Ministry of Higher Education and Scientific Research
University of Babylon
College of Materials Engineering

Personal Computer

Lecture 5

Prepared by:

Assist. Lecturer Areej Abdulkareem AbdulRaheem

07732584770

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Mat437.a.abdulkareem@uobabylon.com

Lecture Topics

- Introduction .
- Definition of Computer .
- Types of Computers .
- Definition User Interface .
- Mouse Techniques .
- Activities and Tasks .
- Conclusion

Introduction

In this lecture, we will discuss the meaning of a computer, its types, and Understanding Numerical Systems .

What is the Picture ?

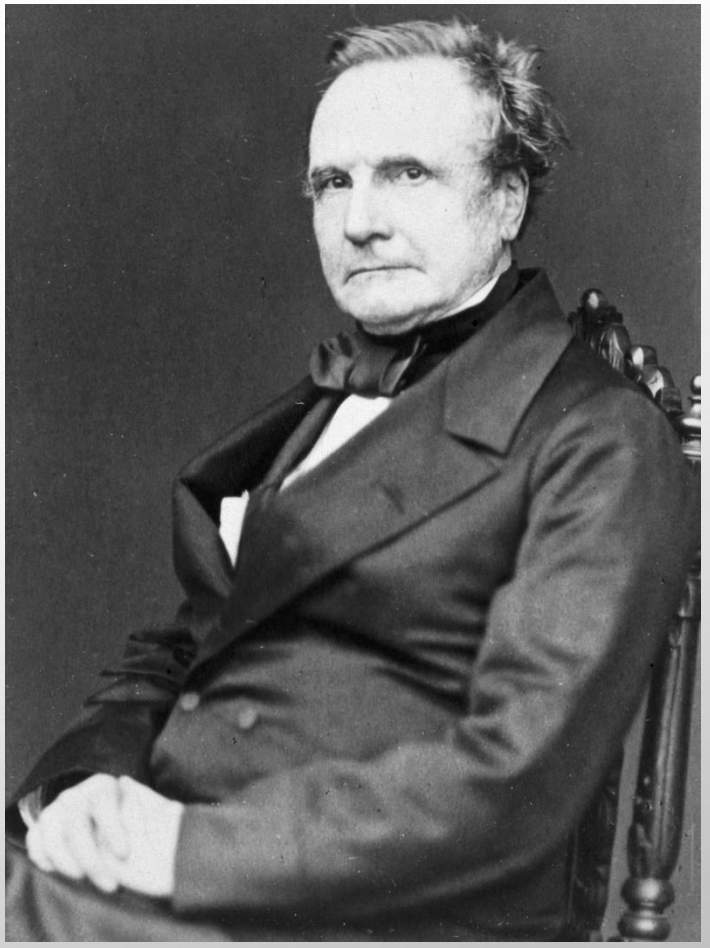
DEFINITION OF THE COMPUTER

A computer is a programmable machine that automatically performs a series of logical and arithmetic operations. It is an electronic device whose function is to receive data, process it, store it, and present results to the user.

Question

Who was the first to discover the computer ?

British mathematician and inventor Charles Babbage is considered the inventor of the computer, as he designed the first programmable mechanical computing machine in the 19th century.



PERSONAL COMPUTER

It is a small electronic device used by one person to process data, and is used for study, work, communication and entertainment. It is characterized by its ease of use and speed in executing commands.

(Features of a Personal Computer)

- **Small size & affordable price**

  Its size is convenient and its price is affordable for individuals .
- **Single-user system**

  Designed to be used by one person at a time .
- **High speed processing**

  High speed in data processing and command execution .
- **Accuracy & reliability**

  High accuracy in results with few errors .
- **Versatility**

  It is used for multiple purposes: study, work, entertainment, and the internet .
- **Easy to use**

  Easy to use and does not require much experience .

Types of Personal Computer

1 (Desktop Computer)

- Suitable for homes and offices.
- Includes: monitor, system unit, keyboard,
- and mouse.
- Powerful and easy to upgrade.

2 (Laptop / Notebook)

- Lightweight and portable.
- Battery operated.
- Suitable for students and commuting.

