

PTI – Pertemuan 3

# Pengenalan Perangkat Keras



**P r a j a n t o   W a h y u   A d i**

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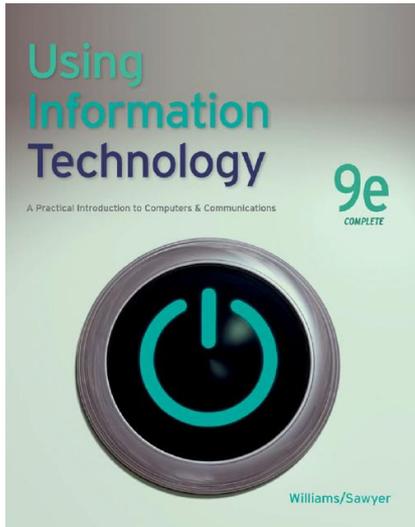
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# Rencana Kegiatan Perkuliahan Semester

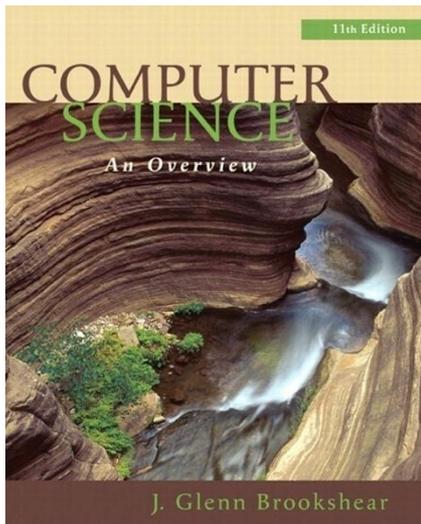
#	Pokok Bahasan
<del>1</del>	<del>Pengenalan TI</del>
<del>2</del>	<del>Konsep Sistem Komputer</del>
<b>3</b>	<b>Pengenalan Perangkat Keras</b>
4	Data Storage
5	Perangkat Lunak (Konsep, peran, klasifikasi, UI)
6	Perangkat Lunak (komersil, open source)
7	Data dan Informasi
8	<b>Ujian Tengah Semester</b>

#	Pokok Bahasan
9	Komputasi dan Pemrograman
10	Komputasi dan Pemrograman (Paradigma Pemrograman)
11	Rekayasa Perangkat Lunak
12	Komunikasi data
13	Jaringan Komputer
14	Etika dan Dampak Sosial TI
15	Teknologi Terkini
<b>16</b>	<b>Ujian Akhir Semester</b>

# Referensi



- Brian K. Williams – **Using Information Technology** : A Practical Introduction to Computers and Communications 9th Edition (2010)



- J. Glenn Brookshear - **Computer Science** : An Overview 11th Edition (2011)

# Pre-Test

- Sebutkan 2 komponen TI !
- Jelaskan 3 elemen sistem komputer !
- Jelaskan 3 konsep utama cara kerja komputer menurut Williams !
- Sebutkan komponen-komponen CPU !
- Jelaskan secara singkat sejarah & perkembangan komputer !

# Konten

1

- Perangkat Keras

2

- Perangkat Keras Input dan Output

3

- Perangkat Keras Pemroses (CPU)

