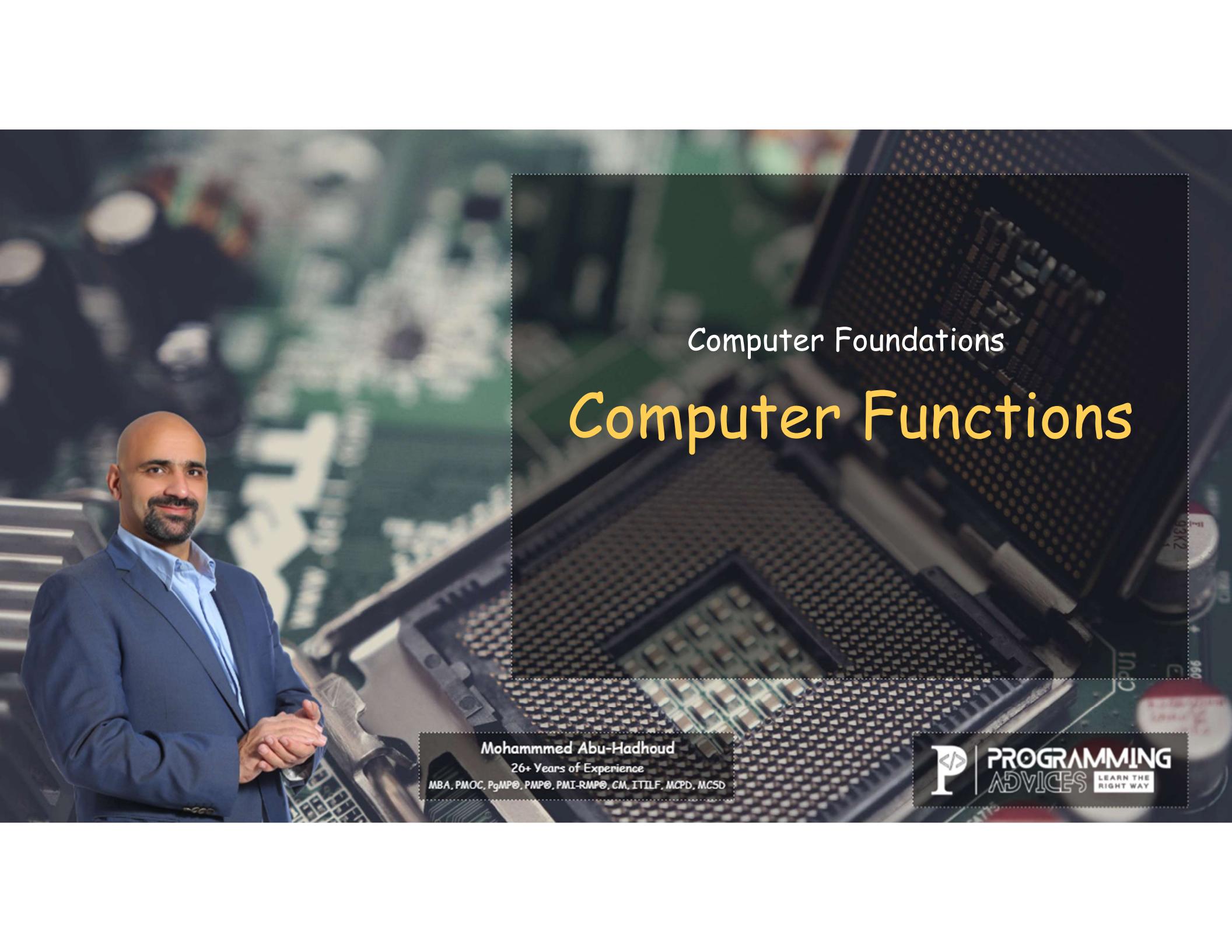
What is the difference between...



جهاز الكتروني يستقبل منك بيانات (processing) ويتم معالجتها (data as input) لاوامر وقوانين انت بتحدها ضمن البرنامج بتاعك بعدها بيدهالك كنتائج (information as output)

What is computer?





