

IT Trends:

- Overview
- Today's Technology

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Overview

1. Cari satu buah produk IT, lalu ceritakan perkembangan dari awal sampai dengan rencana pengembangan kedepannya.
2. Online collaboration: Buat mock-up project, capture kegiatan
3. Revolusi industri:
4. IT Ethics: ambil studi kasus, diskusikan dengan kelompok
5. Database/Blockchain: ambil studi kasus, diskusikan dengan kelompok
6. Operating System/Web3/Metaverse
7. Software Development + IT Business: membuat website utk bisnis menggunakan Wix
9. Industri kreatif: studi kasus
10. Internet of Things
11. Big Data + AI Machine Learning
12. Game Industry & E-Sports: Tugas
13. Metodologi Penelitian
14. Karya tulis ilmiah



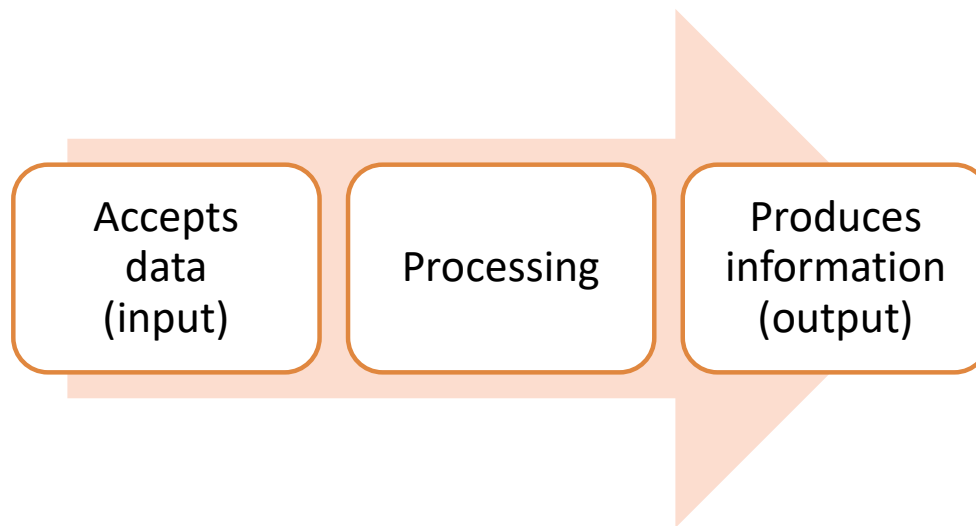
Introduction

- Because technology changes, you must keep up with the changes to remain digitally literate
- Digital literacy involves having a current knowledge and understanding of computers, mobile devices, the web, and related technologies



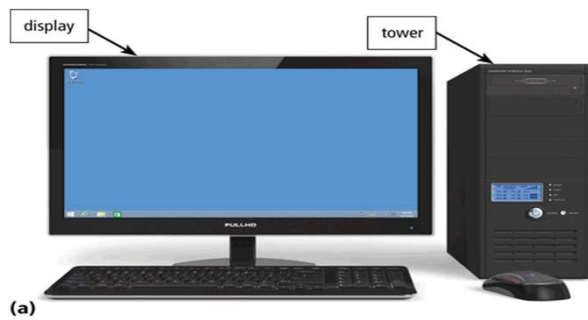
Computers

- A computer is an electronic device, operating under the control of instructions stored in its own memory



Computers

- Laptop
- Tablet
- Desktop and All-in-One
- Server



Mobile and Game Devices



Smartphone



Digital camera



Portable and digital media player



E-book reader



Wearable device



Game device

Input

- A keyboard contains keys you press to enter data and instructions into a computer or mobile device



desktop keyboard



laptop keyboard



on-screen keyboard



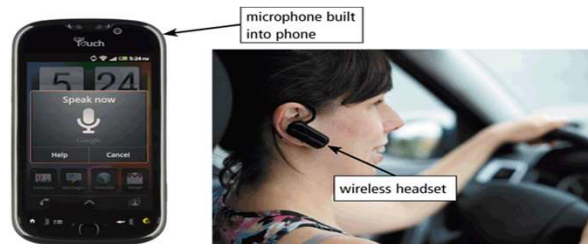
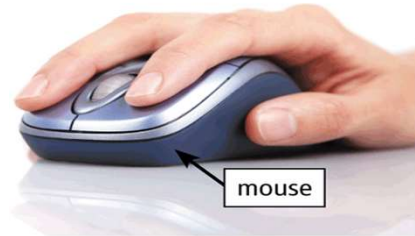
mini keyboard



virtual keyboard

Input

- A pointing device is an input device that allows a user to control a small symbol on the screen called the pointer
- Some mobile devices and computers enable you to speak data instructions using voice input and to capture live full-motion images using video input



