



**Program Pasca Sarjana Magister Manajemen  
Universitas Gunadarma**

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# **Introduction to Computer Application I**



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## Summary

- ❖ Introduction to the computer
- ❖ Hardware development
- ❖ Software development
  - Language Programming
  - Operating System
  - ***Software Application***
    - ***Presentation***
    - ***Multimedia***
    - ***Internet***
    - ***Image Processing***



# **Introduction to the computer**

- »»Definition**
- »»Electronic Data processing & Data Processing Cycle**
- »»Computer System**



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## DEFINITION

Computer is:  
an electronic device that can receive data  
input and process it to get the result as an  
information

**EDP** is a manipulation from a row data to a useful Information

## Data Processing Cycle



## COMPUTER SYSTEM





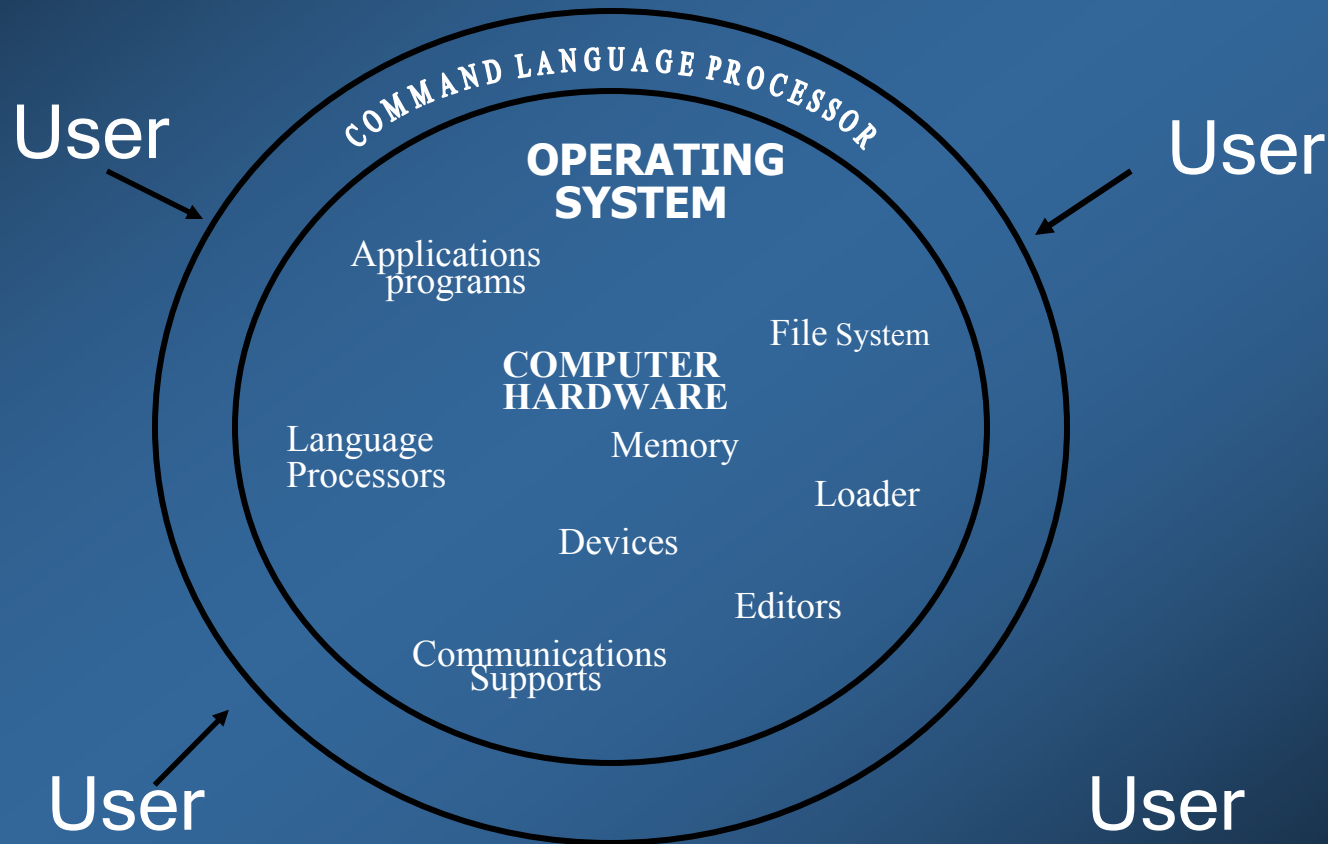
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- ❖ **Computer System:** A collection of hardware and software components designed to provide an effective tool for computation.
- ❖ **Hardware:** Actual equipment used to perform the computations.
- ❖ **Software:** Programs enabled us to communicate with a computer by providing it with the list of instructions it needs to operate.