Computer Foundations

Computer Functions

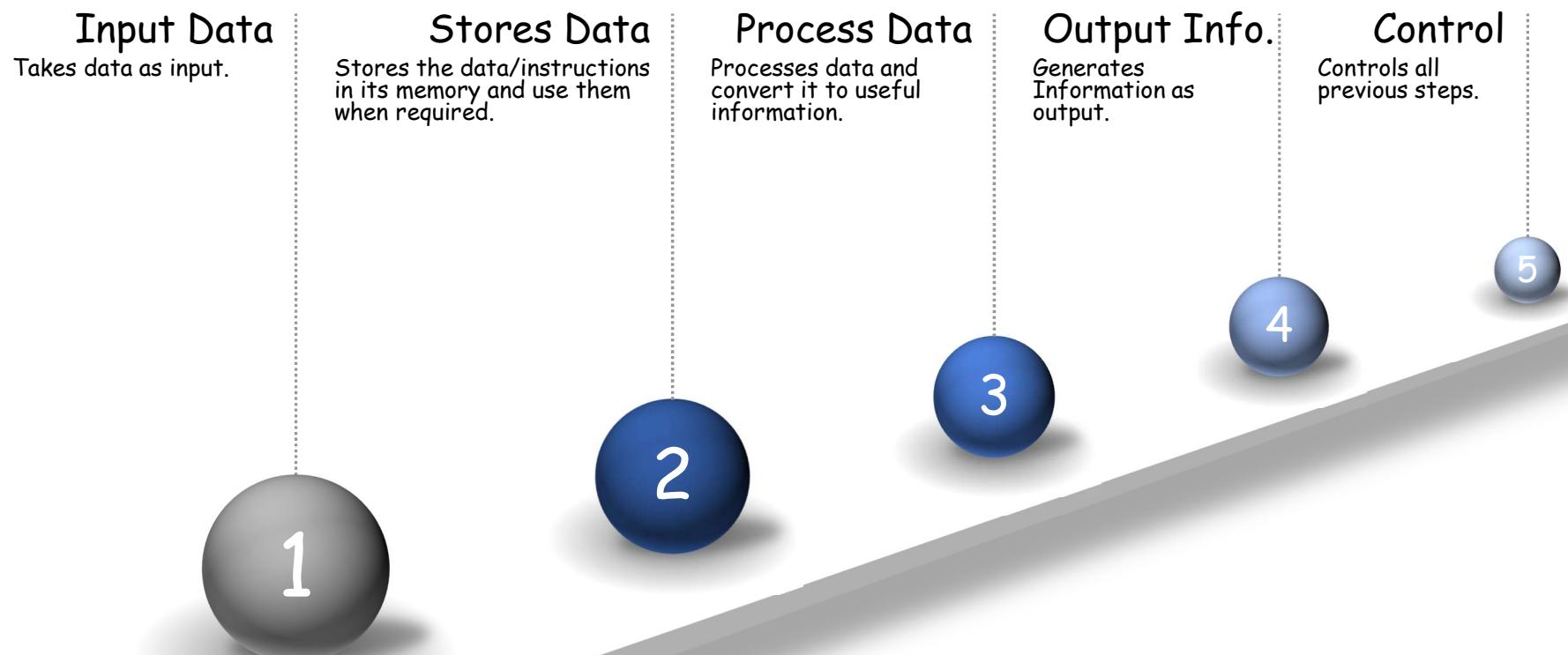
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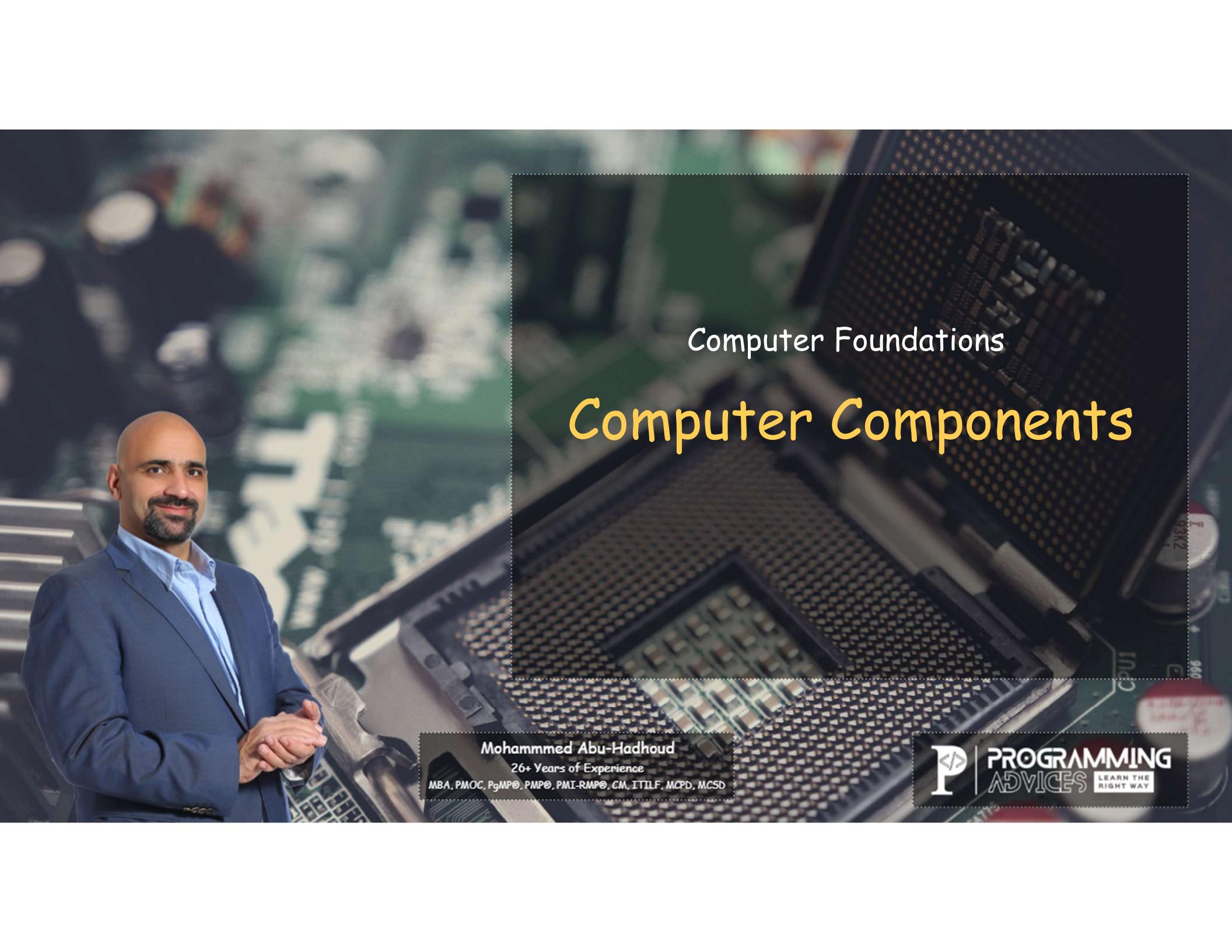


Functionalities of Computer



Computer is:

- Electronic Device.
- Operating under the control of instructions.
- Accepts Data (Input).
- Processes Data according to certain rules.
- Produces Information (Output).
- Stores information for future use.



Computer Foundations

Computer Components

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Computer Components





Computer Foundations Software

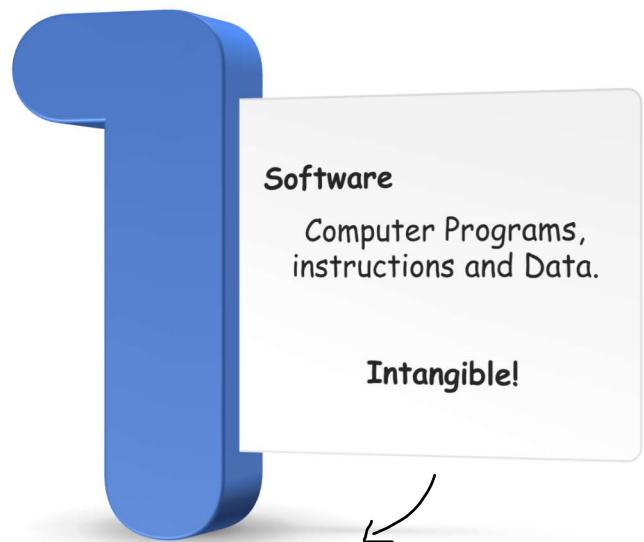
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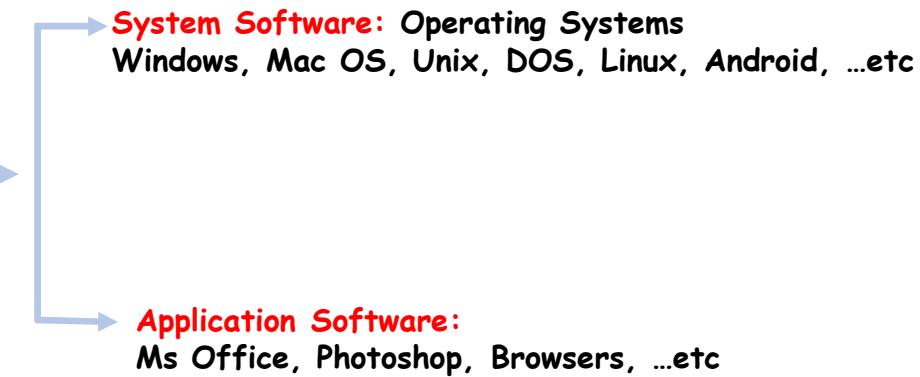
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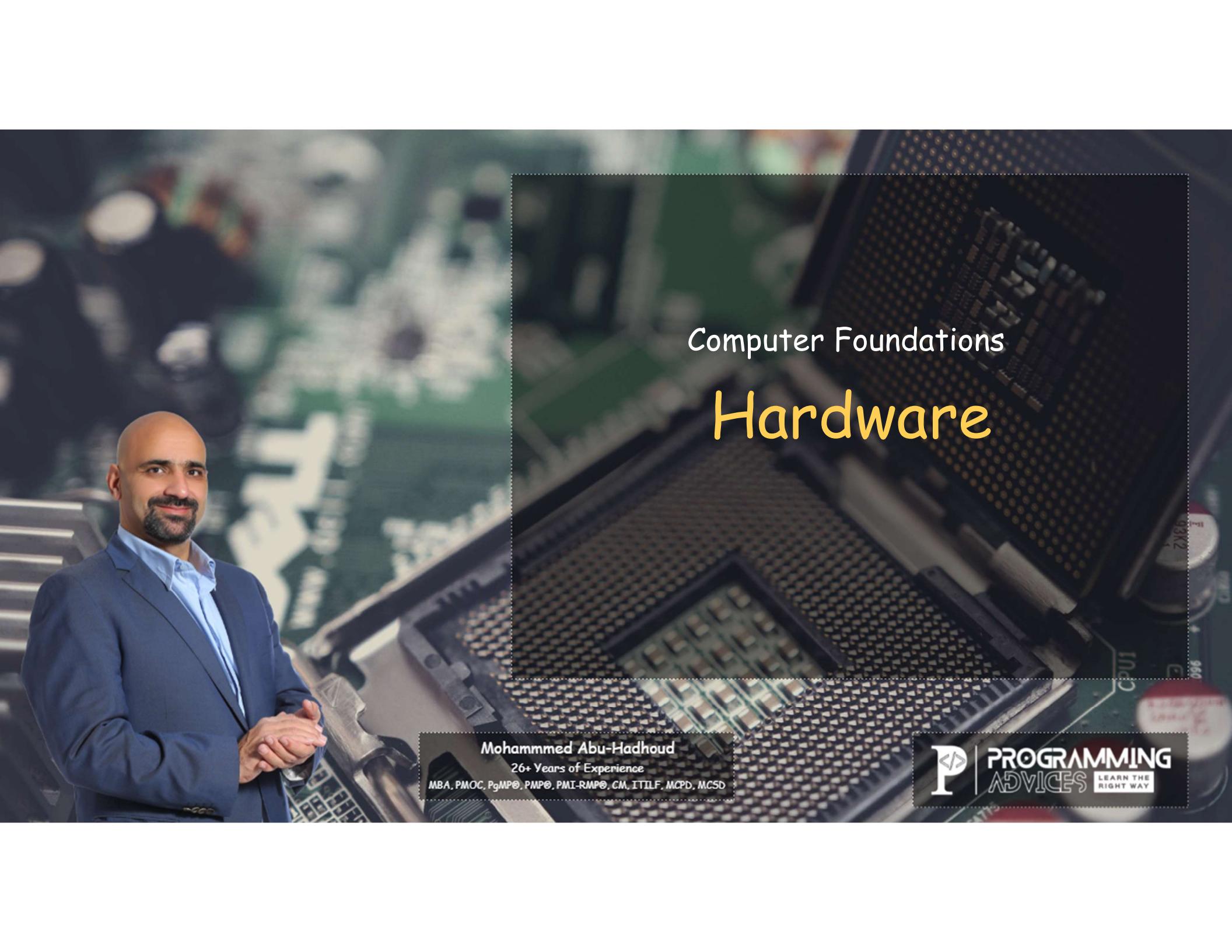