Input

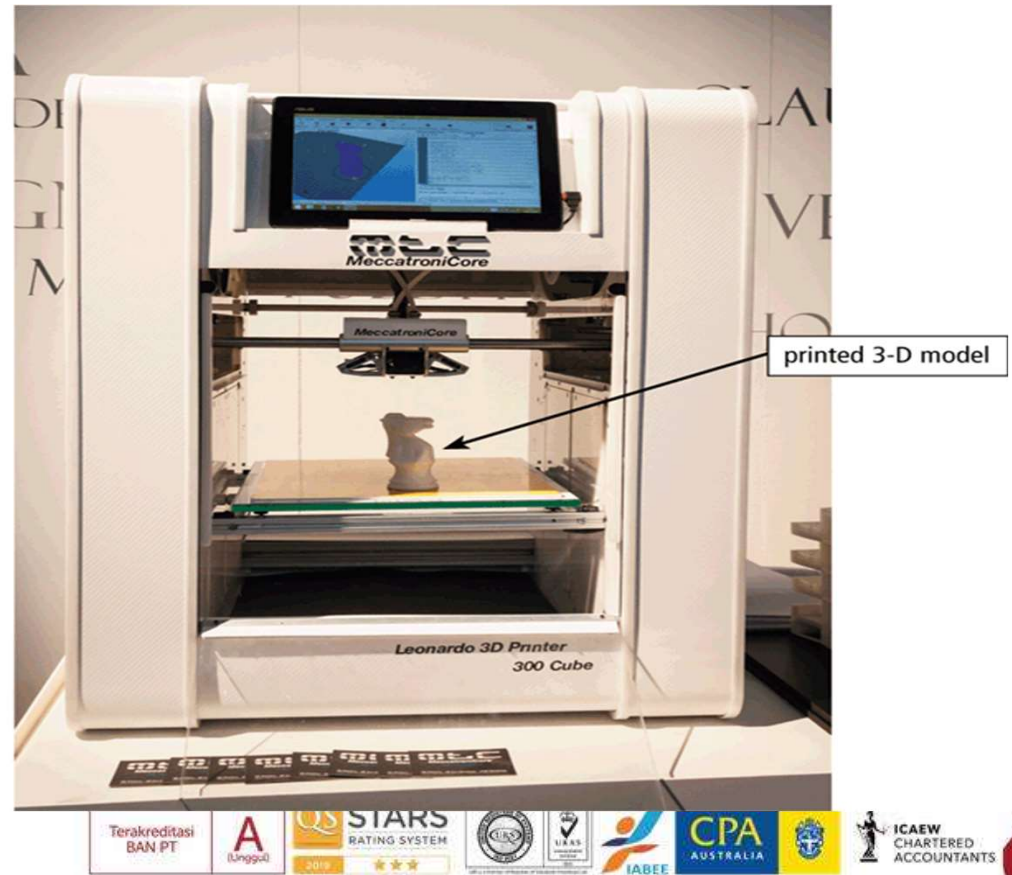
- A scanner is a light-sensing input device that converts printed text and images into a form the computer can process
- CCD Charge-Coupled Device
- Convert light to digital data



Output

- An **output device** is any hardware component that conveys information from a computer or mobile device to one or more people
- A **printer** is an output device that produces text and graphics on a physical medium, such as paper or other material
 - A 3-D printer can print solid objects, such as clothing, prosthetics, eyewear, implants, toys, parts, prototypes, and more

Output



Output

- A display is an output device that visually conveys text, graphics, and video information



smartphone display



digital camera display



tablet display



laptop display



monitor display

Output

- Speakers allow you to hear audio such as music, voice, and other sounds
 - Earbuds
 - Headphones