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*A typical computer system*



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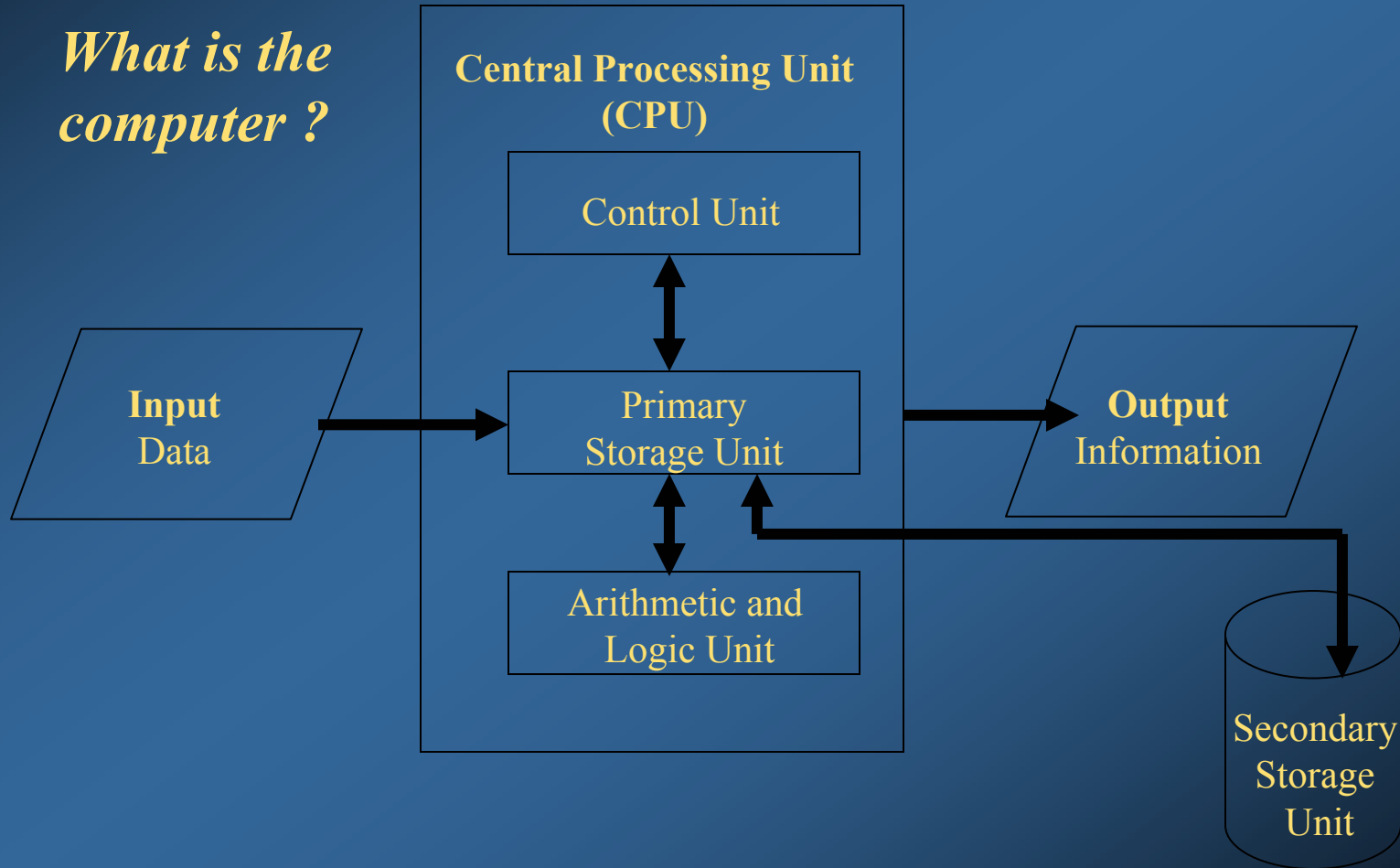
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- » All Computers, from the very smallest microsystem to the largest mainframe, consist of three basic components.
  - » Memory
  - » Central Processing Unit (CPU)
  - » Input/Output devices