Software



البرامج اللي بتنزل ع الكمبيوتر وتكون غير ملموسة





Computer Foundations Hardware

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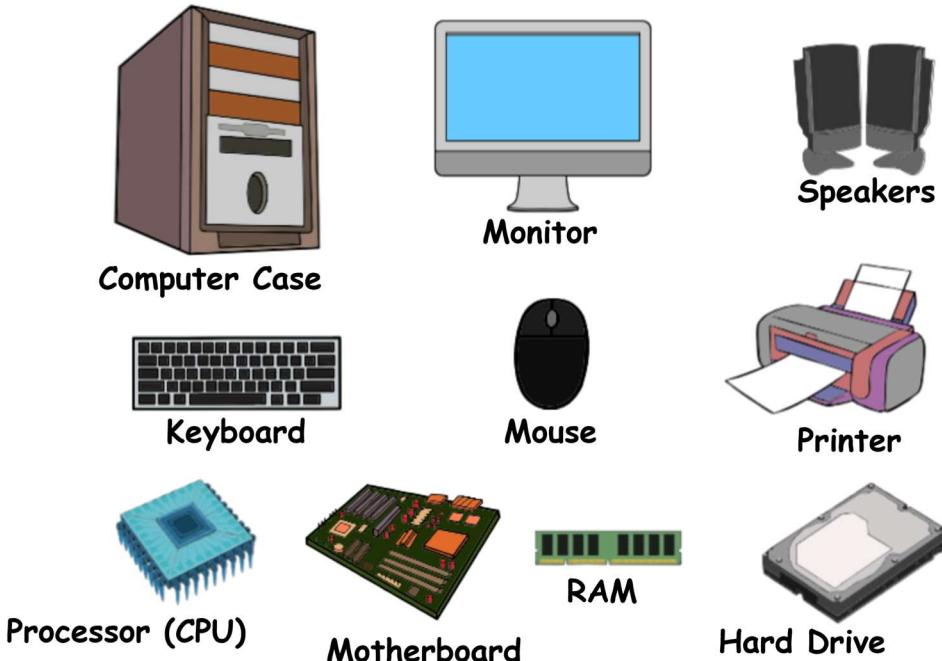
Hardware

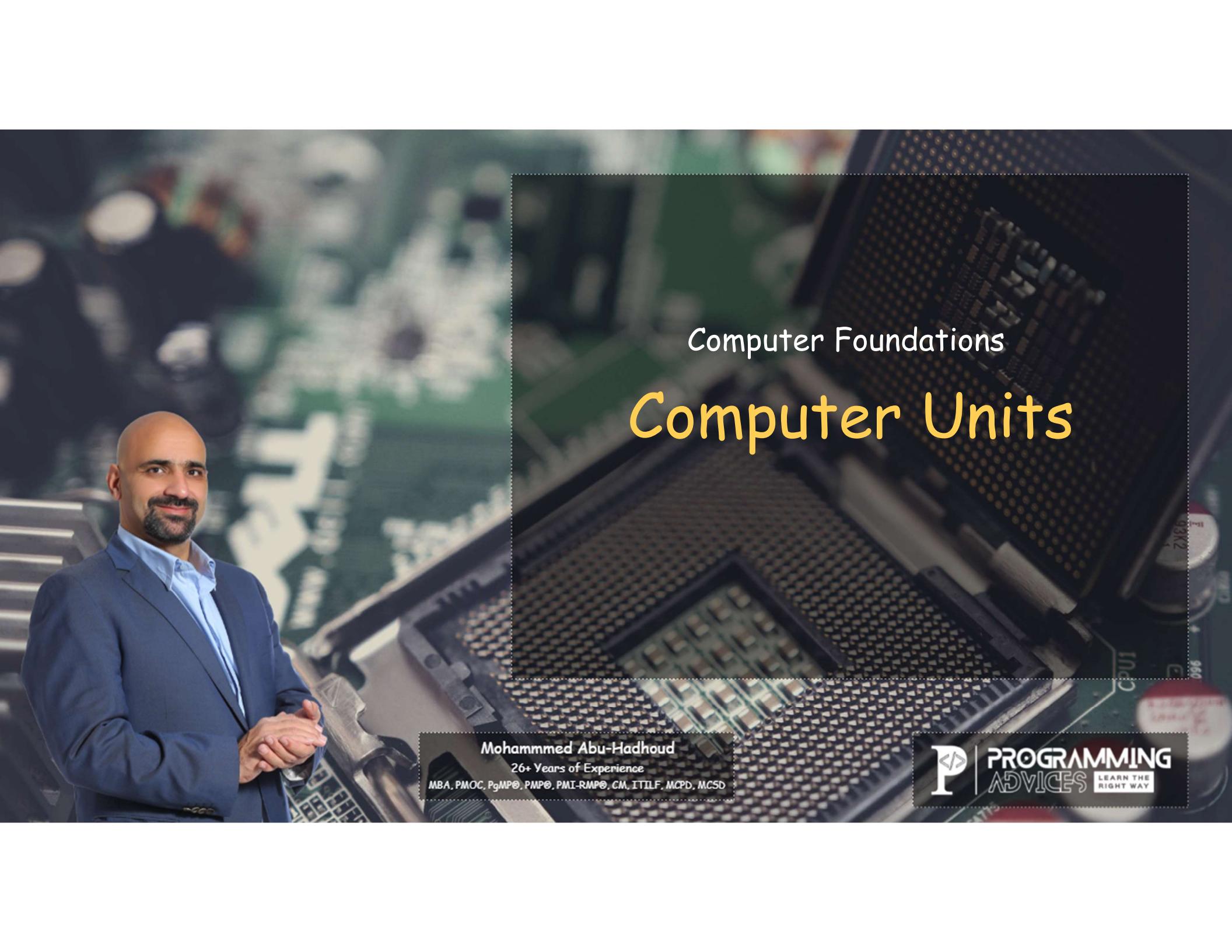
2

Hardware
Collection of physical
elements (tangible
objects)

Tangible!