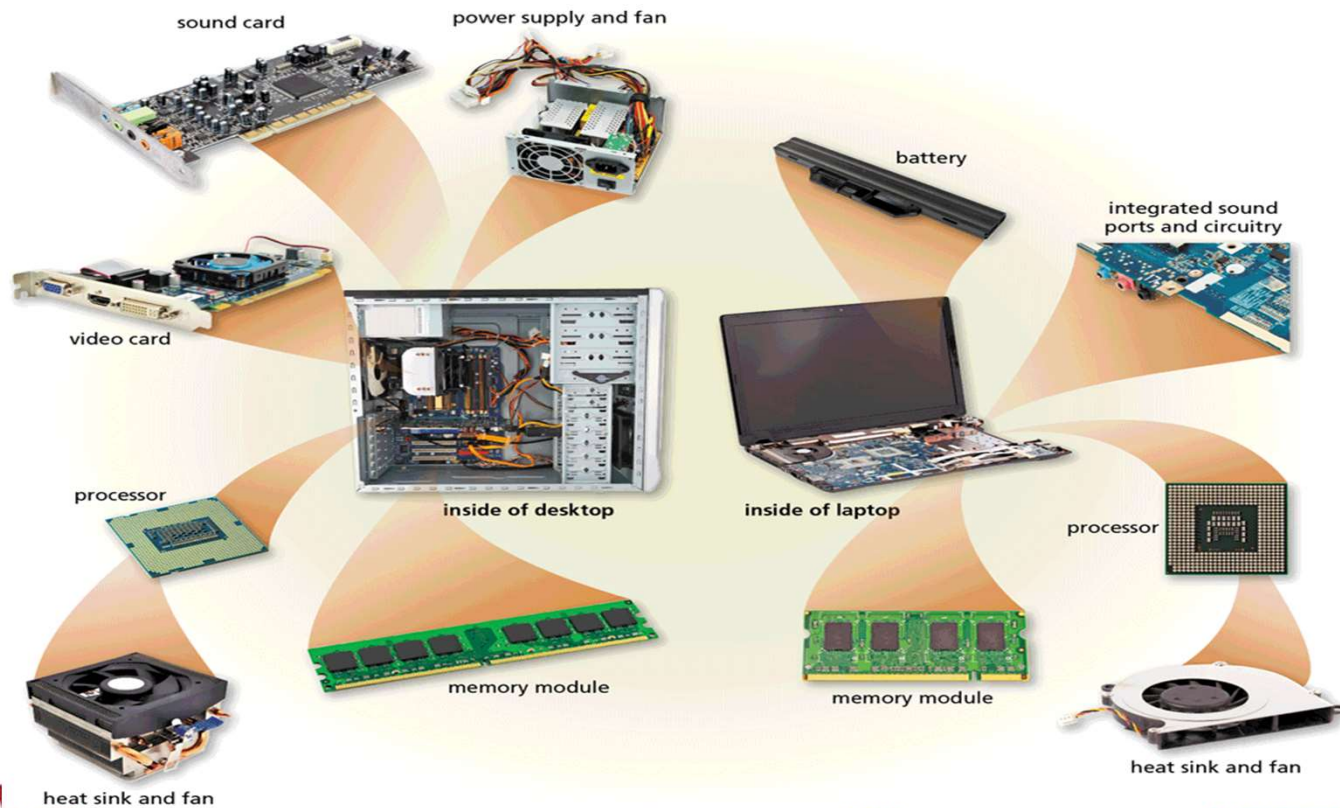


Inside the Case

- The case contains and protects the electronics of the computer or mobile device from damage