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*What is the  
computer ?*







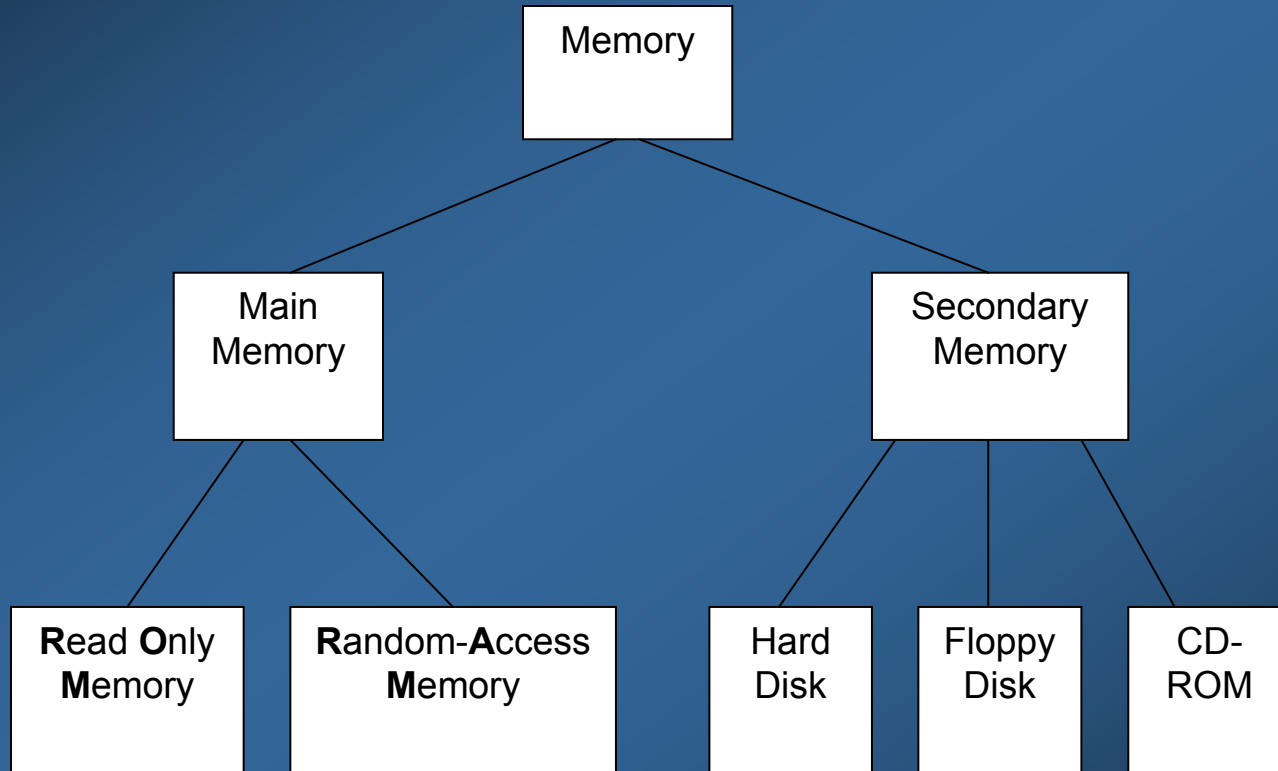
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- Every computer comes with a certain amount of storage, both *internal* storage (*memory*), and *external* (or *secondary*) *storage*.
  - The two forms of storage differ in *characteristics* and in *purpose*.
  - Program currently in execution, along with some of the data required for execution, must be reside in memory.
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*Types of memory*



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## MAIN MEMORY

### ➤ Read Only Memory (ROM):

- Stores information permanently (*not* volatile).
- Stores the boot instructions needed to start-up the computer when it is switch on.
- Is written by the manufacturer.

### ➤ Random Access Memory (RAM):

- Is usually volatile memory.
- Temporarily stores programs while they are being executed and data.

### ➤ Cache Memory

Checked by the processor prior to looking for a needed program instruction or data in regular RAM.

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## Central Processor Unit (CPU)

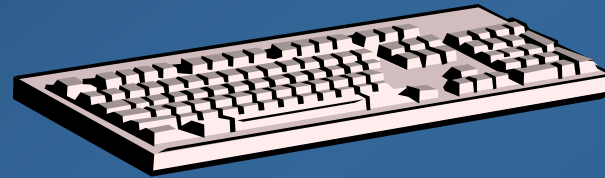
- ❑ Coordinating all computer operations
- ❑ Performing arithmetic and logical operations on data
- ❑ Contains two subcomponents
  - **Arithmetic/Logic Unit (ALU)**
    - Carries on all types of calculation (Arithmetic and logical operations)
  - **Control Unit (CU)**
    - Controls the actions of the other components.
    - Examples, *Operating under the control of instructions from the programmer (these instructions reside in memory), the control unit causes data to be read from the input devices, passed the appropriate values from storage to arithmetic/logic unit for the required calculations, stores and retrieved data and intermediate results from main memory, and passes results to the output device for display*



