

Introduction to Computers & The Internet

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Text Book

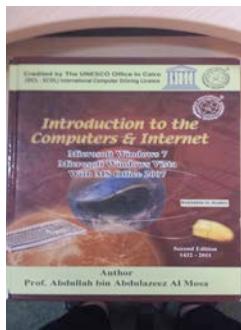
Introduction to the Computers
& Internet

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Contents

- Definition and advantages of computers
- Difference between Data and Information
- Generations of computers from early years
- Types of computers and their characteristics

Definition of a computer

An electronic machine that processes, sorts and retrieves data. Able to perform calculations and logical operations.

The advantages of Computer

- 1-Ability to save data and retrieve it any time.
- 2-Ability to format text and make calculation operation and logical operations(comparative between numbers and values).
- 3-Programming on computer using programming language.

The advantages of Computer

- 1-Speed: in calculation and processing data.
- 2-Accurate: the error probability is very small that it can be neglected.
- 3-Save data: we can save a huge data in computers.
- 4-Economic: From (Cost and Time) point of view.
- 5-Network communication: you can access to others according the web and the internet

Data & Information

Data are the facts or details from which information is derived. Individual pieces of data are rarely useful on their own, for data to become information, data needs to be put into context.

Data: raw, unorganized facts that need to be processed. Data can be something simple and random until it is organized.

Information: When data is processed, organized, structured and presented in a given context so as to make it useful, it is called information

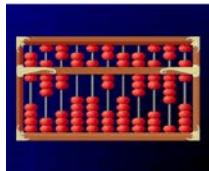
Example:

Data: Each student's test score is one piece of data

Information: The average score of a class or the entire school derived from the given data.

Computer Generations, Definitions, Characteristics & Types

- ***Abacus:** The standard abacus can be used to perform addition, subtraction, division and multiplication; the abacus can also be used to extract square-roots and cubic roots.
- ***Nibers machine:** this machine can do multiplication and division operation.
- ***Add Bascal machine:** The first mechanic machine for adding.
- ***The ruler account:** we can do many operations with this machine.
- ***Leanter's calculator:** this machine can do multiplication and division operation and can find root square.
- ***Babah deference machine:** this machine finds logarithms tables.
- ***Addition printer machine:** this machine can add numbers and print the result into a tap of paper.
- ***Heltor machine:** first cahro-mechanic machine.



Abacus Machine



Babah machine



Pascal machine



Nibers machine

Computer Generation

The computers Passed through development stages, these stages or generation are:

1-First generation: (Vacuum Tubes)

The first computers had used vacuum tubes for circuitry and magnetic drums for memory, and they were often enormous, taking up entire rooms. They were very expensive to operate and used a great deal of electricity, generated a lot of heat, which was often the cause of malfunctions. The first generation computers relied on the machine language to perform operations.

Common computer in this generation are;

- Electro-Mechanic computer (Mark).
 - Electro-Mechanic computer (Anyak).
 - Electro-Mechanic computer (Edvak).
 - Electro-Mechanic computer (Insyak).
 - Electro-Mechanic computer (Yonivak).

(IBM) computer: is the most famous computer in this generation, the memory was a magnetic cylinder. It used Punch cards as input and output units.

Beginnings – Computing in 1945



- Harvard Mark I
 - Picture from <http://piano.dsi.uminho.pt/museuv/indexmark.htm>
 - 55 feet long, 8 feet high, 5 tons

55 feet long, 8 feet high, 5 tons



Vacuum Tubes

2-Second Generation: (Transistors)