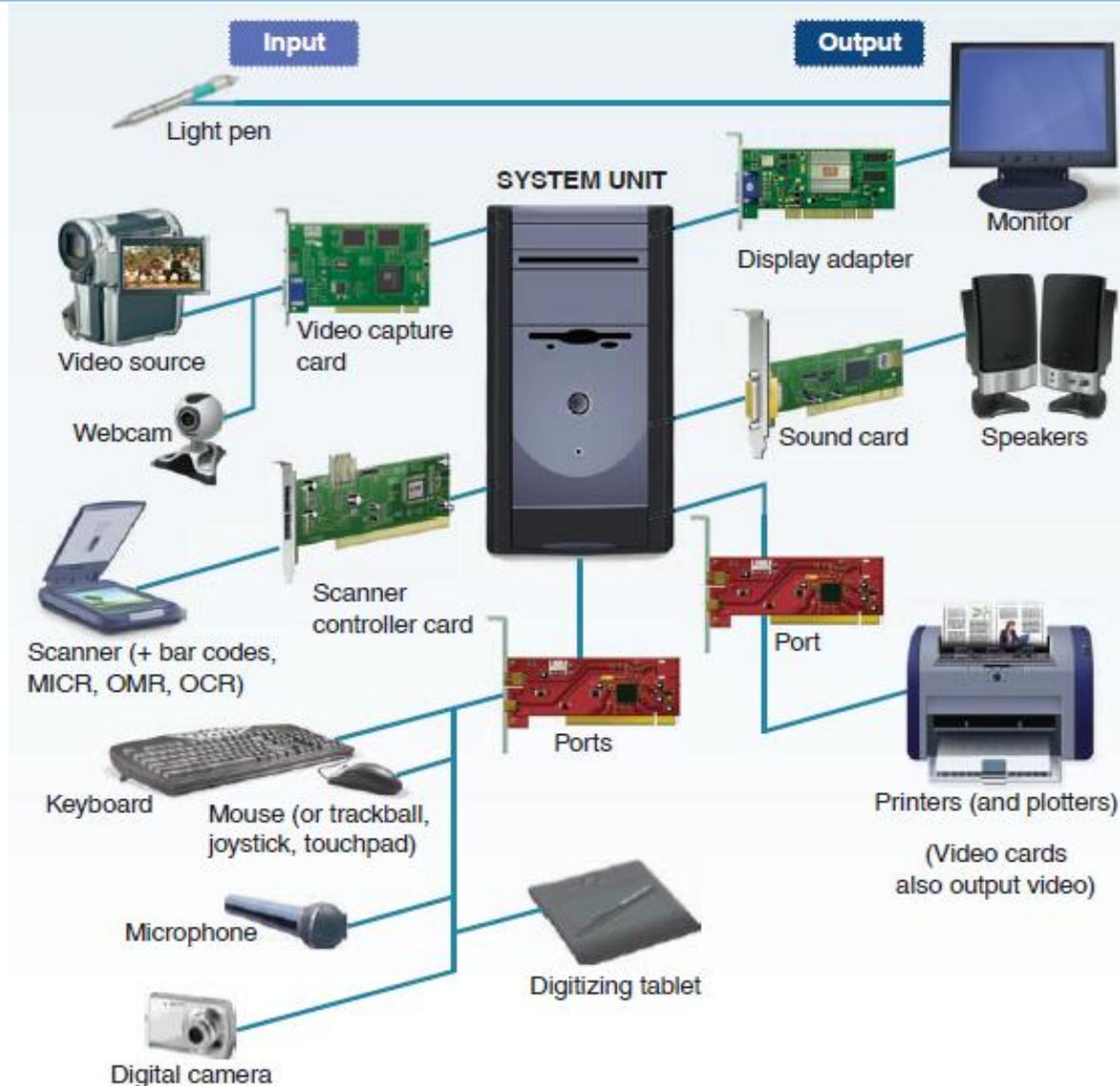
4

- Siklus Kerja CPU

# Perangkat Keras

*Williams, 2010:*

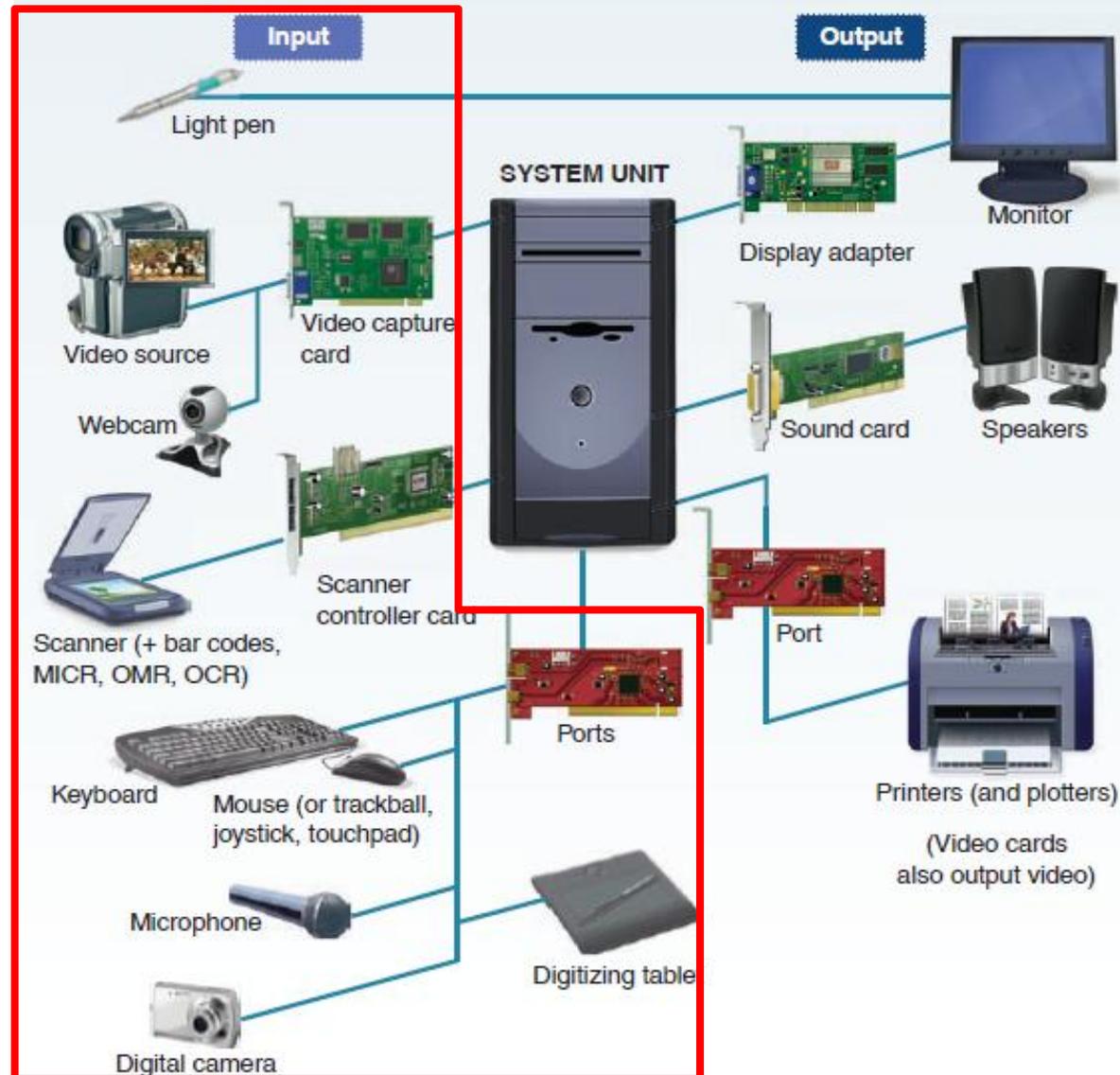
- **Perangkat keras** Meliputi keseluruhan mesin dan perangkat dalam sistem komputer