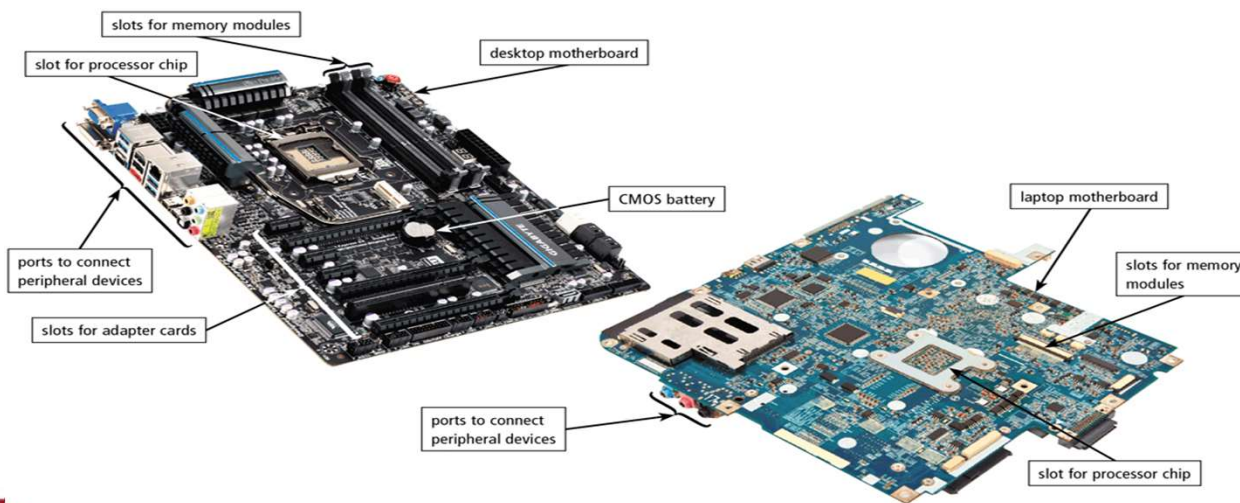


Inside the Case



Inside the Case

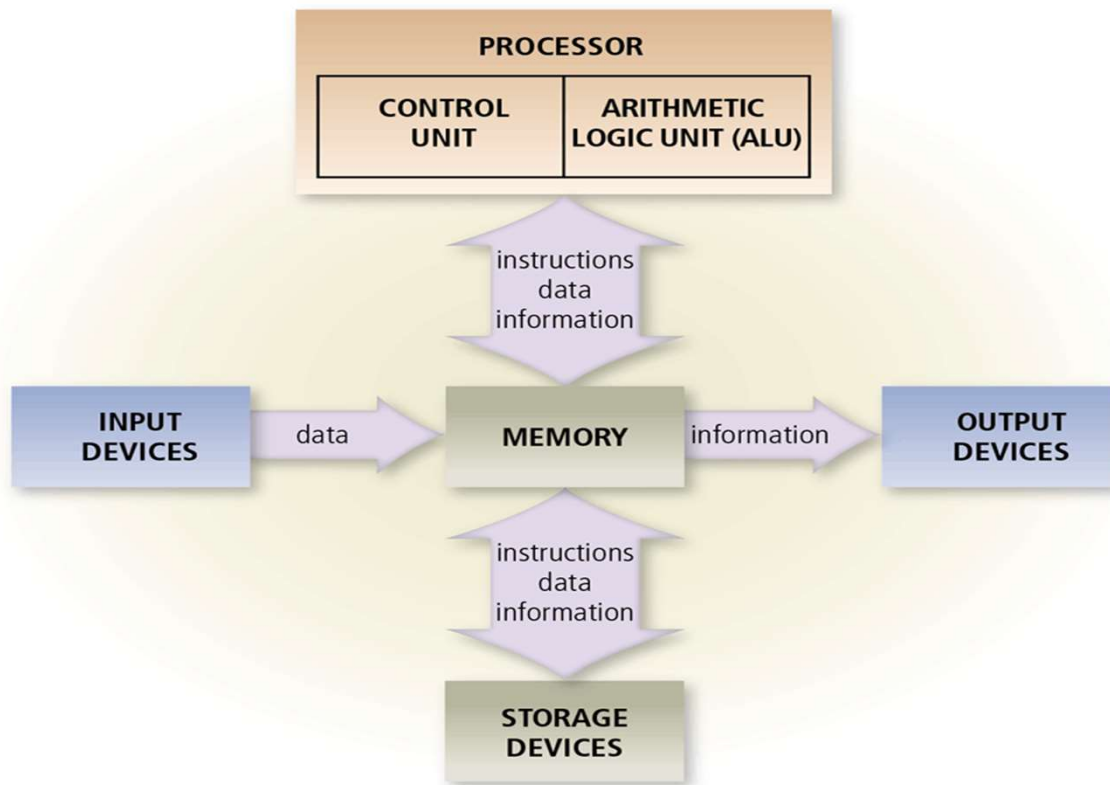
- The **motherboard** is the main circuit board of the computer
 - A computer **chip** contains integrated circuits



Processors

- The **processor**, also called the **central processing unit (CPU)**, interprets and carries out the basic instructions that operate a computer
- A **multi-core processor** is a single chip with two or more separate processor cores
- Processors contain a control unit and an arithmetic logic unit (ALU)

Processors

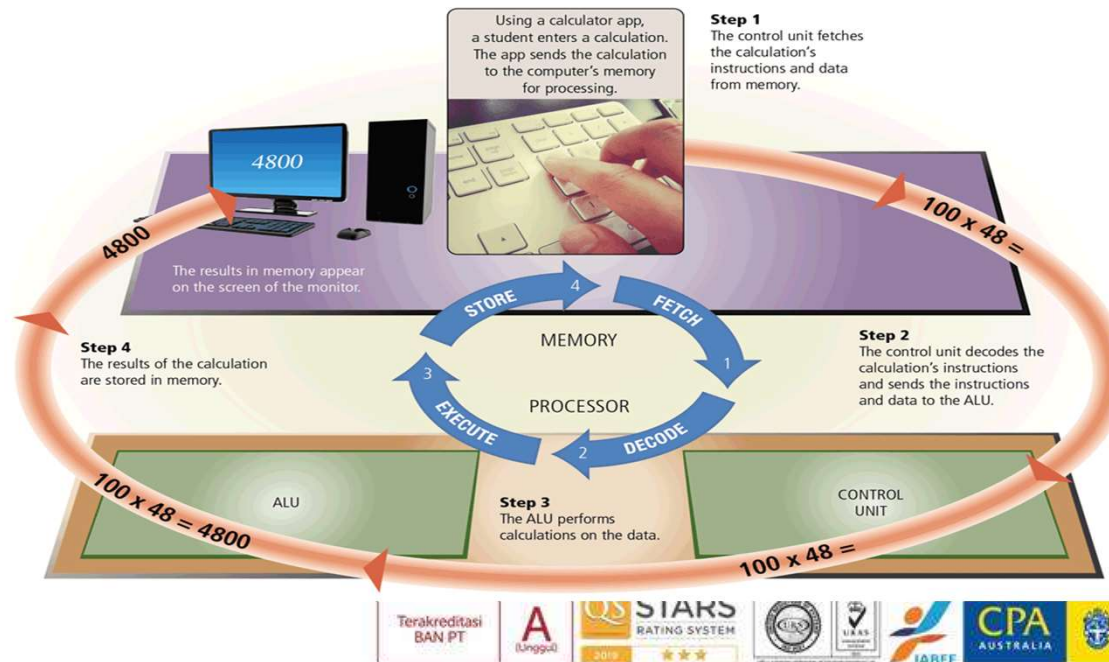


- The **control unit** is the component of the processor that directs and coordinates most of the operations in the computer
- The **arithmetic logic unit** (ALU) performs arithmetic, comparison, and other operations

Processors

- For every instruction, a processor repeats a set of four basic operations, which comprise a machine cycle