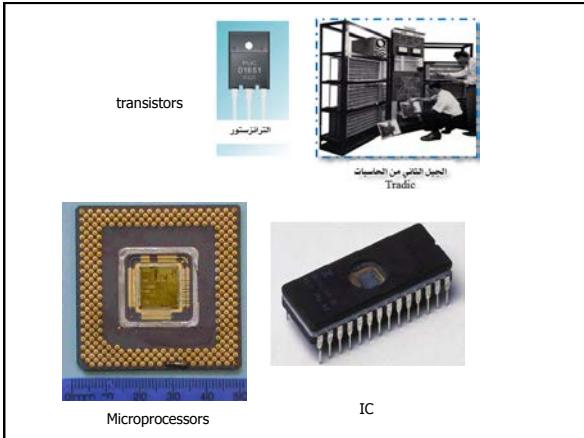
Transistors replaced vacuum tubes and ushered in the second generation of computers. The transistor was invented in 1947 but did not see widespread use in computers until the late 50s. The transistor was far superior to the vacuum tube, allowing computers to become smaller, faster, cheaper, more energy-efficient and more reliable than their first-generation predecessors.

3-Third Generation: Integrated Circuits

The development of the integrated circuit (I.C) was the hallmark of the third generation of computers. Transistors were miniaturized and placed on silicon chips, called semiconductors, which drastically increased the speed and efficiency of computers.

4-Fourth Generation: Present Microprocessors

The microprocessors brought the fourth generation of computers, as thousands of integrated circuits were built onto a single silicon chip. What in the first generation filled an entire room could now fit in the palm of the hand. The Intel 4004 chip, developed in 1971, located all the components of the computer - from the central processing unit and memory to input/output controls - on a single chip.



Example changes in computing styles

- Batch processing
 - Timesharing
 - Networking
 - Graphical display
 - Microprocessor
 - WWW
 - Ubiquitous Computing
 - A symbiosis of physical and electronic worlds in service of everyday activities.



Type of Computer according their work and technology

I-Digital computer:

A device that processes numerical information; more generally, any device that manipulates symbolic information according to specified computational procedures.

2-Analog computer

A computer where circuits are designed so that they can mimic the behavior of a real physical system. Thus, a circuit in which the output voltage quadruples when the input voltage doubles is said to be an analog of a falling object, for which the distance travelled quadruples when the time doubles. Analog computers, never widely used, since they have been largely replaced by digital computers.

Type of Computer according to their size :

1. Super Computer :

it is a very large computer that can operate many programs at the same time , where we can connect with hundreds of terminals , The disadvantages of these computers are their cost, they are very expensive and they cost millions of dollars.



Super Computer

Main frames:

It's the most popular computer in some businesses and companies. Uses Control Units & Modems to connect hundreds of terminals with the computer according to the time sharing system.

Number of users access up to 1000 users at the same time.

Main frame Computer



Mini Computer :

This computer is widely used, because it's cheap and we can connect it with many terminals and networks.

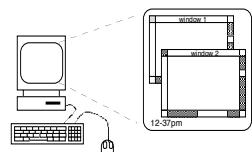
Micro computer :

It is called the personal Computer (pc): It is popular everywhere, and developed very quickly some of its types are (laptops, palm computers etc)

A ‘typical’ PC computer system

- screen, or monitor, on which there are windows
 - keyboard
 - mouse/trackpad

- variations
 - desktop
 - laptop
 - PDA



the devices dictate the styles of interaction that the system supports
If we use different devices, then the interface will support a different style of interaction

Workstation computer

Like PC, and it is sufficient especially in viewing graphics and colors. It is used by engineers and scientists in labs and factories.

Control computer:

It is used in controlling operations in industrial and medical devices, travel areas like planes and cars to alert in any dangerous situation. And it is used in communication media like the central exchange to translate calls.

How many computers..

in your house?

- PC
- TV, VCR, DVD, HiFi, cable/
satellite TV
- microwave, cooker, washing
machine
- central heating
- security system

can you think of more?

in your pockets?

- PDA
- phone, camera
- smart card, card with
magnetic strip?
- electronic car key
- USB memory

try your pockets and bags

Quick Quiz

- Define a computer.....?
- What is the difference between data and information?
- How many generations of computers are there?
- Which generation uses micro-processors?
- What is a super-computer?
- Give me 3 advantages of computers?

Summary

- Definition and advantages of computers
- Difference between Data and Information
- Generations of computers from early years
- Types of computers and their characteristics