# Perangkat Keras

*Williams, 2010:*

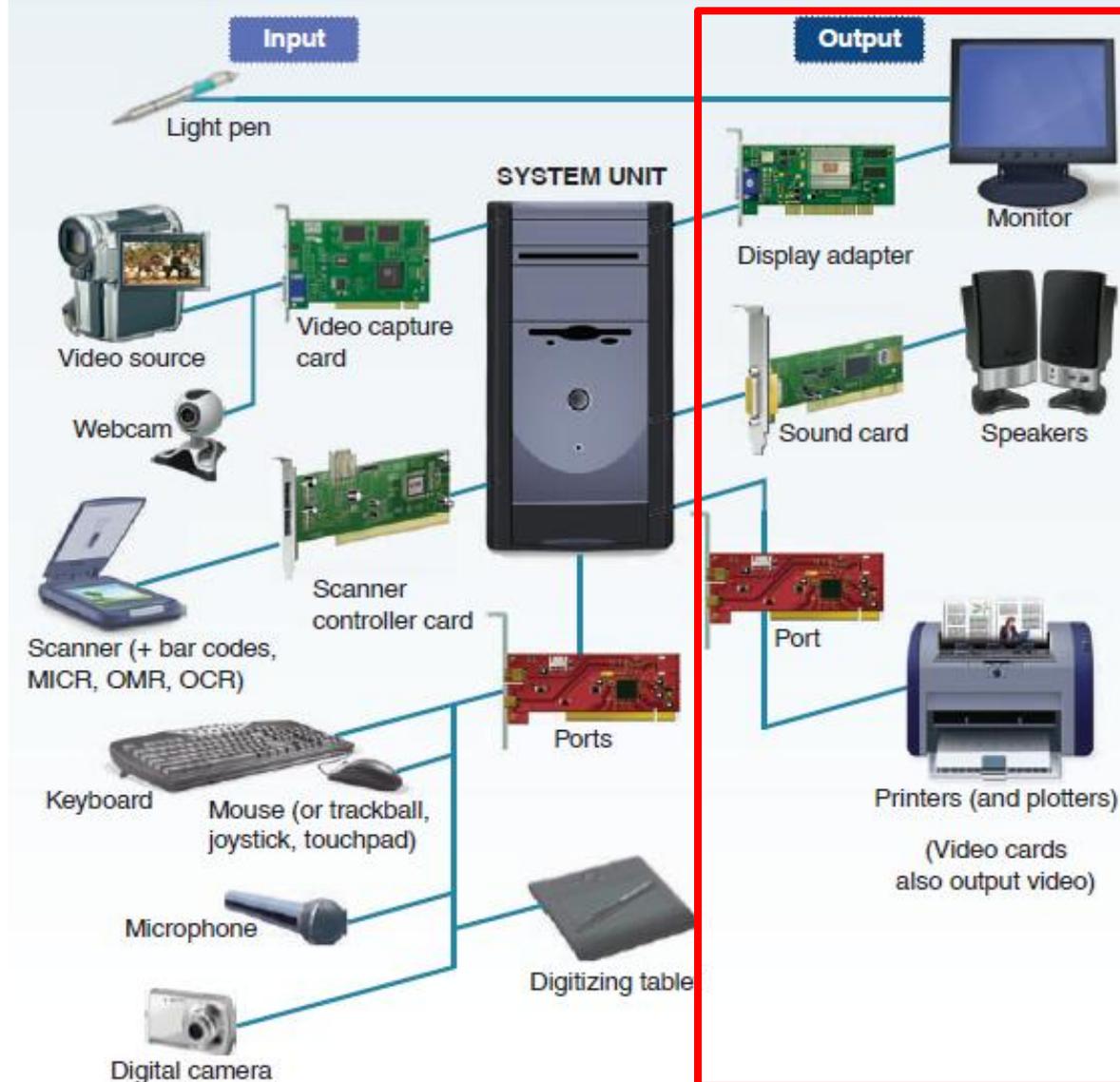
- Perangkat keras **input** adalah perangkat yang merubah data menjadi bentuk yang dapat diproses oleh komputer



# Perangkat Keras

*Williams, 2010:*

- Perangkat keras **output** adalah perangkat yang merubah informasi hasil pengolahan komputer, menjadi bentuk yang dapat dipahami oleh manusia



# Perangkat Keras Input

- Tiga jenis perangkat keras input (Williams, 2010):

## Keyboards

Traditional computer keyboards

Specialty keyboards and terminals: dumb terminals, intelligent terminals (ATMs, POS terminals), internet terminals

## Pointing Devices

Mice, trackballs, pointing sticks, touchpads

Touch screens

Pen-based computer systems, light pens, digitizers (digitizing tablets)

Optical sensor technology remotes, such as for Wii

## Source Data-Entry Devices

Scanner devices: imaging systems, bar-code readers, mark- and character-recognition devices (MICR, OMR, OCR), fax machines

Audio-input devices

Webcams and video-input devices

Digital cameras

Speech-recognition systems

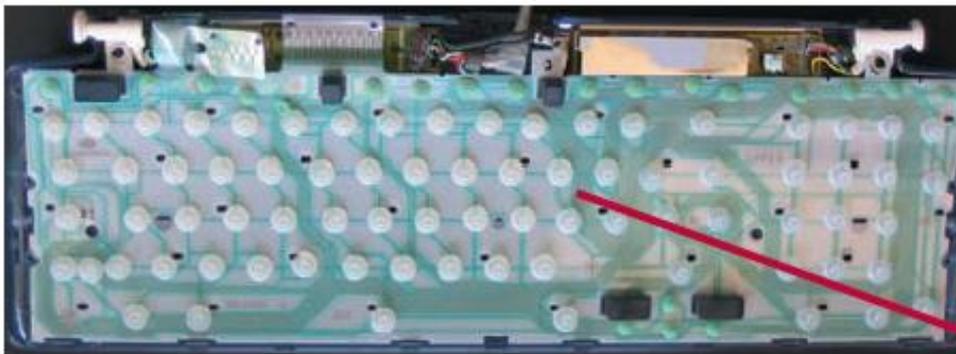
Sensors

Radio-frequency identification

Human-biology input devices

# Keyboards

- Keyboard adalah perangkat yang merubah huruf, angka, dan karakter lain menjadi sinyal elektrik yang dapat dibaca oleh prosesor komputer



Inside a computer keyboard. In most keyboards, each key sits over a small, flexible rubber dome with a hard carbon center. When the key is pressed, a plunger on the bottom of the key pushes down against the dome. This pushes the carbon center down, which presses against the keyboard circuitry to complete an electrical circuit and send a signal to the computer.



# Keyboards

- Keyboard portable dan keyboard genggam

**Stowaway Portable Keyboard for PDAs.** This keyboard folds up to roughly the size of a PDA (3.8 inches wide × 5.1 inches deep × 0.8 inch thick) and unfolds into a full-size keyboard measuring 13.8 inches wide × 5.1 inches deep × 0.4 inch thick. To use the keyboard, you simply unfold it and slide the sections together.



**FrogPad one-hand, 20-key keyboard for PDAs.** Keys are the same size as those on a regular computer keyboard. Fifteen keys represent letters, numbers, and punctuation marks; four keys alternate the symbols for each key; a Shift key is for capital letters. The keyboard can also handle page navigation.

