

Ministry of Higher Education and  
Scientific Research  
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Department



Subject: Computer Application  
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Stage : 1<sup>st</sup>  
Lecture No. 1



## Computer Applications

**First stage**

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## 1. Definitions (تعريفات)

- **The computer** :- is an electronic device that performs mathematical and logical operations - on a set of data - and processes them and produces results in the form of (information) that we benefit from in our lives.

- و يسمى أيضا **الحاسوب الآلي** :- وهو عبارة عن جهاز إلكتروني يقوم بإجراء العمليات الحسابية والمنطقية - على مجموعة من البيانات - ويقوم بمعالجتها وإخراج نتائج على شكل معلومات نستفيد منها في حياتنا

- Another definition of **the computer** :- It is a digital electronic device that has the ability to receive and process data And output the results in the form of information.

- تعريف آخر **للحاسوب**:- هو جهاز إلكتروني رقمي له القدرة على استقبال البيانات ومعالجتها وإخراج النتائج شكل معلومات

- **Data** : Collecting them from a specific statistical population and entering them into the computer for processing and outputting the processed results.

- **البيانات**: هي عبارة عن مجموعة -من الحقائق والمشاهدات يتم جمعها من مجتمع إحصائي معني وإدخالها الى الحاسوب لمعالجتها وإخراج النتائج المعالجة.

- **Information**: is a set of results that we get from the computer, after processing the data - as the student's final result - helps in the decision-making process.

- **المعلومات**: هي عبارة عن مجموعة النتائج التي نحصل عليها من الحاسوب بعد معالجة البيانات كنتيجة الطالب النهائية وهي تساعد في عملية اتخاذ القرارات.

- **Processing**: It is all the operations that take place on the data - from arranging, organizing, searching and sending Save, delete, add, enter, exit, etc.

- **المعالجة**: - هي جميع العمليات التي تجرى على البيانات من ترتيب وتنظيم وبحث وإرسال وحفظ و حذف وإضافة وإدخال وإخراج وغيرها.

- **Algorithm**: is a set of steps and instructions arranged to carry out arithmetic, logical or other operations in a sequential manner.

- **الخوارزمية**:- عبارة عن مجموعة من الخطوات والتعليمات المرتبة لتنفيذ عمليات حسابيه او منطقيه او غيرها بشكل تتابعي متسلسل.

- **Program** - A set of sequential instructions that tells a computer what to do. The person who writes the program is called a programmer.

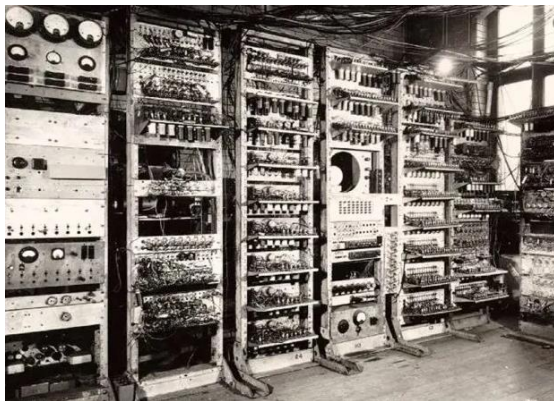
- **البرنامج**:- مجموعة من التعليمات المتسلسلة التي تخبر الحاسوب ماذا يفعل، يسمى الشخص الذي يكتب البرنامج مبرمج.

## 2. History of Computers (تاريخ الحاسوب)

The first attempts of man to invent a machine to carry out his arithmetic operations, he invented the abacus (abacus), which uses beads on wires. The abacus helped him in performing some simple arithmetic operations, and that was more than 2000 years before the birth, and in the year **1642AD**, a French worker named (**Pascal**) invented it.



Pascal 1642



A French worker named (**Joseph Kaquard**) invented a machine that uses punched cards in its work. With the invention of this machine - the emergence of the idea of computer programming, and after him (**Charles Babbage**) developed it, you can receive orders through punched cards in the middle **Forties**.

And around **1945A.D.** (Newman) developed computer work, as the computer became the internal storage of data and used the binary system as a base for building the computer, as the binary system in the world D. One of the currents of the electric current is similar to turning on and off, and this reminds us of the definition of logical operations, that is, the computer is based in its work and its structure on logic, and the binary system is considered the basis of the machine language, which is the language that the computer understands. And advance it, so they worked on it. Developing and updating it to suit the pace of life in which they live, and generations of computers began to appear .



### 3. Classification of computers (تصنيف الحواسيب)

The most popular computer devices used in offices and houses is called the personal computer (PC). There is many type of computer devices.

**First**:- By Purpose ( حسب الغرض من الاستخدام ):

1. Computer Purpose General (حاسبات الاغراض العامة)

This type is used for general purposes, whether scientific, commercial or administrative, including banking systems, expenses, salary accounts and budgets. It is also used in solving mathematical equations and engineering designs. The uses of this type of calculator because it does not have the full flexibility to use it anywhere.