The Steps in a Machine Cycle



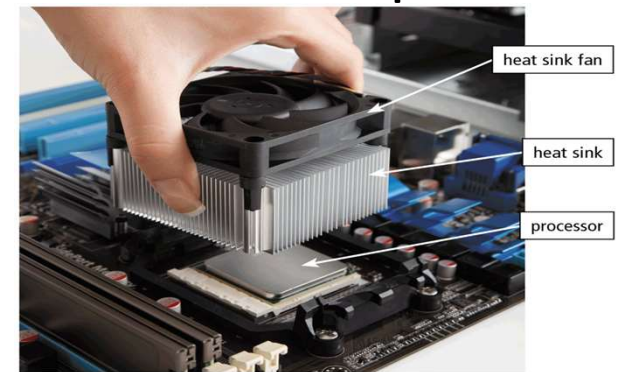
Processors

- The leading manufacturers of personal computer processor chips are Intel and AMD



Processors

- A processor chip generates heat that could cause the chip to malfunction or fail
- Require additional cooling
 - Heat sinks
 - Liquid cooling technology
 - Cooling pads



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
- Stores three basic categories of items:

The operating
system and other
programs

Applications

Data being
processed and the
resulting
information

Memory

- Each location in memory has an address
- Memory size commonly is measured in gigabytes (GB) or terabytes (TB)



Memory

- Computers and mobile devices contain two types of memory:

Volatile memory

Loses its contents when power is turned off

Example includes **RAM**

Nonvolatile memory

Does not lose contents when power is removed

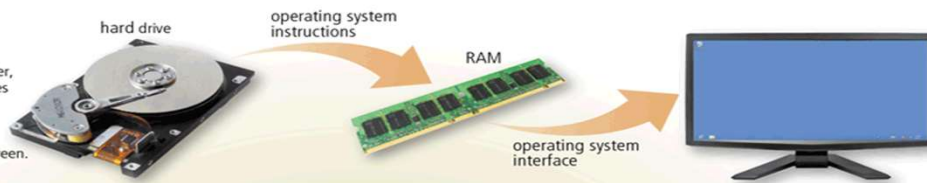
Examples include ROM, flash memory, and CMOS

Memory

How Program Instructions Transfer in and out of RAM

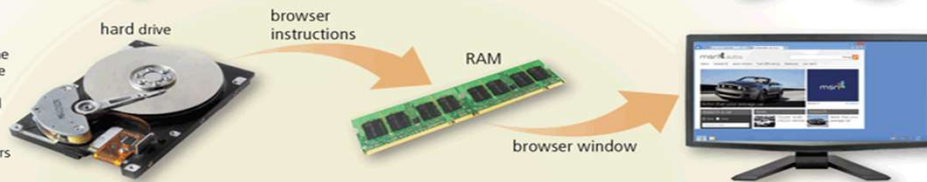
Step 1

When you start the computer, certain operating system files are loaded into RAM from the hard drive. The operating system displays the user interface on the screen.



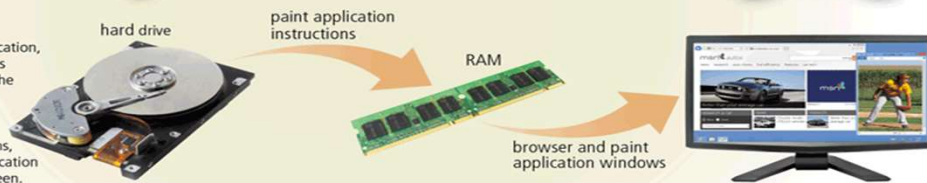
Step 2

When you run a browser, the application's instructions are loaded into RAM from the hard drive. The browser and certain operating system instructions are in RAM. The browser window appears on the screen.



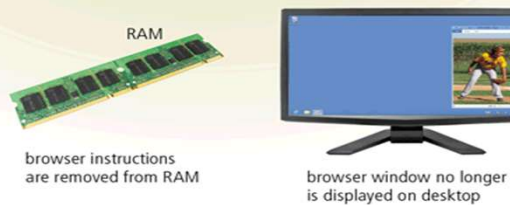
Step 3

When you run a paint application, the application's instructions are loaded into RAM from the hard drive. The paint application, along with the browser and certain operating system instructions, are in RAM. The paint application window appears on the screen.