الأشياء الملموسة ف الكمبيوتر





Computer Foundations

Computer Units



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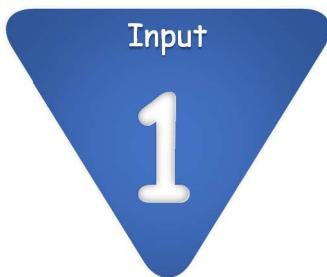
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Computer Units

وحدات ادخال



وحدات اخراج

الذاكرة الرئيسية

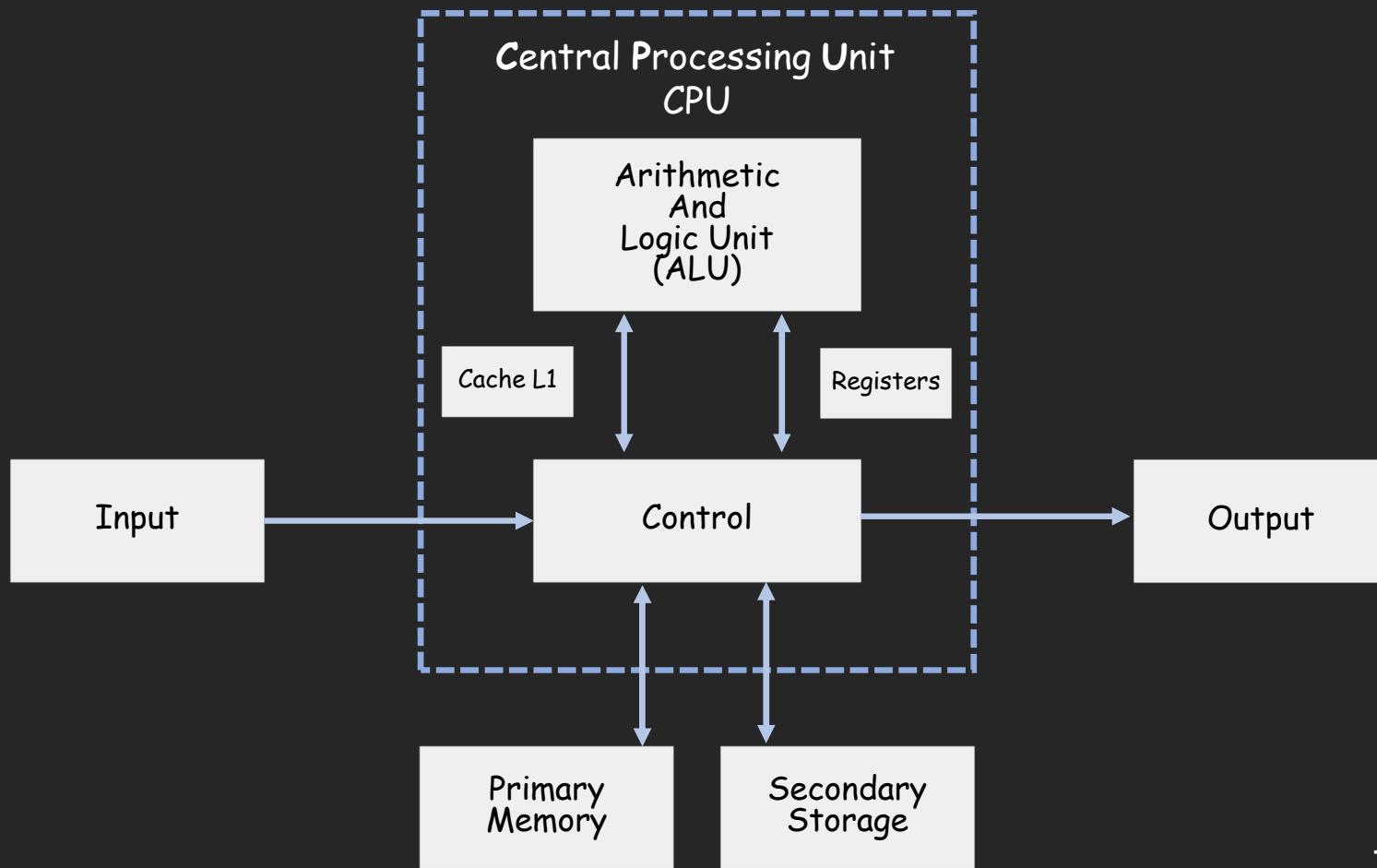


الذاكرة الثانوية

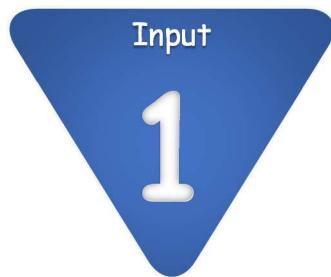
وحدات المعالجه المركزيه



Computer Units



Computer Units - Input



Any device that provides data or signal to computer.

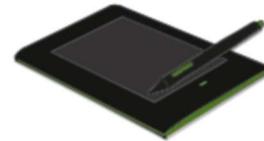
اي جهاز قادر تدخل عن طريقه بيانات او اشارات للكمبيوتر



Keyboard



Mouse



Touch Screen & Pens



Joystick

Camera



Remote



Mic



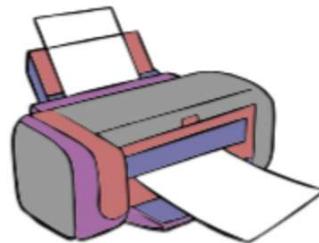
Scanner

Computer Units - Output



Any device used
to communicate
results.