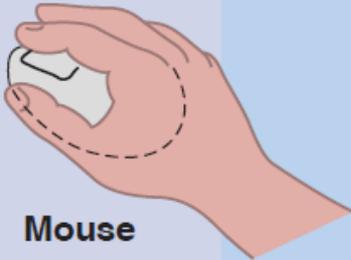
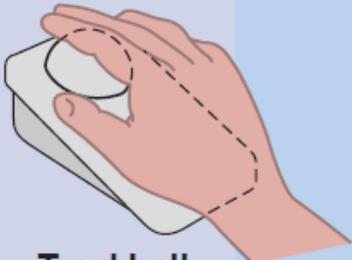
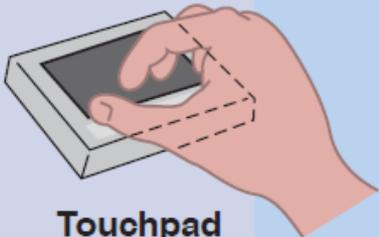


# Pointing Devices

- *Pointing Device* mengendalikan posisi cursor atau pointer pada layar sehingga memungkinkan user untuk memilih pilihan yang ada pada layar.  
contoh: *mouse, trackball, touchpad.*

# Pointing Devices

- *Mouse, Trackball, dan Touchpad*

Pros		Cons
<ul style="list-style-type: none"><li>• Relatively inexpensive</li><li>• Very little finger movement needed to reach buttons</li></ul>	 <p>Mouse</p>	<ul style="list-style-type: none"><li>• When gripped too tightly can cause muscle strain</li><li>• Uses more desk space than other pointing devices</li><li>• Must be cleaned occasionally</li></ul>
<ul style="list-style-type: none"><li>• Uses less desk space than mouse</li><li>• Requires less arm and hand movement than mouse</li></ul>	 <p>Trackball</p>	<ul style="list-style-type: none"><li>• Wrist is bent during use</li><li>• More finger movement needed to reach buttons than with other pointing devices</li><li>• Requires frequent cleaning because of finger oils</li></ul>
<ul style="list-style-type: none"><li>• Small footprint</li><li>• Least prone to dust</li><li>• Needs little cleaning</li></ul>	 <p>Touchpad</p>	<ul style="list-style-type: none"><li>• Places more stress on index finger than other pointing devices do</li><li>• Small active area makes precise cursor control difficult</li></ul>

# Source Data-entry Devices

- *Source data-entry device* menghasilkan data yang dapat dibaca oleh mesin pada media magnetik atau memasukkan langsung ke prosesor komputer.  
contoh: scanner, microphone, kamera digital.

# Source Data-entry Devices

- **Scanner** atau optical scanner menggunakan sensor cahaya untuk merubah citra yang berupa text, gambar, foto, dsb menjadi bentuk digital.



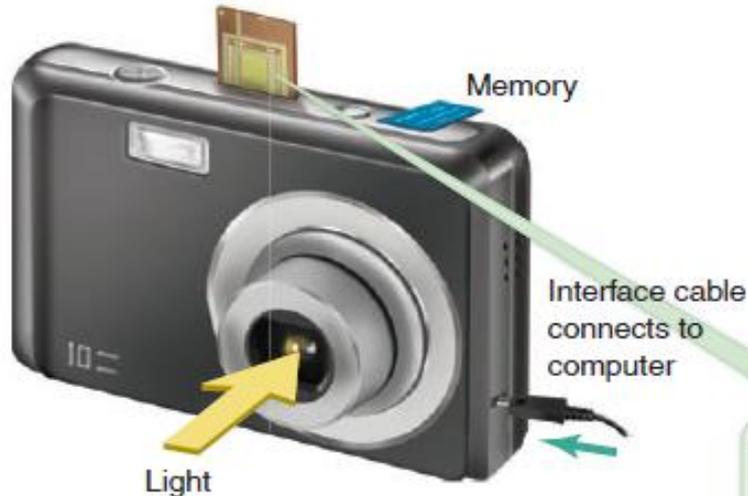
# Source Data-entry Devices

- **Mikrofon** merupakan audio-input device yang berfungsi merubah gelombang suara menjadi sinyal elektrik.



# Source Data-entry Devices

## • Kamera Digital



1 Light enters the camera through the lens.

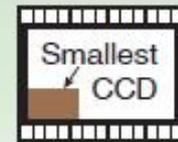
2 The light is focused on the charge-coupled device (CCD), a solid-state chip made up of tiny, light-sensitive photosites. When light hits the CCD, it records the image electronically, just like film records images in a standard camera. The photosites convert light into electrons, which are then converted into digital information.

3 The digital information is stored in the camera's electronic memory, either built-in or removable.

4 Using an interface cable, the digital photo can be downloaded onto a computer, where it can be manipulated, printed, placed on a web page, or emailed.

### A look at CCDs

The smallest CCDs are 1/8 the size of a frame of 35mm film. The largest are the same size as a 35mm frame.



- Lower-end cameras start with 180,000 photosites.
- Professional cameras can have up to 6 million photosites.