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## INPUT DEVICES

### ➤ Keyboard Devices



### ➤ Pointing Devices:

Mouse, Trackball, Touch Screen, Light Pen, Remote Control Unit

### ➤ Optical Reading Devices:

*OCR (Optical Character Recognition) :*

optical mark reader, optical character reader, handprint reader

### ➤ Magnetic Reading Devices

EFT (Electronic Funds Transfer) : automatic deposit, automatic transfer, Automated Teller Machine (ATM)

### ➤ Speech Recognition Devices



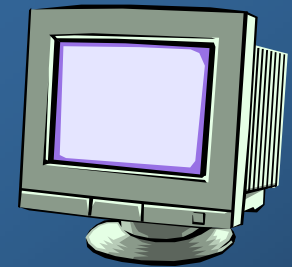


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## OUTPUT DEVICES

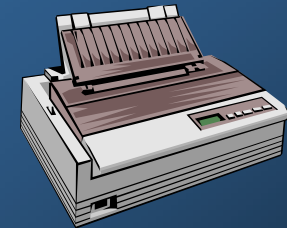
### ➤ Displayed Output Devices :

*Display Screen, Monitor, Cathode Ray Tube (CRT),  
Video Display Terminal (VDT)*



### ➤ Printers :

*Line Printers, Character Printers, Page Printers*



### ➤ Speech Output Devices



### ➤ Plotters

### ➤ Microfilm



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## Hardware Development

- First Generation (1946-1959)
- Second Generation (1960-1965)
- Third Generation (1966-1975)
- Fourth Generation (1975 - Now)
- Accessories





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## Software Development

- **System Software**
  - ❖ **Operating Systems**
  - ❖ **Utility Programs**
  - ❖ **Language Translators**



## Operating System

Without operating system, a software application or a program language software can't communicate with the computer.

Operating System is just like a brain on human body which organize all process inside a human body

**OS/360**

**CP/M**

**OS/2**

**WINDOWS**

**UNIX**

**OS/400**

**MS-DOS**



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**There are six basic functions that an operating system can perform :**

1. Schedule Jobs.
2. Manage Hardware and Software Resources
3. Maintain Systems Security
4. Enable Multiple User Resource Sharing
5. Handle Interrupts
6. Maintain Usage Records



## Utility Programs

Utilities enable users to copy files, erase files, sort the content of files, merge two or more files together, and prepare removeable storage media for use. Other utilities allow the computer operations manager to recover lost or bad files, monitor performance of the system, and event control the flow data between users and computers.



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**Language Programming** : There are three different kind of Language programming:

- **Machine Language**

- **Low level Language**  
Assembler

- **High Level Language**  
Fortran, Lisp, Algol, Cobol,  
RPG, Basic, Pascal, Prolog, C,  
Matlab, etc.



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- **Machine Language**

- A computer's native language, containing instructions that are binary numbers.
- It is difficult for human to learn and use.
- Instructions to the control unit must be expressed in terms of the machine language of the particular computer.
- A machine language instruction conveys the *operation* to performed and the *operands*, or memory cells, that are to take part.

Example, compute the cost of an item

$$\text{cost} = \text{price} + \text{tax}$$



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## Operation Code Operation Meaning

001	<b>Load</b>	Copy the value of the memory cell addressed into the accumulator
010	<b>Store</b>	Copy the value of the accumulator into the word addressed
011	<b>Add</b>	Replace the present value of the accumulator with the sum of its present value and the value of the memory cell addressed.
...		
111	<b>Halt</b>	Terminate execution

*Sample Instruction Set*



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- **Assembly Language**

- Is programming language in English-like abbreviations
- Later be converted into machine code by program's translator called assemblers
- Example, adds to number and store in another variable

```
LOAD  A
ADD   B
STORE C
```





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- **High-Level Language**

- A programming language whose instructions resemble every day language
- Has a **language standard** that describe the grammatical form (syntax) of the language
- Every high-level language instruction must conform to the syntax rules specified in the language standard.
- Example, BASIC, C, C++, COBOL, FORTRAN, LISP, PASCAL, Java
- Example of C++ code,

*cost = price + tax;*



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Presentation Application:

## Power Point

**WHY**

Animation



Interesting  
Presentation



Goal

Can be embedded from another software application such as word, excell, access, picture, video, audio etc.