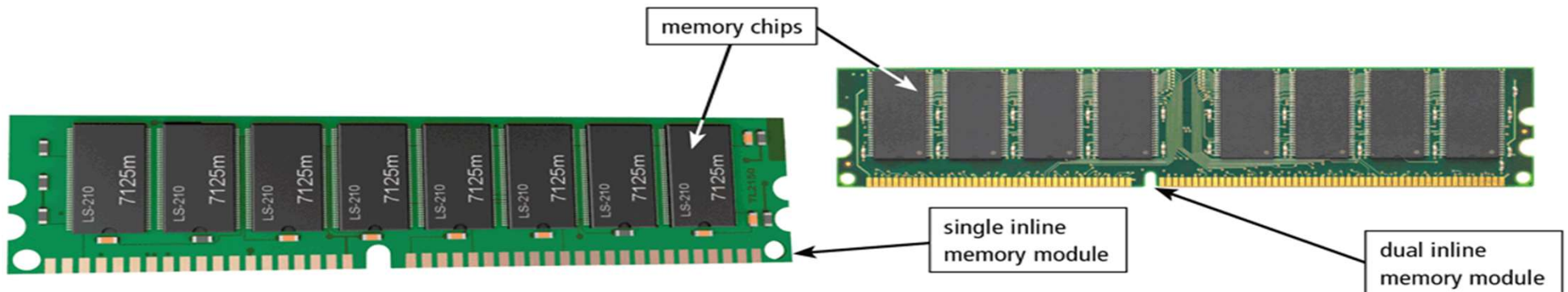
Step 4

When you exit an application, such as the browser, its instructions are removed from RAM. The browser is no longer displayed on the screen.



Memory

- RAM chips usually reside on a memory module and are inserted into memory slots



Memory

- **Read-only memory (ROM)** refers to memory chips storing permanent data and instructions
- **Flash memory** can be erased electronically and rewritten
 - CMOS technology uses battery power to retain information when the power to the computer is off

Adapters

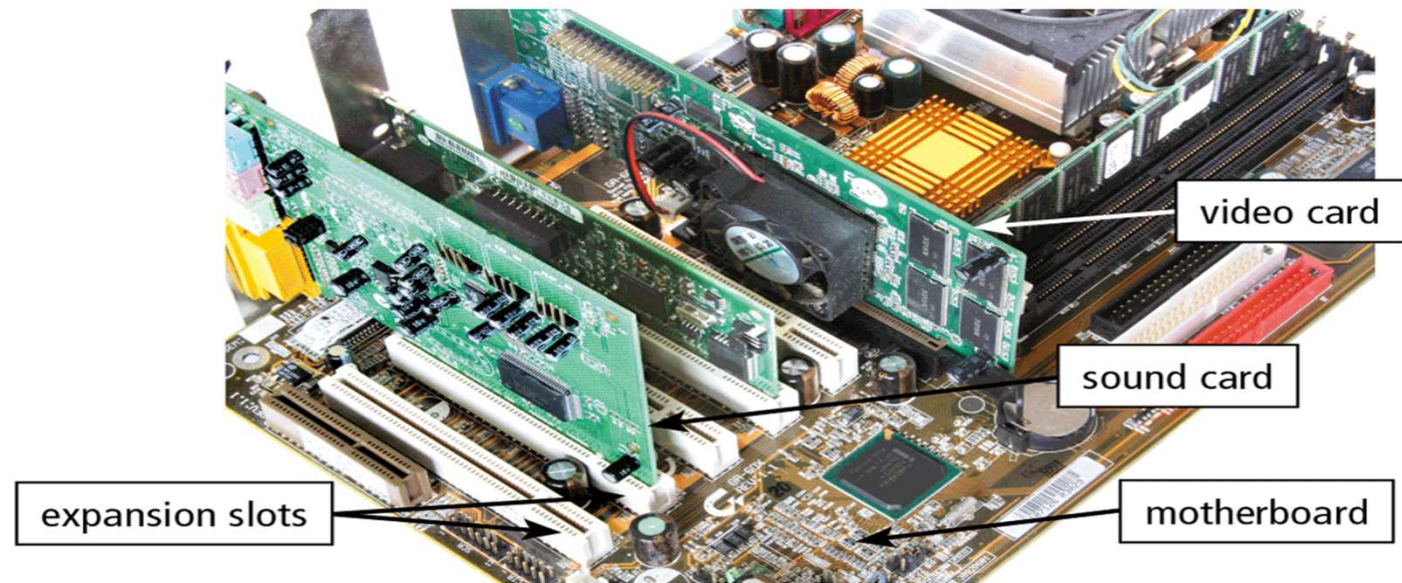
- An **adapter card** enhances functions of a component of a desktop or server system unit and/or provides connections to peripherals
 - Sound card and video card
- An **expansion slot** is a socket on a desktop or server motherboard that can hold an adapter card

Table 6-3 Adapter Cards

Type	Purpose
Bluetooth	Enables Bluetooth connectivity
MIDI	Connects to musical instruments
Modem	Connects to transmission media, such as cable television lines or phone lines
Network	Provides network connections, such as to an Ethernet port
Sound	Connects to speakers or a microphone
TV tuner	Allows viewing of digital television broadcasts on a monitor
USB	Connects to high-speed USB ports
Video	Provides enhanced graphics capabilities, such as accelerated processing or the ability to connect a second monitor
Video capture	Connects to a video camera

Adapters

- With **Plug and Play**, the computer automatically can recognize peripheral devices as you install them