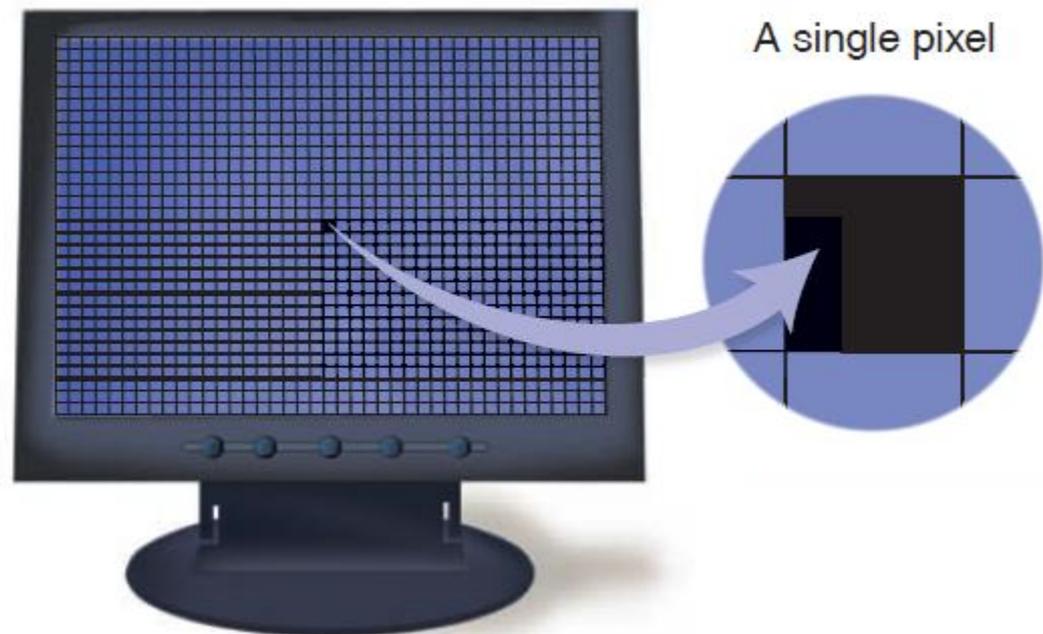
# Perangkat Keras Output

- Tiga jenis perangkat keras output (Williams, 2010):

Softcopy Devices	Hardcopy Devices	Other Devices
CRT display screens	Impact printers: dot-matrix printer	Sound output
Flat-panel display screen (e.g., liquid-crystal display)	Nonimpact printers: laser, ink-jet, thermal	Voice output Video output

# Softcopy Devices

- *Softcopy Devices* menampilkan data pada **display screen** atau dalam bentuk suara atau audio.
  - **Display Screen** atau yg sering disebut monitor adalah perangkat output yang menampilkan instruksi program dan data sebagaimana yang dimasukkan, dan informasi setelah diproses



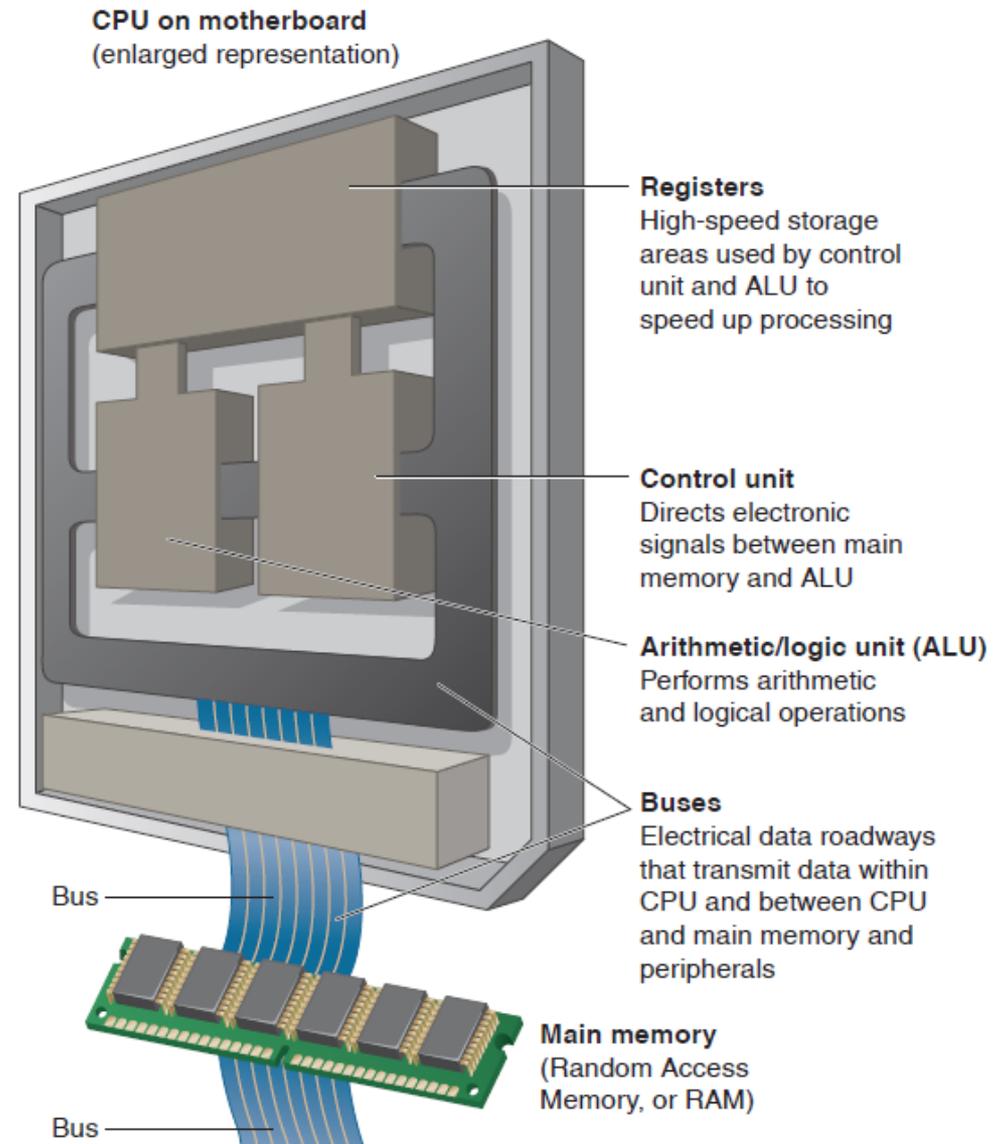
# Hardcopy Devices

- *Hardcopy Devices* menampilkan output dalam bentuk tercetak (**printed** output).
  - **Printer** adalah perangkat output yang mencetak karakter, simbol, atau grafik pada kertas atau medium cetak lainnya.