3 (Tablet)

- Touchscreen compatible.
- Small size.
- Suitable for browsing, reading, and simple applications.

4 Workstation

- A very powerful computer.
- Used for design, programming, and engineering.
- More expensive than regular computers.

Activity 1

What are the advantages of a laptop?

How to computer work ?

Computers are electronic devices, not mechanical, meaning these devices use electrical current (or power supply) in order to store and process data. It is true that some parts of them are mechanical (such as the hard disk), but storage and processing are electronic.

The data translate inside the computer in the form of electrical signals (either there is or no signal). Therefore, all data must be converted from text, image, or audio to binary form (a group of 0 and 1), otherwise the computer will not be able to understand and process them.

The computer converts all data into digital data and stored in memory inside a place called the byte, and one character is stored within the byte. The byte consists of 8 bits , Show the Below Table :

							Bit

Byte = 8 bit

Activity 2

1 byte = 8 bit

1 MG = ????

Numerical Systems

The systems used inside the computer to represent data and calculations are called number systems, the most prominent of which is the binary system.

1- Binary System

It is a system used to represent the data inside the computer by numbers 0 and 1, and the basis of this system = 2. (Expressed by the following series 1, 2, 4, 8, 16, 32, 64, 128, 256, 512,....)


TikTok
@almullisemath

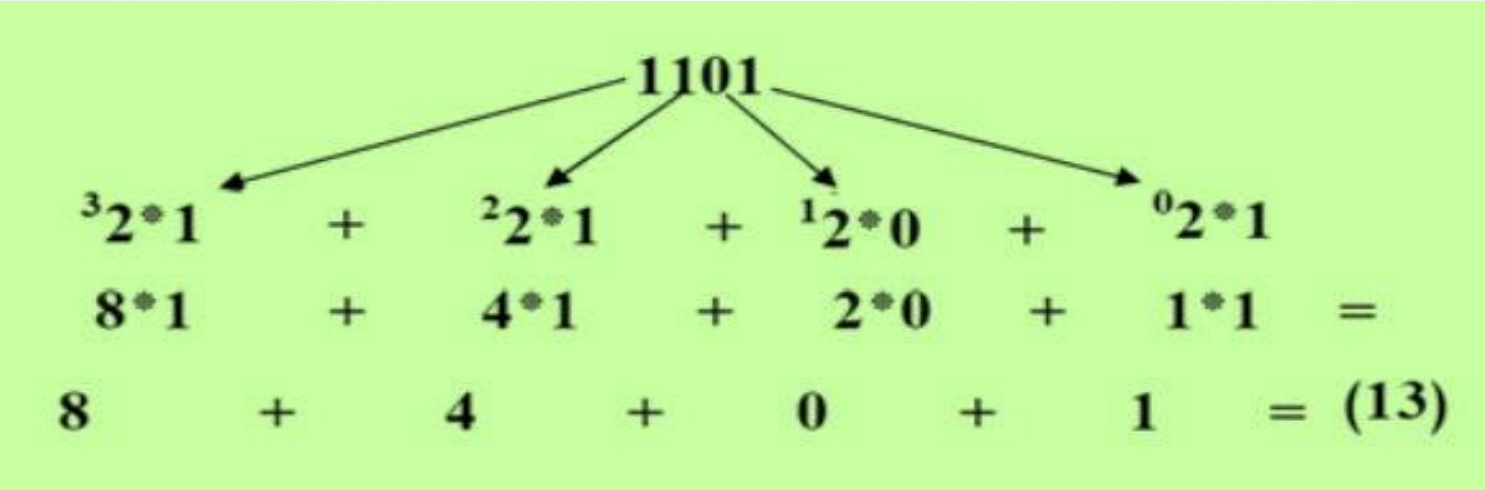
Convert binary number to decimal number

We convert the binary number to decimal according to the place value of the number, where we multiply each binary number by the corresponding rank value, as shown below.