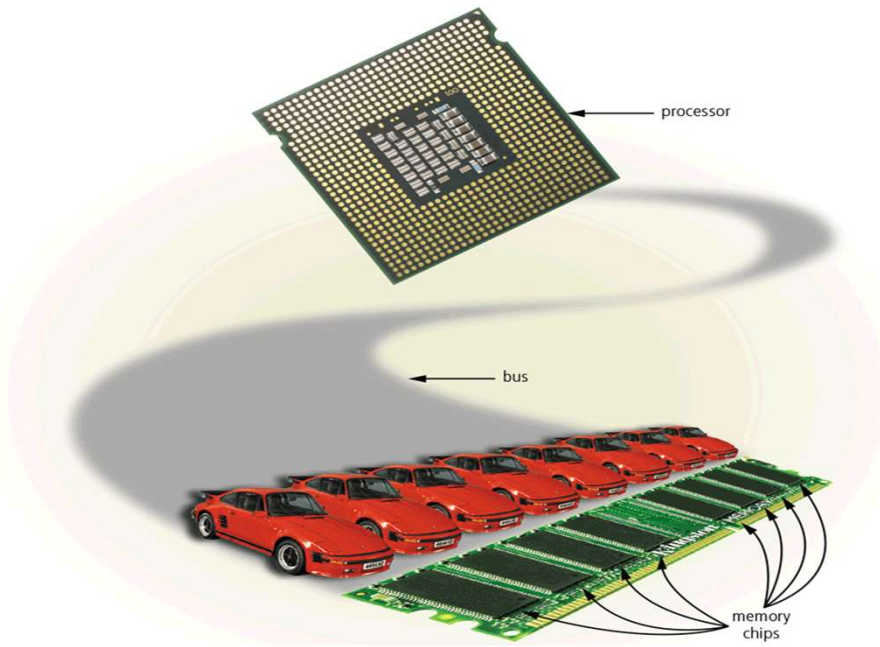
Adapters

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



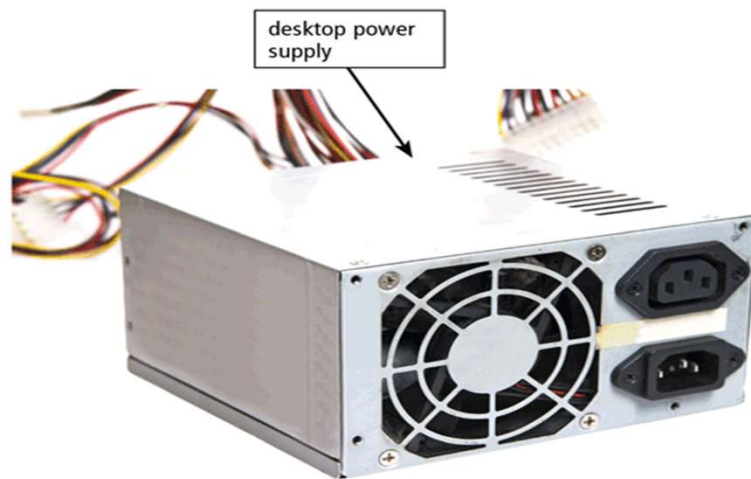
Buses

- A **bus** allows the various devices both inside and attached to the system unit to communicate with one another
 - Data bus
 - Address bus



Power Supply and Batteries

- The **power supply** or laptop AC adapter converts the wall outlet AC power into DC power



Power Supply and Battery

- Mobile computers and devices can run using either a power supply or batteries
- Batteries typically are rechargeable lithium-ion batteries



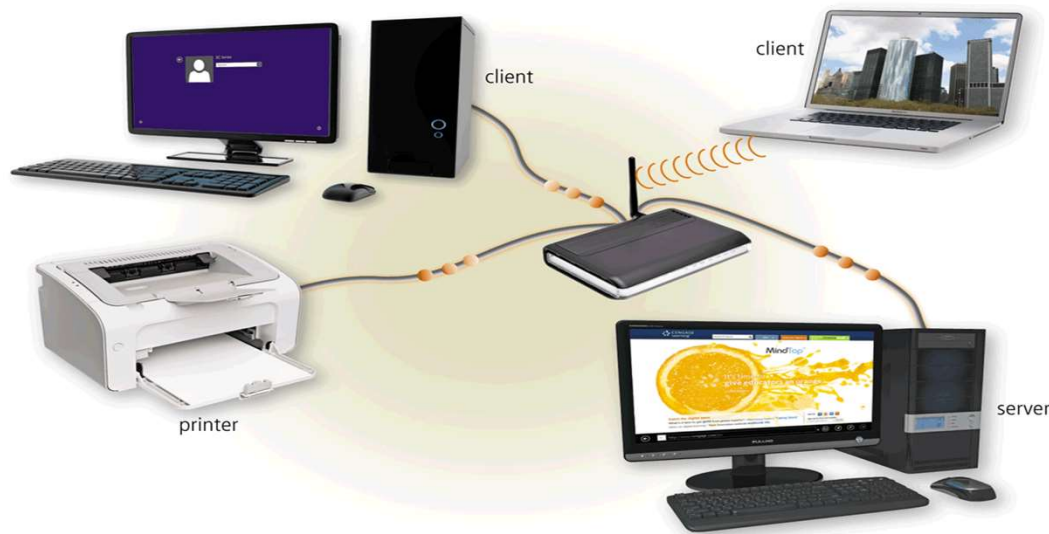
Communications and Networks

- A **communications device** is hardware capable of transferring items from computers and devices to transmission media and vice versa