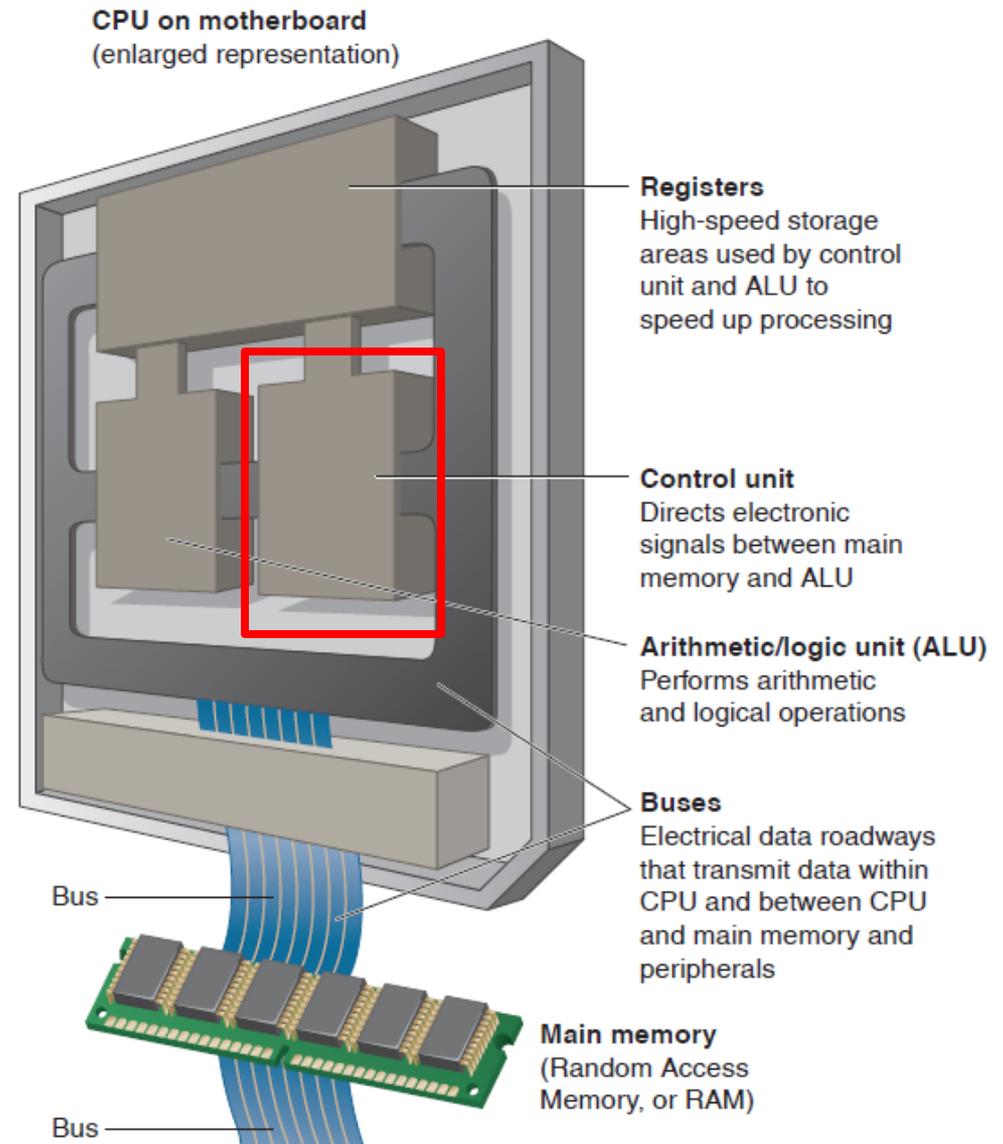
# CPU

- CPU:
  - Control Unit
  - ALU
  - Register
  - Bus



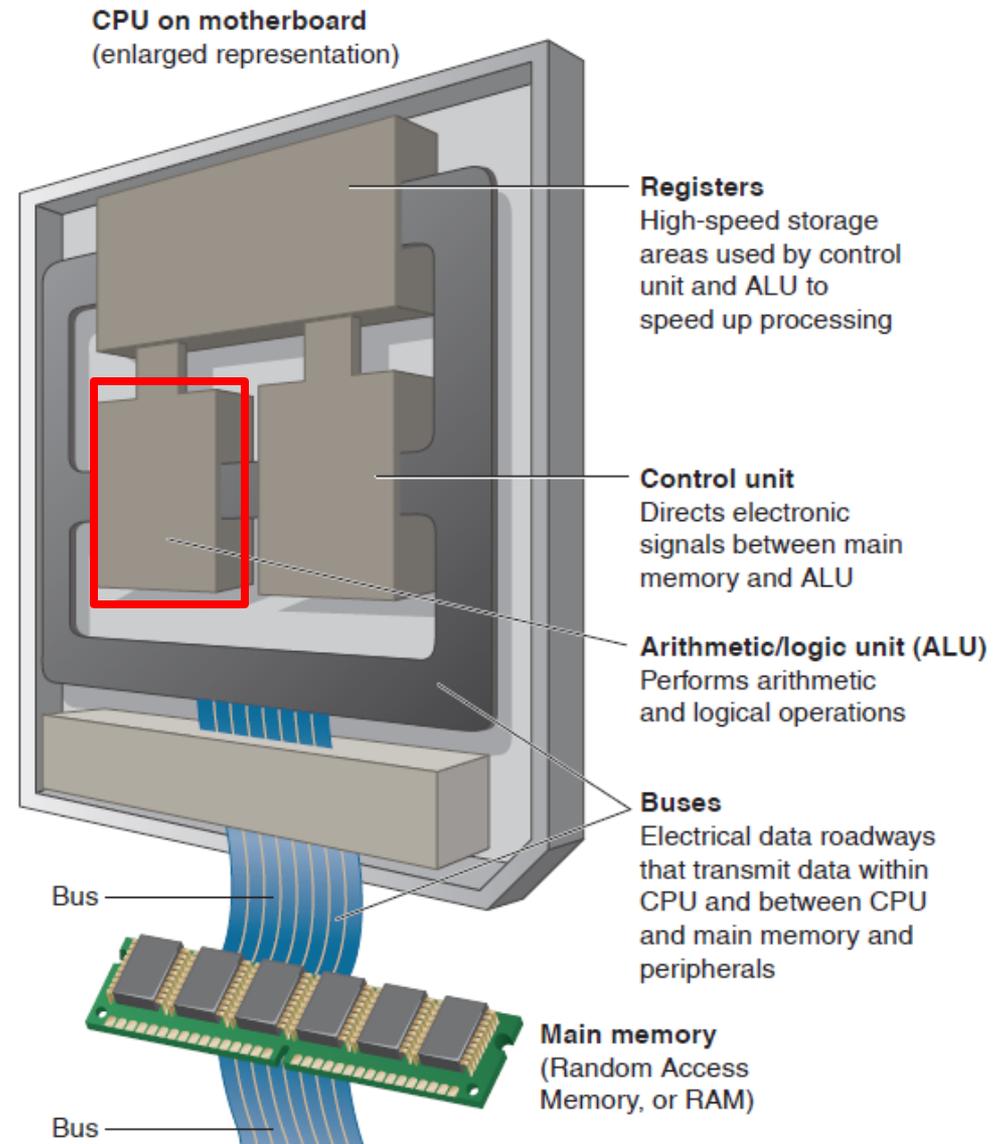
# CPU

- **Control Unit:**  
menterjemahkan setiap instruksi yang tersimpan di CPU dan kemudian menjalankan instruksi tersebut