Can be convert to html file



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Image Processing  
Application:

Matlab

Khoros

Halcon

Ad Oculos

Vista

Mega Wave

Image Pro Plus



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Image Processing  
Application:

## Matlab

**WHY**

Easy to program

Many library specially for Image Processing

Can be compiled with c++ compiler

Interactive Program



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## Internet & Multimedia Application:

Browsing

File Transfer

Email

Remote Control

Video Conferencing

Tools

Audio player

Etc.

Webcam

Video player

Ads Banner



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- **Internet**
  - worldwide collection of computers connected together by a network communication channel.
- **Benefit of Internet**
  - **Electronic mail (E-mail)**
    - one form of communication where an individual can use to send mail to another person or to a complete list of addresses.
  - **Sites**
    - another form of communication to access other people's **files** or information



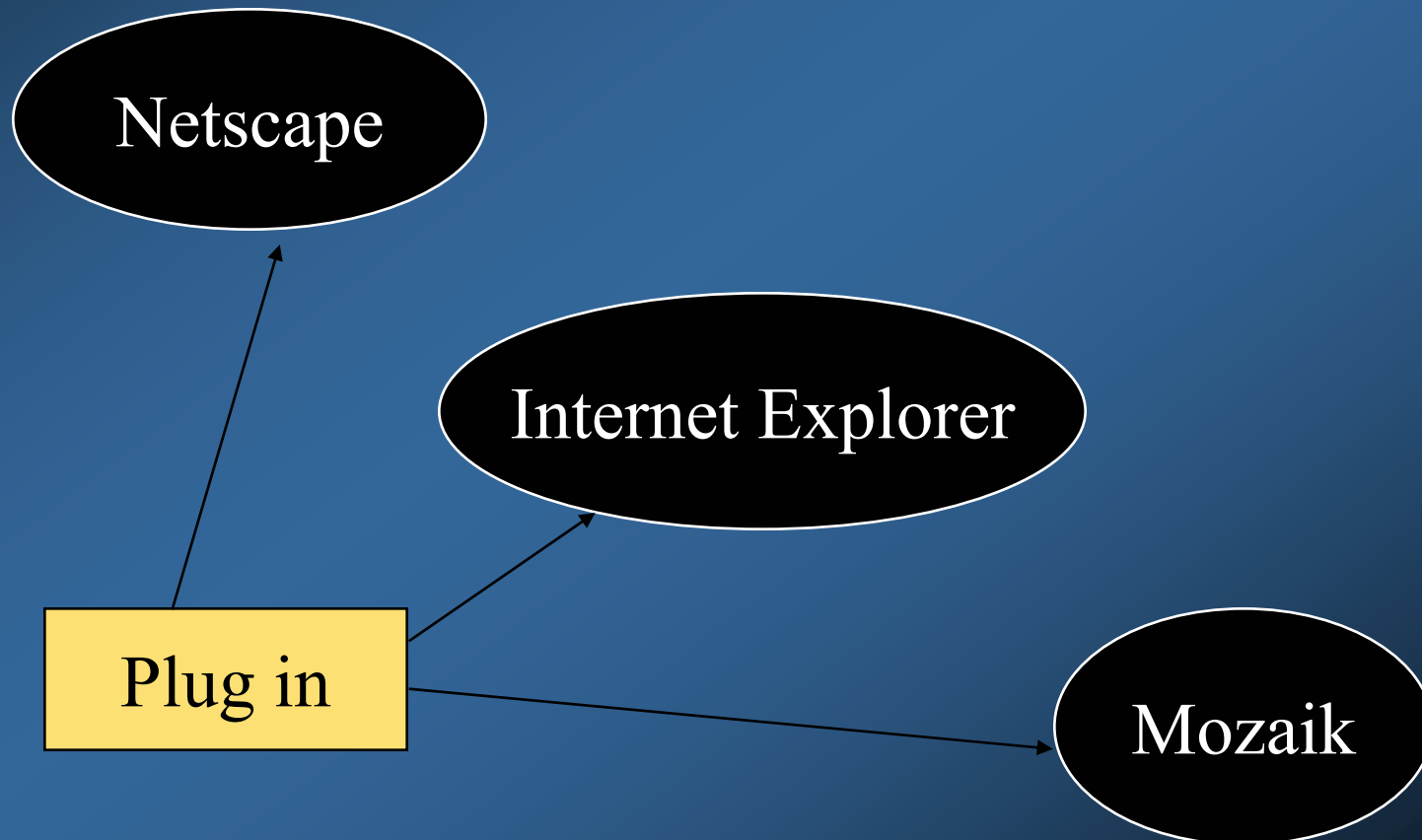
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- **World Wide Web (WWW)**
    - the collection of sites across the world that offer information
  - To visit the site, we must have
    - Web Address / Uniform Resource Locators (URL)
      - <http://www.cnn.com>
      - <http://www.au.ac.th>
      - <http://www.infoseek.com>
    - Computer, communicating devices (MODEM, LAN card) and **web browser**
  - **Web browser**
    - A program that allows us to type the address and send messages asking for information from that site.
    - Browser companies: Microsoft's Internet Explorer (IE) and **Netscape**
-