ای جهاز تستخدمة عشان یوصلک نتیجه او معلومه



Printer

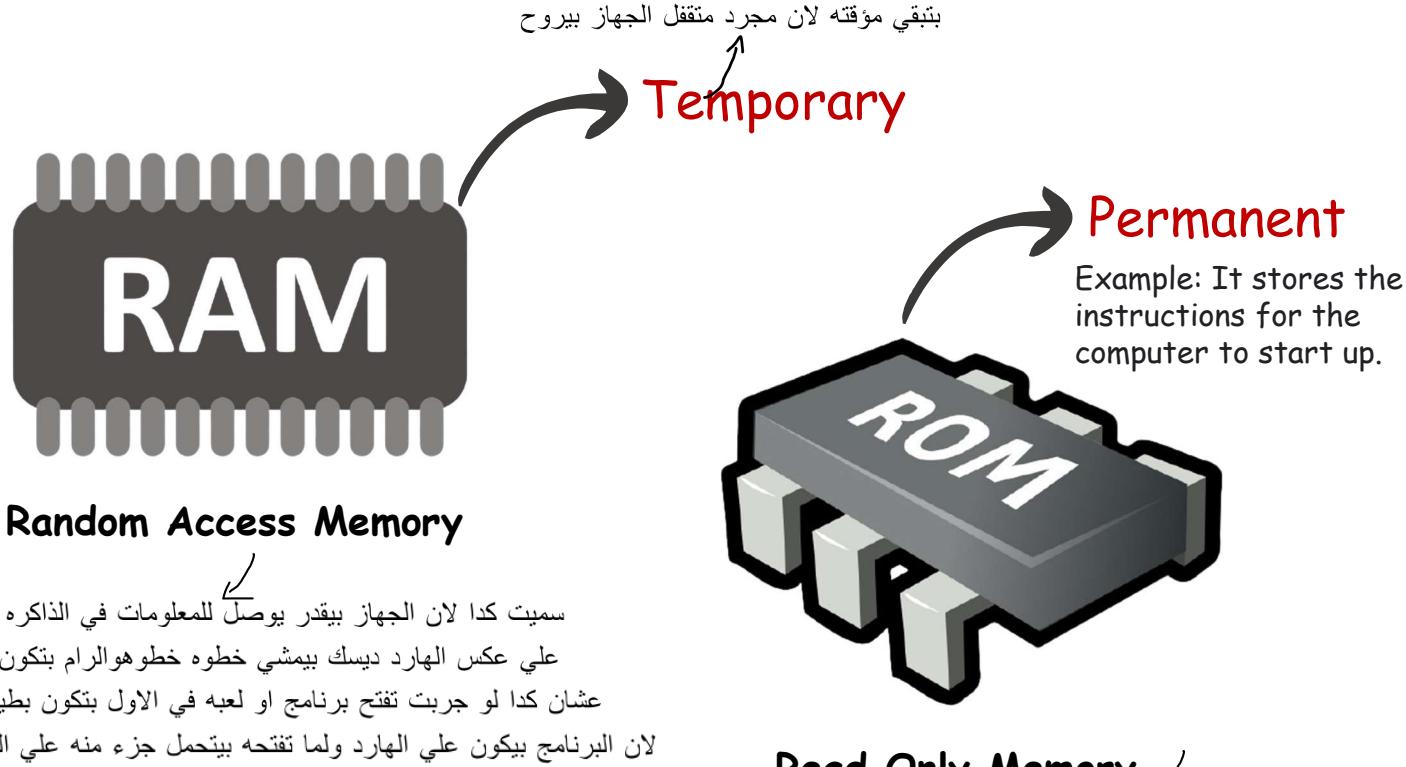


Monitor



Speaker

Computer Units - Primary Memory



ممنوع تلعب او تغير في اوامرها وعادة تكون ذاكرة دائمه
يعني لو قفلت الجهاز وفتحته المعلومات هتنفصل موجوده
وعادة في الروم بيتحزن فيها الاوامر اللي ليها علاقه بتشغيل الجهاز زي اوامر تشغيل ويندوز مثلا

Computer Units - Secondary Storage



**Stores data
permanently**

اي شئ بتخزن فيه المعلومات بشكل دائم



Hard Drive



CD



Memory Card



Flash Memory

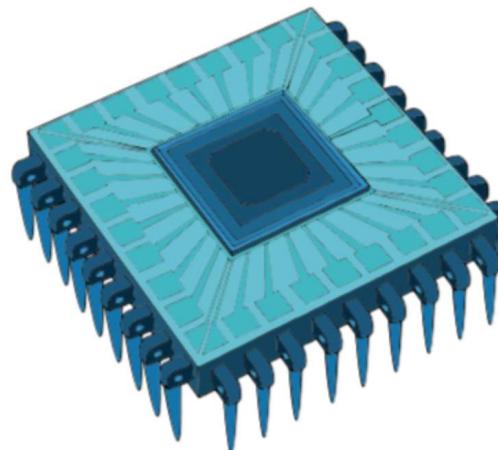
Computer Units - CPU



**It is responsible
for all functions
and processes.**

مسئوله عن كل الوظائف والعمليات داخل الكمبيوتر

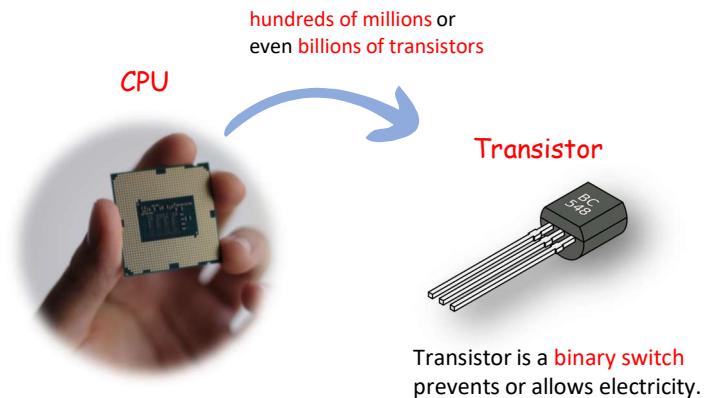
Known as microprocessor or processor



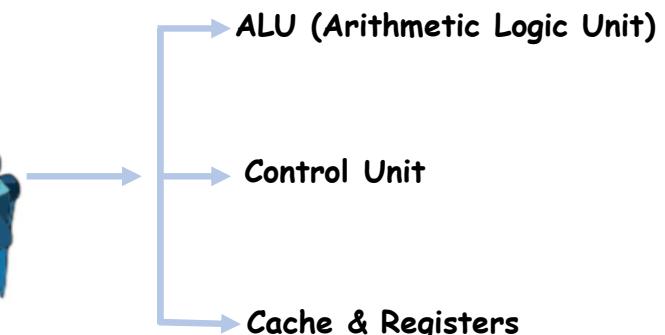
Central Process Unit (CPU)