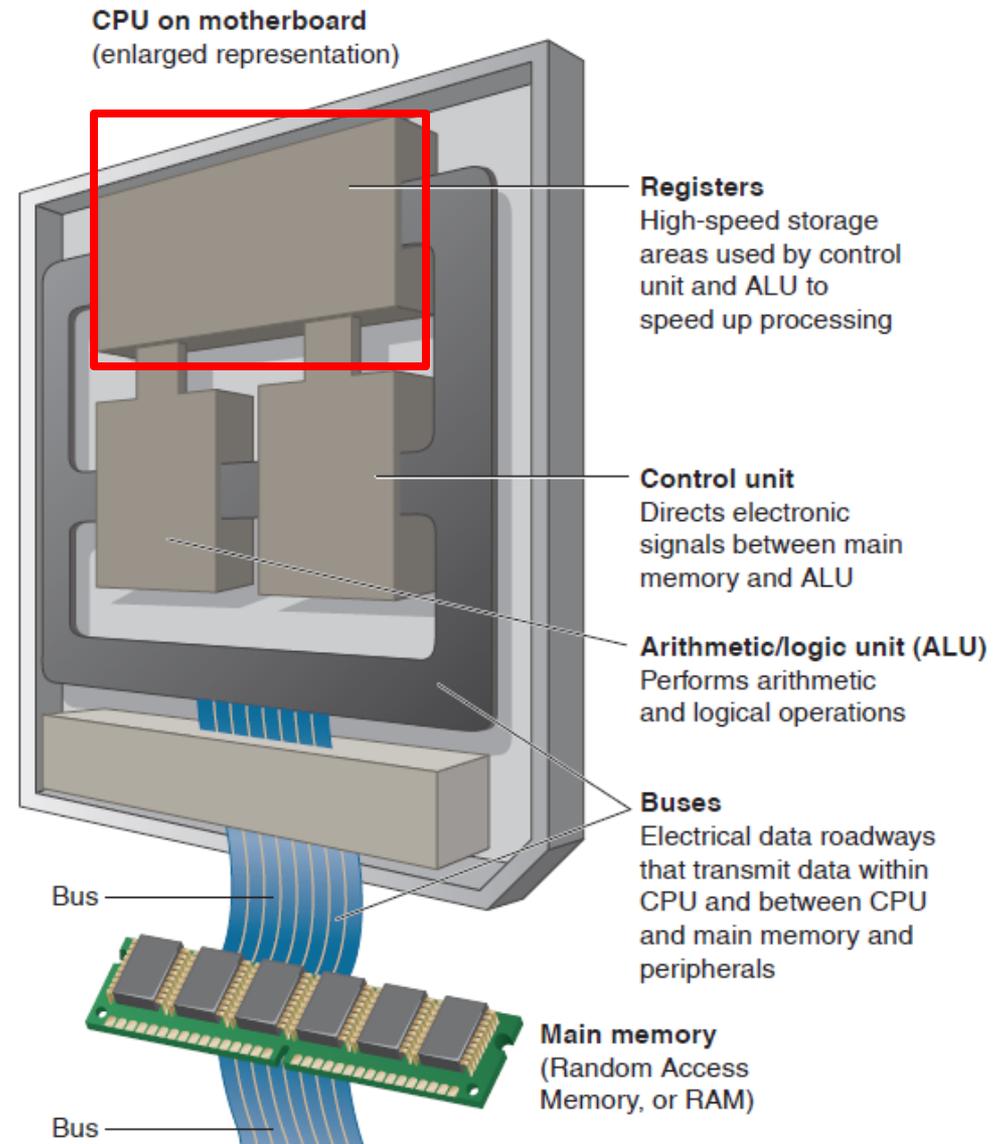
# CPU

- **Arithmetic/Logic Unit (ALU) :**  
melakukan operasi-operasi aritmatika dan operasi-operasi logika dan mengendalikan kecepatan dari operasi-operasi tersebut