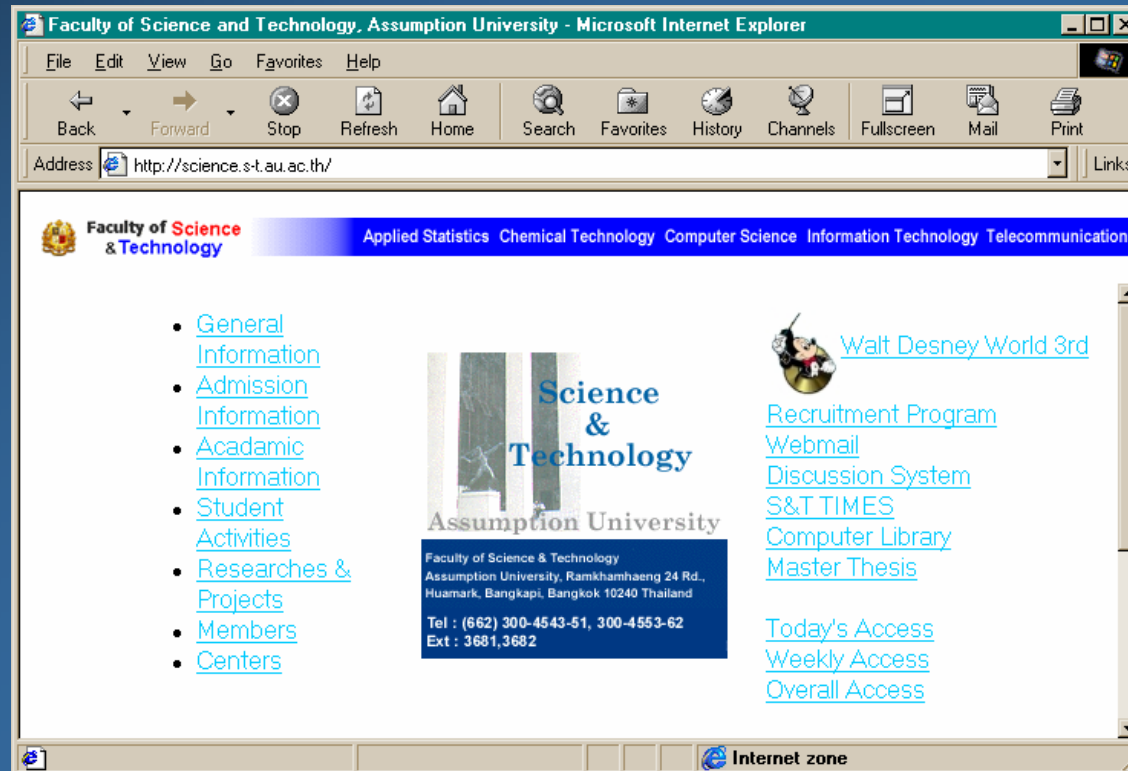
## BROWSING







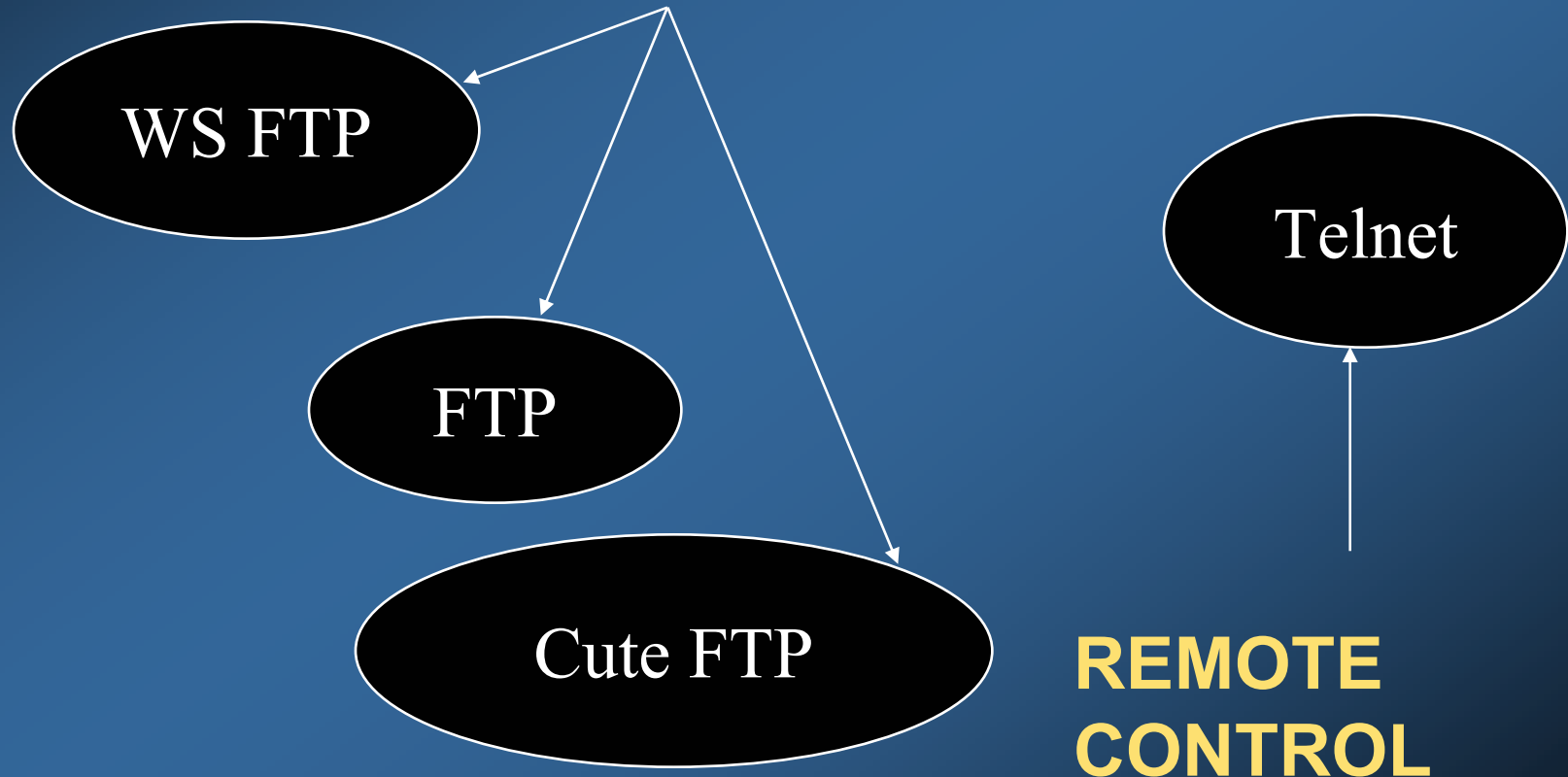
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*Example of Web browser (IE)*