وحدة المعالجة المركزية
تعتبر دماغ الكمبيوتر

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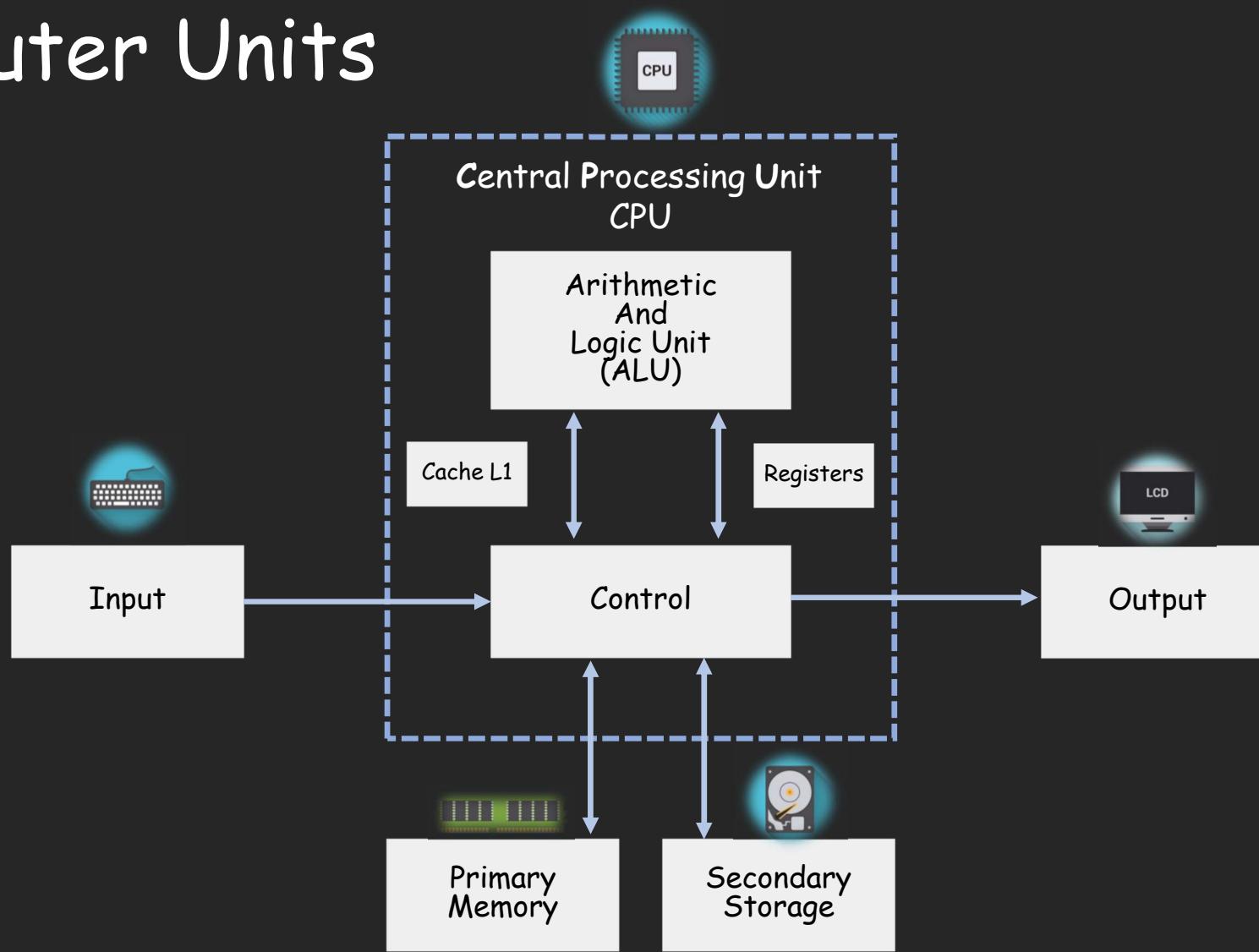


Transistor is a **binary switch**
prevents or allows electricity.



جهاز الكتروني يستقبل منك بيانات (data as input)

Computer Units



Arithmetic and logical Unit - ALU:

- Executes **Arithmetic** and **logical** operations.
 - Arithmetic **calculations** (Addition, Subtraction, Multiplication, Division).
 - Logical Operations (**Compare** numbers, letters, characters).

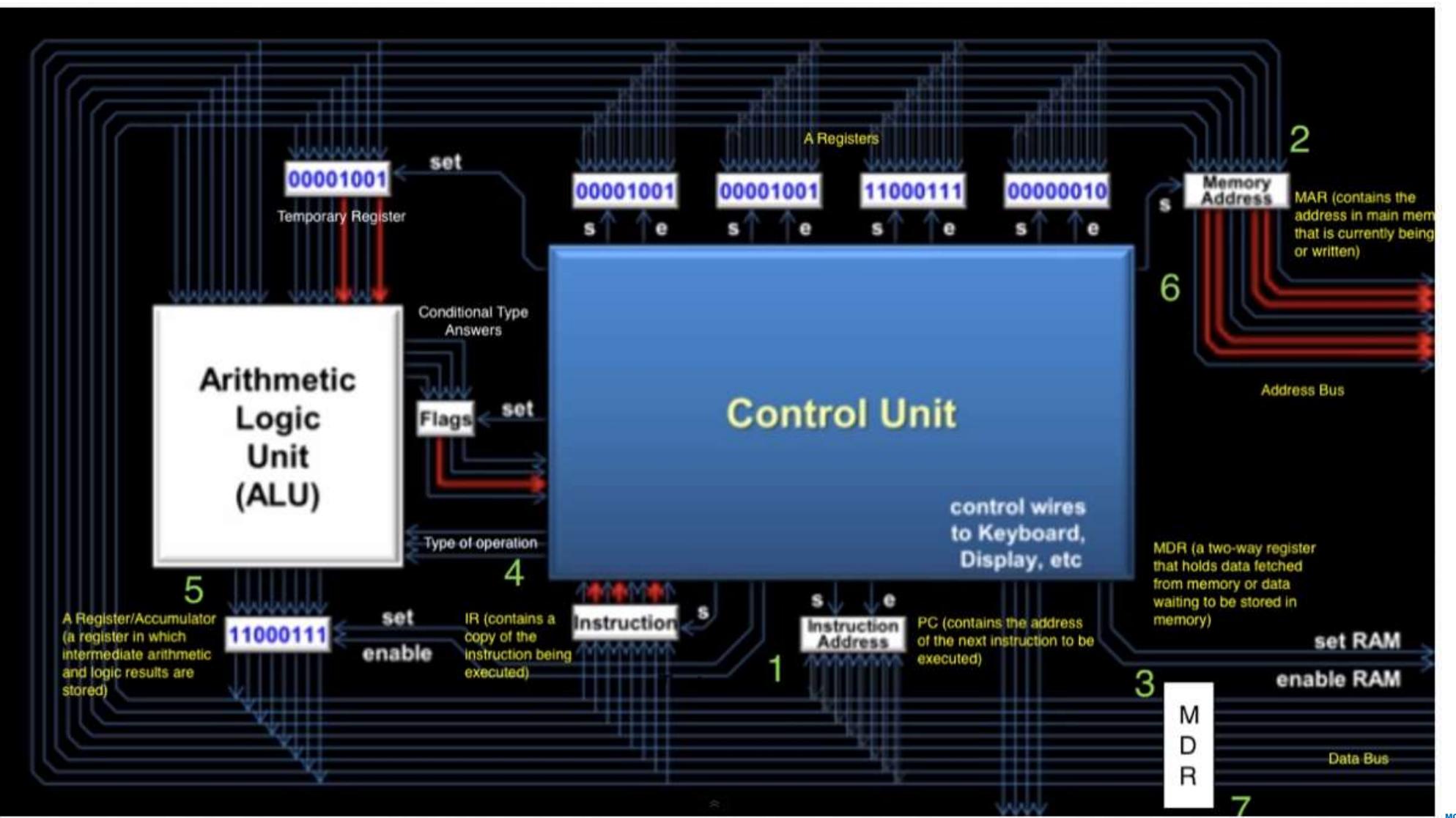
Control Unit - CU:

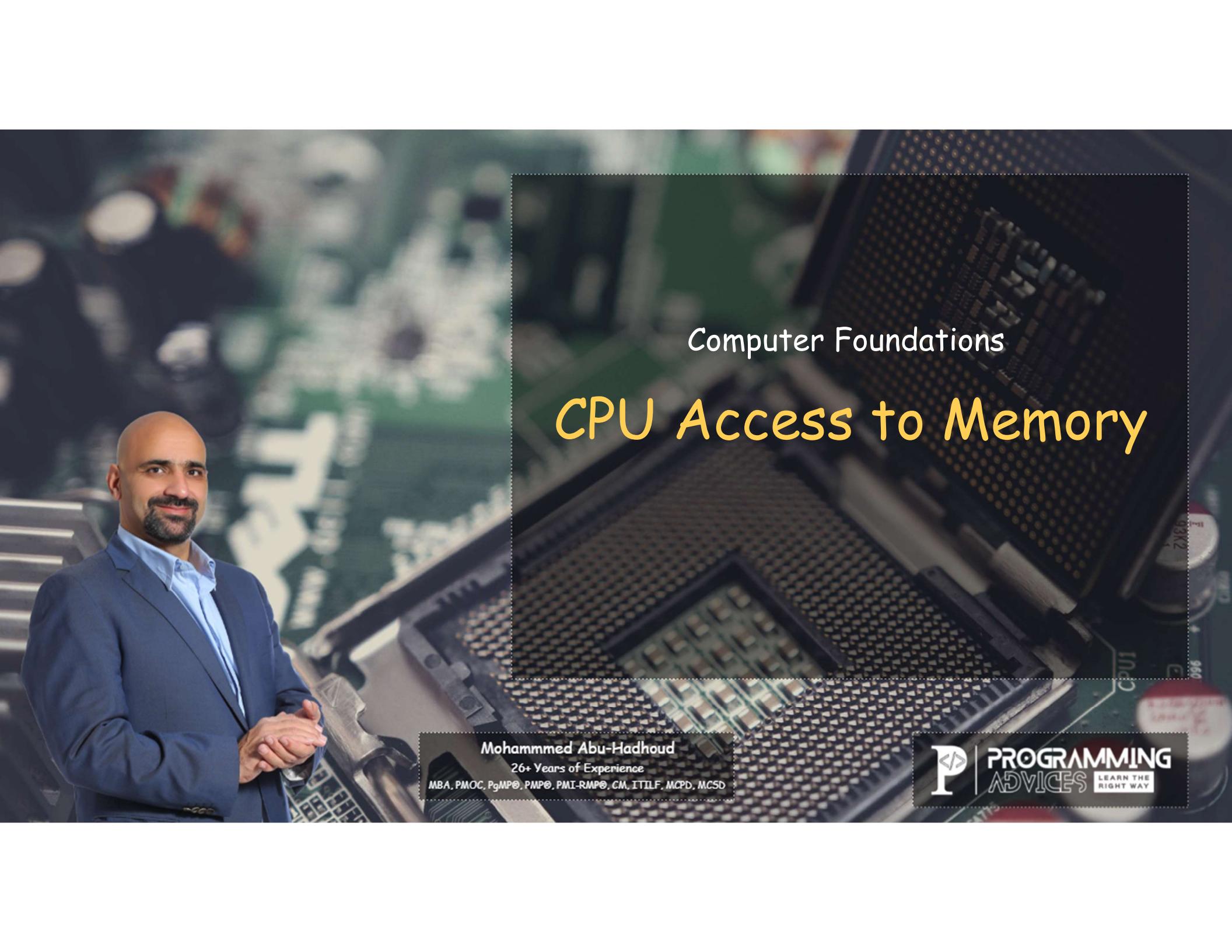
- Controls and **coordinates** computer components.
 - Reads data from memory
 - Sends data to ALU or register
 - Instructs hardware to perform the requested operation

Cache & Registers:

- Cache is a High-Speed memory inside the CPU chip.
- Registers are Higher-Speed memory inside the CPU chip.

These are memory locations that can be directly accessible by processor.