Communications and Networks

- A **network** is a collection of computers and devices connected together, often wirelessly, via communications devices and transmission media



Communications and Networks

- Examples of wireless communications technologies include:

Wi-Fi

Bluetooth

Cellular radio

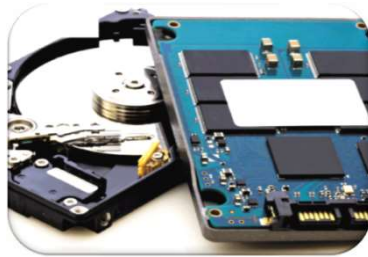
DATA & INFORMATION



Data and Information



Hard Disk



Solid-State
Drive



USB Flash Drive



Memory Card



Optical Disc



Cloud Storage

Databases, Data, and Information

Database

- Collection of data organized in a manner that allows access, retrieval, and use of that data

Data

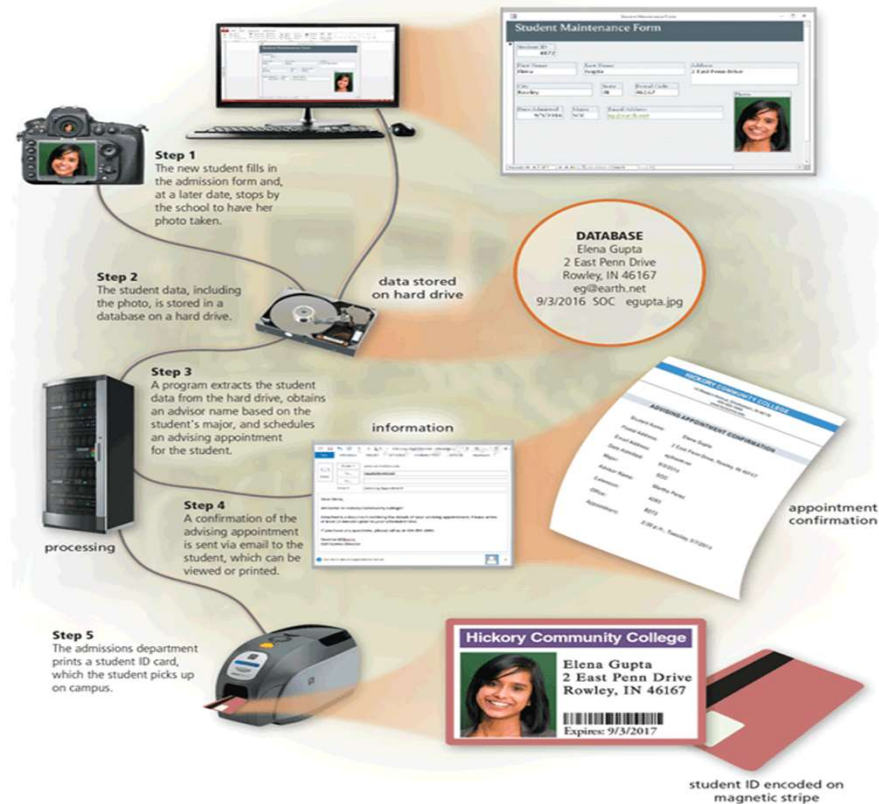
- Collection of unprocessed items
 - Text
 - Numbers
 - Images
 - Audio
 - Video

Information

- Processed data
 - Organized
 - Meaningful
 - Useful

Databases, Data, and Information

How a School's Admissions Department Might Process New Student Data into Information



Databases, Data, and Information

- **Database software**, often called a **database management system (DBMS)**, allows users to:

Create a computerized database

Add, modify, and delete data

Sort and retrieve data

Create forms and reports from the data

File Processing Systems and Databases

File processing system

- Each department has its own set of files
- Redundant data
- Isolated data

Database approach

- Programs and users share data
- Reduced data redundancy
- Improved data integrity
- Shared data
- Easier access
- Reduced development time

Cloud Computing

- Home and business users choose cloud computing for a variety of reasons

Accessibility

Cost savings

Space savings

Scalability



Q&A

BENTUK KELOMPOK (5 ORG/KLP)

TUGAS KELOMPOK

- Pilih salah satu device / komponen computer, misalnya: komponen computer: memory, processor, VGA, dll; Gadget: VR, Drone, Wearable device, dll
- Buat dalam presentasi max 3 halaman, dapat berisi:
 - Penjelasan teknis mengenai device tsb, atau
 - Mengapa device/komponen tsb dapat menjadi trend di masa mendatang
- Tuliskan NPM dan Nama anggota kelompok
- Filetype: Powerpoint / Canva / bebas