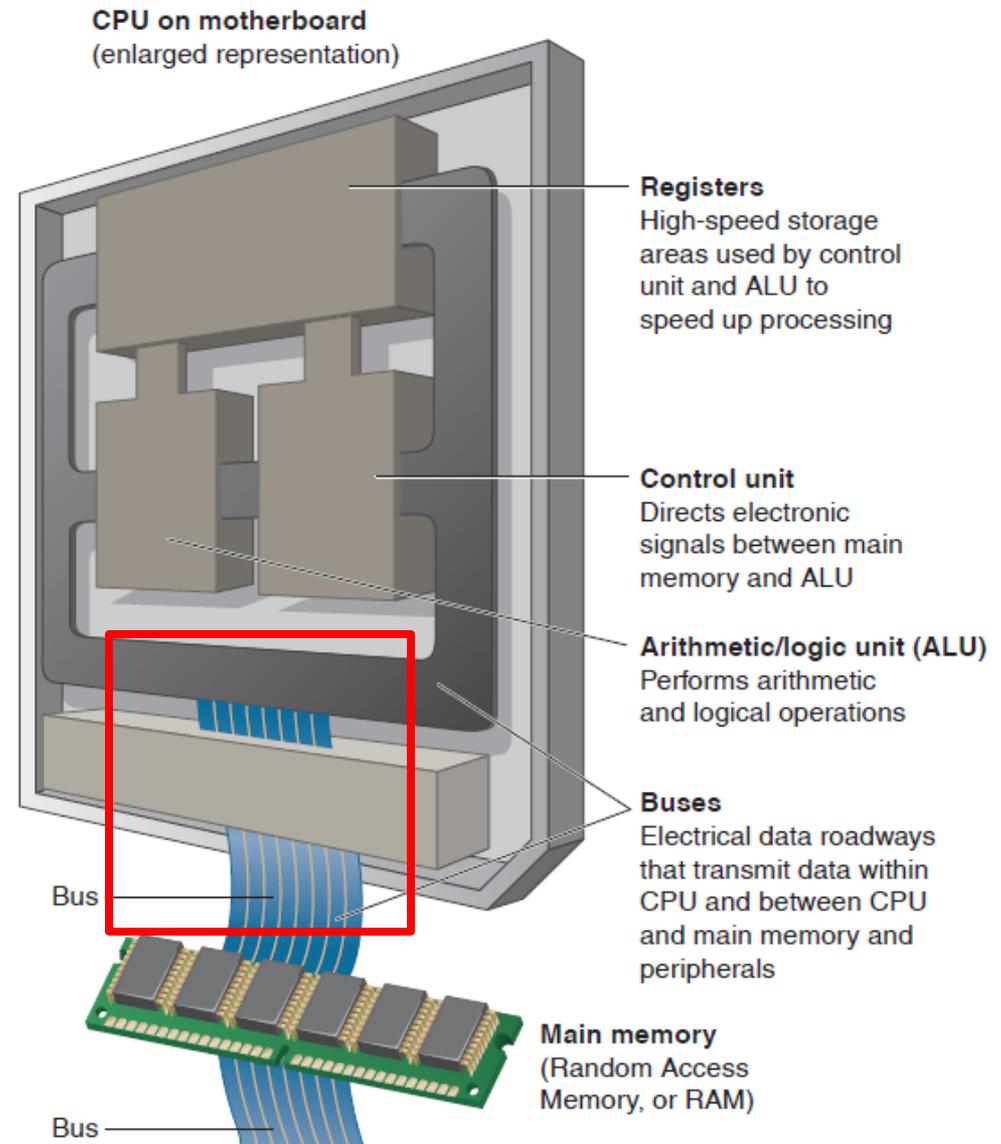
# CPU

- **Register:**  
area penyimpanan dengan kecepatan tinggi yang menyimpan data secara sementara selama proses berlangsung



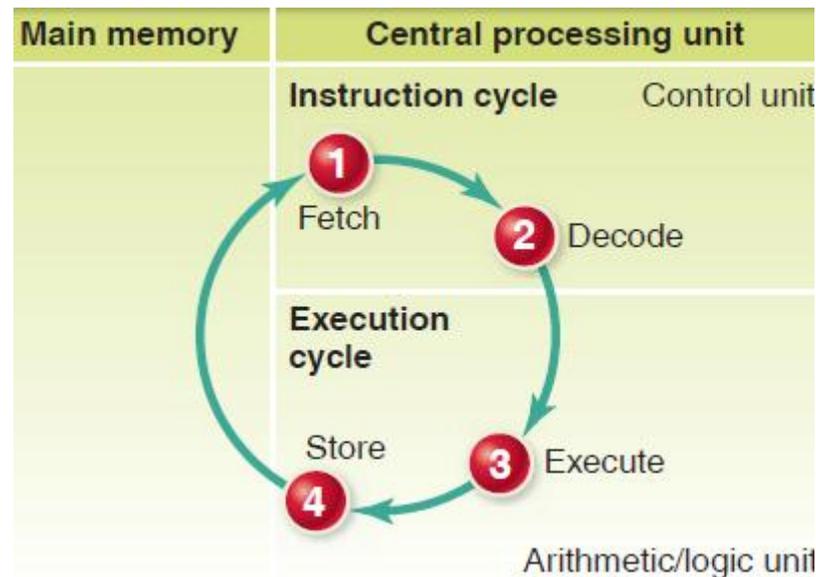
# CPU

- **Bus:** jalur elektrik data dimana bit-bit dikirimkan dalam CPU, antar CPU, maupun komponen lain pada motherboard (papan utama rangkaian komputer).



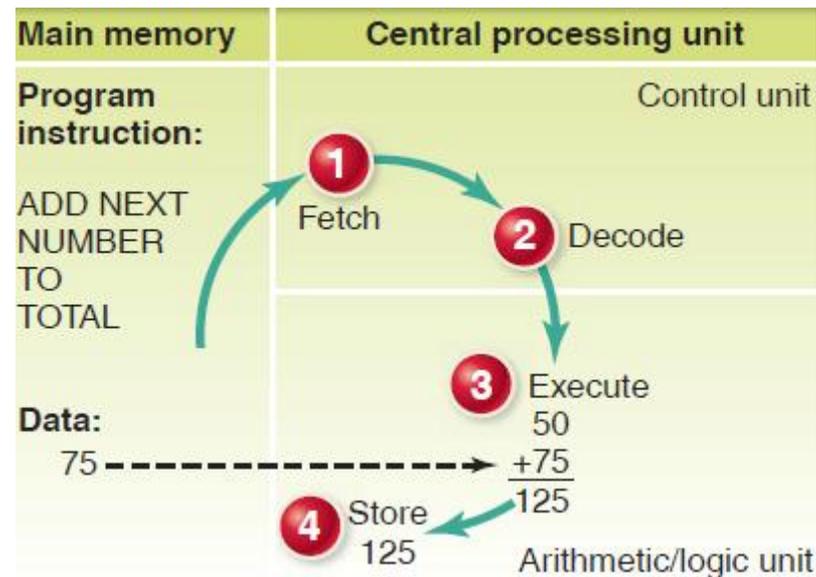
# Siklus Kerja CPU

- Pada setiap instruksi Control Unit melakukan 4 operasi utama yang disebut **Machine Cycles**:
  1. Fetch : mengambil instruksi
  2. Decode : menterjemahkan instruksi
  3. Execute : melaksanakan instruksi
  4. Store : menyimpan hasil



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**Sekian**

**TERIMAKASIH**