Computer Foundations

CPU Access to Memory

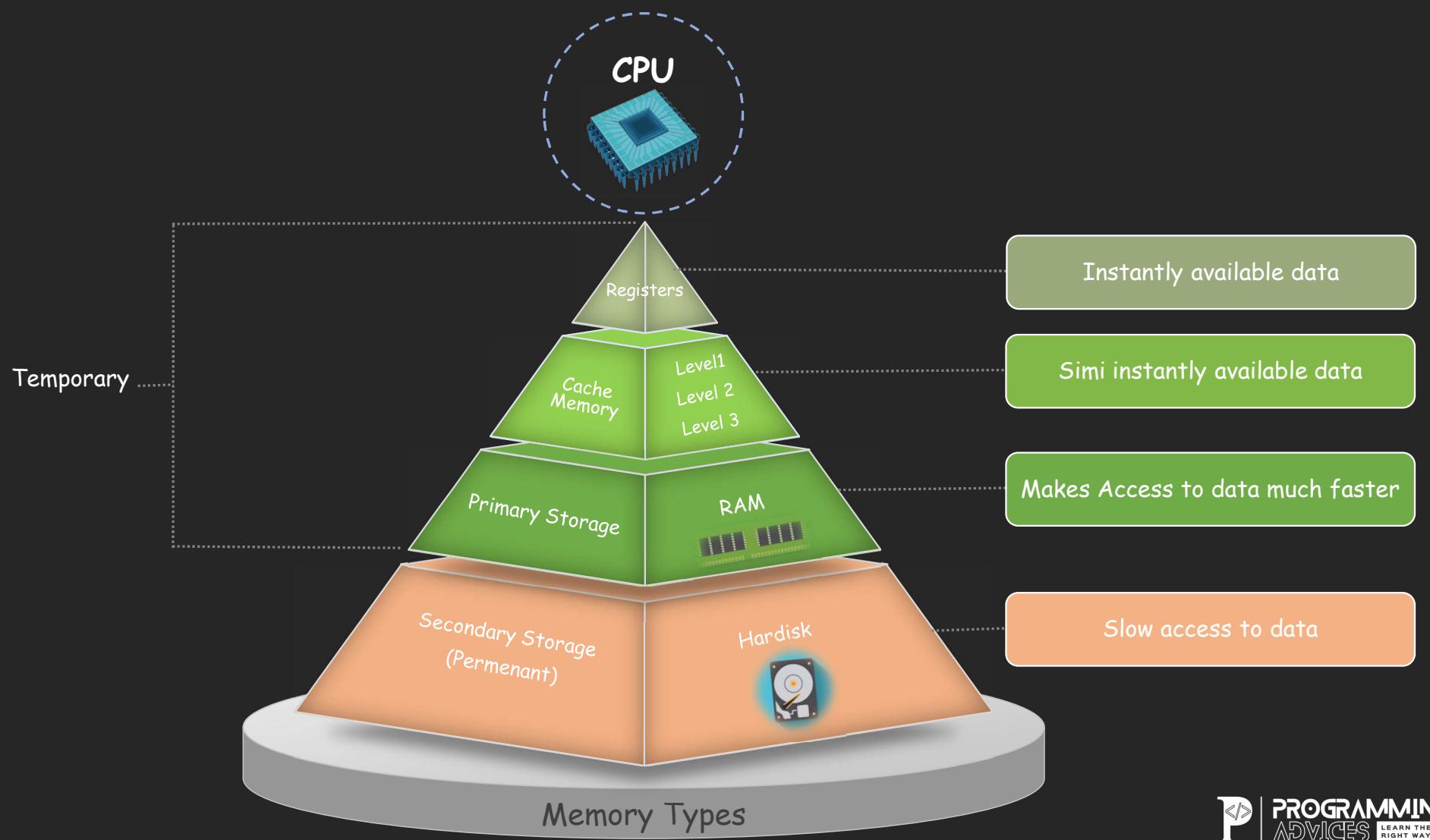


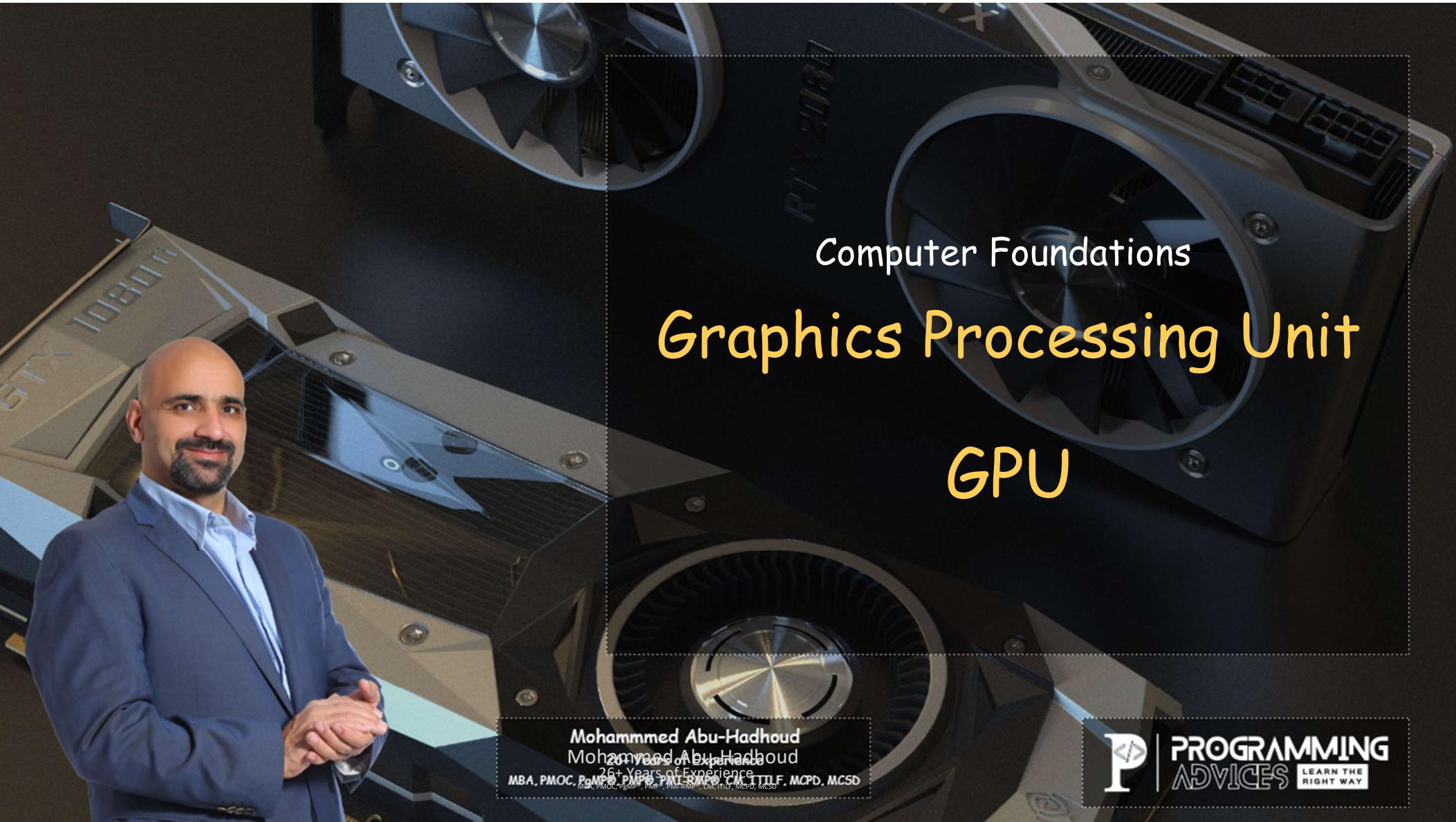
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Computer Foundations

Graphics Processing Unit

GPU

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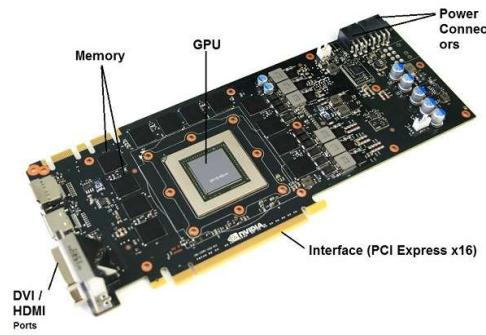
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RIGHT WAY

What is GPU?

وحدة معالجه الصور
يعتبر جزء من كارت الشاشه

- GPU stands for graphics processing unit.
- You'll also see GPUs commonly referred to as graphics cards or video cards!
- But it is not graphic card, it's only one part of it.



GPU vs CPU

- CPU is designed to handle tasks quickly but are limited in the concurrency of tasks that can be running.
- A GPU is designed to quickly render high-resolution images and video concurrently.



Computer Foundations

How Computer Deals with data?

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الفرق بين نظام 32 و 64 بت

اضغط على اللينك

https://youtu.be/vLBA6O1f8kc?si=1GMtMwD_rXAoeZ8X

شوف الفيديو دا وبعدين تعالى اقرأ ←

What is 32 vs 64

32-bit number has 2^{32} possible addresses, or **4,294,967,296**. On other side, a 64-bit number's capacity is 2^{64} , or **18,446,744,073,709,551,616**. Comparing ~4 billion bytes (about 4 gigabytes) to ~18 quintillion bytes (about 18 billion gigabytes or 16 exabytes) showcases the vast difference.

x64 or *x86-64* and 32-bit hardware and software are often referred to as *x86* or *x86-32*.

- 64-bit computer architecture provides higher performance than 32-bit architecture by handling twice as many bits of information in the same clock cycle.
- A computer with a 32-bit processor can only run a 32-bit operating system and 32-bit software. But a computer with 64-bit processor can run both 64-bit and 32-bit operating systems and software.

Note: if you have installed 32-bit operating system on a 64-bit computer, then it can run 32-bit software only.

32bit operating systems can allocate only 4GB of memory ($2^{32} = 4294967296$), whereas **64bit** ones can allocate a lot more ($2^{64} = 18446744073709551616$). So if you have under 4 GB of RAM in your computer, you don't need a 64-bit CPU, but if you have 4 GB or more, Then you must have 64 Bit CPU and operating system.

About

Your PC is monitored and protected.

[See details in Windows Security](#)

Device specifications

Device name	MSafer-Mac
Processor	Intel(R) Core(TM) i9-9880H CPU @ 2.30GHz 2.30 GHz
Installed RAM	16.0 GB (15.9 GB usable)
Device ID	DA94F72E-CA16-4D3D-9AFE-78DA0D409BA6
Product ID	00329-10286-19105-AA841
System type	64-bit operating system, x64-based processor
Pen and touch	No pen or touch input is available for this display

Copy

Rename this PC

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26+ years of experience

CPUs are built by placing billions of microscopic transistors onto a single computer chip.

الـ *CPU* يتم بناءها بوضع ملليارات الترانزistorات على شريحة كمبيوتر واحدة

a transistor is a binary switch and the fundamental building block of computer circuitry. Like a light switch on the wall, the transistor either prevents or allows current to flow through. A single modern CPU can have hundreds of millions or even billions of transistors.

الترانزستور هو مفتاح ثبائي ووحدة البناء الأساسية لدوائر الكمبيوتر
زي مفتاح الضوء كذا وبيحدد التيار هيمرا ولا لا
زي مخدنا ف الالكترونيكس يعني

اللهم لك الحمد