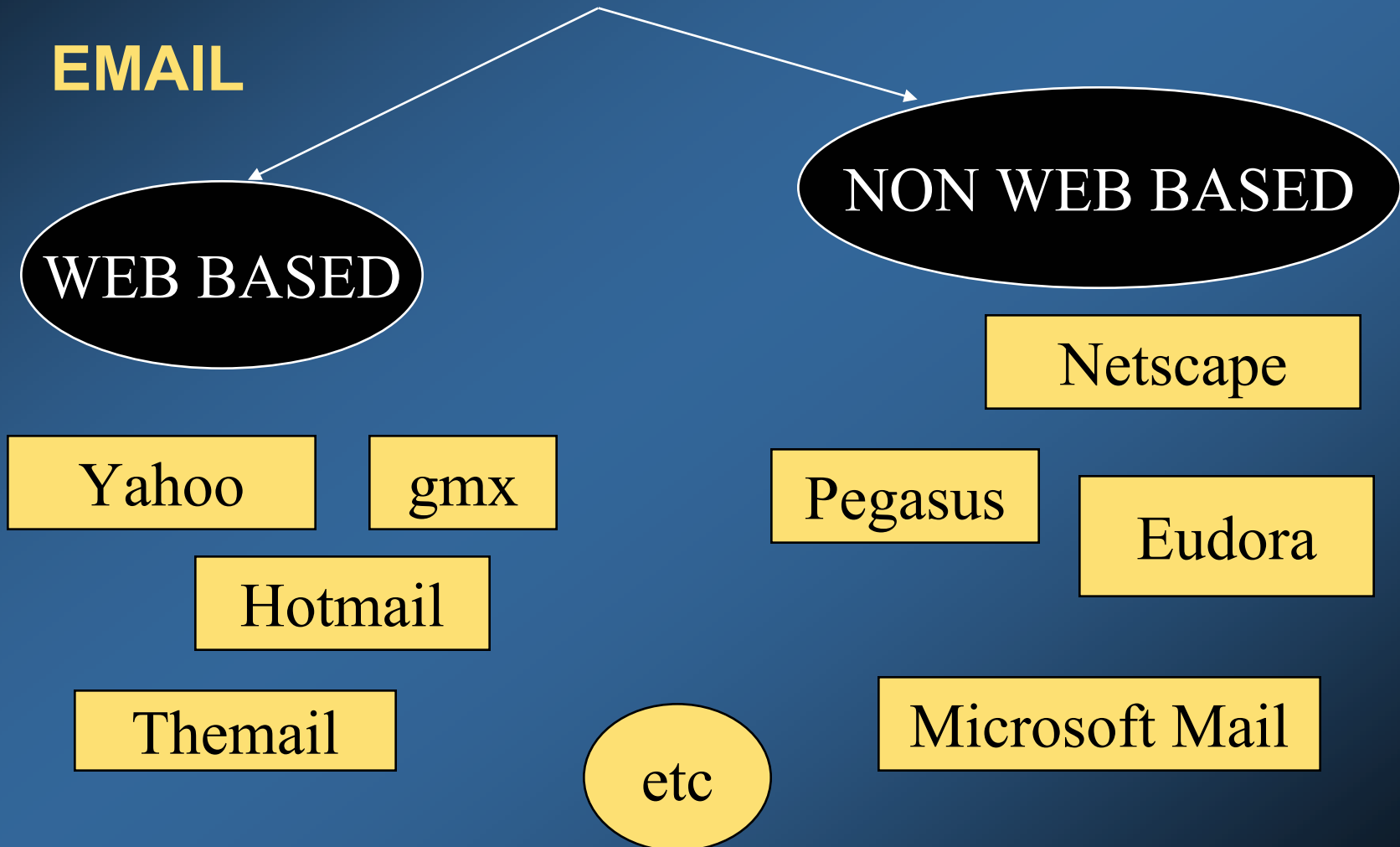
# FILE TRANSFER





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## EMAIL





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## APPLICATION SOFTWARE

- Word Processing
- Database & File Management
- Models
- Management Investation
- Accounting
- Project Schedulling
- Spreadsheet
- **Presentation**
- **Internet**
- Graphic
- Printer Manipulation
- Tools
- Sorting
- Education
- Games
- Statistik
- **Multimedia**
- **Image Processing**



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## »General Business Packages

Inventory, Tracking Customer, Account Receivable, etc.

## ➤Industry-Specific Packages

Agriculture, Real Estate, Trucking, Healt Care, etc

## ➤Organizational Productivity Packages

Group decision support system.

Electronic mail.

Project management packages.

Forecasting and statistical analysis p

## ➤Personal Productivity Packages

Office Automation : Word Processor, Spreadsheet,etc

Desktop Publishing.





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## ACHIEVING USER FRIENDLINESS IN SOFTWARE

Software that is to be used in end-user computing should be easy to learn and use, or *user-friendly*, as possible. To achieve user friendliness, software designers make use of a variety of tools and technique in various hardware environments.

In mainframe and minicomputer environments, **menu**, **context sensitive help** and **guided dialog** all contribute to easy of use by the user. In the microcomputer environment, **the graphic user interface**, with its mouse- or trackball-driven icons, windows, and pull-down menus, has emerged as the the unofficial standard.



## KEEPING INPUT ERRORS TO A MINIMUM

Event with all the techniques that have been devised to assist the user with data entry, it is still possible to make errors. Typographical errors are Just as easy to make with a computer as with a typewriter. In other cases, the user simply enter incorrect data.

Software can be designed to reduce the oppurtunity for errors by providing for their **prevention, detection, and correction**.



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## Software



## Industry-Specific Packages

[mySAP Aerospace & Defense](#)  
[mySAP Apparel & Footwear](#)  
[mySAP Automotive](#)  
[mySAP Banking](#)  
[mySAP Chemicals](#)  
[mySAP Consumer Products](#)  
[mySAP Engineering & Construction](#)  
[mySAP Healthcare](#)  
[mySAP Higher Education](#)  
[mySAP High Tech](#)  
[mySAP Insurance](#)

[mySAP Media](#)  
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## Office Automation



## Programming



**Borland Family of Tools**

Borland development tools work together as a family:

- Delphi
- JBuilder
- C++Builder
- IntraBuilder

For more information: [www.borland.com](http://www.borland.com)



## Desktop Publishing



Adobe Photoshop®





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## Technology



Multimedia Object :

- Text
- Image
- Movie
- Sound
- etc



Connection to database, with :

- PC
- Notebook
- Palm Organizer
- etc.