Rank	2^8	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
Place value	256	128	64	32	16	8	4	2	1

Example

Convert the following binary number 1101 to a decimal number

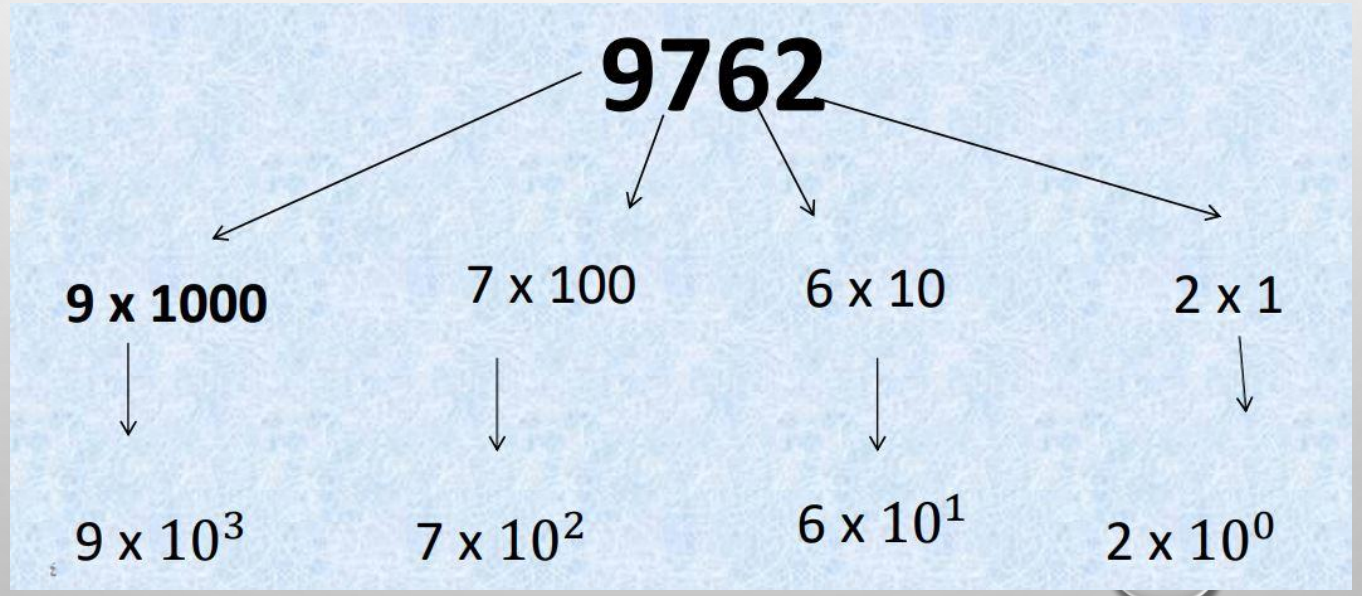


So the decimal number is **13**

2- Decimal System

It is one of the oldest numerical systems and it is the numbering system that we use in our daily life; it called by this name because it consists of ten numbers (0, 1, 2, 3, 4, 5, 6, 7, 8, 9), in this Base = 10.

Example: The decimal number **9762** can be decomposed into the following ranks:



Converting from decimal to binary

There is more than one way to convert a number from the decimal system to the binary system, but we will follow the method of dividing by the remaining number in our solution, which is as follows:

Example: Convert the decimal number (15) to the binary system

The remainder of the division

1
1
1
1

Division

15/2 = 7
7/2 = 3
3/2 = 1
1/2 = 0

So the number (15) is (**1111**)

Example

Convert the decimal number (37) to the binary system

18 = 37/2
9 = 18/2
4 = 9/2
2 = 4/2
1 = 2/2
0 =1/2

1
0
1
0
0
1

So the binary number is $(100101)_2$

Question

Convert the binary number $(100011)_2$ to a decimal number

Activity 3

1- Convert the Binary Number $(101011)_2$ into the Decimal Number ?

2- Convert the Decimal Number $(45)_{10}$ into the Binary Number ?

3- Are there any other Numerical Systems you are Familiar with?

Conclusion of Lecture Five

In this lecture, we learned what a Numerical Systems and How to calculate numbers in decimal and binary systems.

Sources

- Computer Basics by Al-Khader Ali Al-Khader
- Technology in Action by Alan Evans, Kendall Martin, Mary Anne Poatsy.

Thank you