2. Computer Purpose Special (حاسبات الاغراض الخاصة)

This type of computer is used for one purpose only, which is designed to control currencies, early warning devices, control spacecraft, medical devices, and others.

**Second** :- By Type Of Processed Data (حسب نوع البيانات التي يعالجها)

1. Analog Computer (الحاسبات التناظرية)

This type of computer deals with constantly changing data such as temperatures and atmospheric pressure. This type is also used to solve scientific and engineering problems and is used in designing models of aircraft, missiles and spacecraft.

2. Digital Computer (الحاسبات الرقمية)

This type of computer uses discrete information and variables represented by numbers. It is suitable for commercial and scientific uses. It is one of the most flexible computers in carrying out operations.

3. Hybrid Computer (الحاسبات الهجينة)

It is a mixture between the two types of digital and analog contains analog inputs and outputs and the processing in it is digital. This type of computers combines the best capabilities of both the previous types, as it takes the ability to store data and high accuracy from digital computers, while it takes from analog computers the rapid reaction to change Input and real time system.

**Third** :- By Size and Performance (حسب الحجم و الاداء)

1. **Microcomputers** (الحاسبات الدقيقة)

It is the smallest type of computer with administrative and scientific purposes and depends on the microprocessor, it's called the personal computer (PC).

**PERSONAL COMPUTERS(PC)** نماذج للحاسبات الشخصية



2. **Minicomputers** (الحاسبات الصغيرة)

Size of a filing cabinet, Used by small and medium size companies and institutions, Operated by a computer specialist, It can be used for special purposes such as controlling industrial processes, guiding vehicles, and alarms.

3. **Main Computers** (الحاسبات الرئيسية)

This type of computers has a high cost and has great capabilities and is used by most large companies and can be used as mainframes within a small computer company.

**MAIN COMPUTERS** نماذج للحاسبات الرئيسية



4. **Super Computers** (الحاسبات الفائقة)

This type of computers is characterized by being large in size, with a very high cost, high speed, and possesses superior computational capabilities. Examples of this type were produced by (CDC) Company and used by the US Department of Defense in the field of secret strategic weapons and complex accounts for the federal government.



#### 4. Computer generations (اجيال الحواسيب)

##### First generation computers (from 1945 to 1951) : الجيل الاول

The first calculator of this generation (INICE) was produced, in this generation

- vacuum valves were used in the manufacture of computers of this generation. This generation uses machine language. Dealing with the computer - and the computer's need for a specialized person to deal with it, as well as computers.
- Very big size.
- Low speed
- storage capacity is small.

##### Second generation computers (from 1959 to 1964) الجيل الثاني

- During this period, transistor technology was used.
- It is a small computer compared with first generation.
- Speed higher than first generation.
- storage capacity is small.
- Using languages with a more easy translation of the machine language by appearing, and this is a new launch and an enormous addition to the science of computers , such as the Fortran.

### **Third generation computers** (from 1964 to 1970) الجيل الثالث

- Integrated circuits (IC) have been used, It is a group of transistors placed on a silicon wafer.
- An increase in memory capacity
- Smaller than the second generation computers .
- A noticeable increase in its speed, the speed became measured by the nano.
- The heat generated on the computers has become less -as well as the second computers of the second computers. One of the most important things is this is also a computers -the appearance of small computers 00000000 and the development of operating systems

### **Fourth generation computers** (from 1970 to 1995) الجيل الرابع

- Advanced Integrated circuits (IC) have been used, as well as the semiconductor technology has been used.
- The speed of the computers has become more than generations Previous, the emergence of powerful (Pintume) processors with speeds exceeding 100 GHz.
- The most important prosecution of the appearance of personal and easy home computers, the General purpose personal computers (PC) appeared.
- Large storage capacity after the advent of the so-called Random Access Memory (RAM) and Read Only Memory(ROM).
- In the field of software, the operating system was developed, and system called (windows) system appeared, and multiple versions were issued.

### **Fifth generation computers** (from 1995 to now) الجيل الخامس

- The appearance of the integrated circuit (IC) above is extremely large
- The development of storage media and the emergence of (CD-ROM) and (Flash Memory ) and other media.
- The great revolution in the field of artificial intelligence and the emergence of the Robot.
- The wide development in the field of networks and databases and the emergence of the so-called Internet.

## 5. Computer uses (استخدامات الحاسوب)

1. Commercial and economic fields such as calculating budgets, profits and payments Receipts and salaries...etc.
2. Financial Institutions and Banks - It is used in banking operations such as withdrawals and deposits And calculating profits and checking account numbers...etc.
3. Scientific fields, research and experiments such as physics, chemistry, mathematics and science Astronomy and the study of outer space.
4. Administrative, planning, project management and printing.
5. A civil aviation to book tickets and record flight information.
6. Engineering and practical fields, such as designing buildings, bridges, facilities, and control Industrial operations.
7. Medical fields, analysis, and EKG work.
8. Educational fields in (institutes - (universities, schools, teaching... etc.)
9. Military fields, strategic weapons, and guidance of intercontinental missiles and early warning devices. 10- Lots of personal uses.

### ❖ computer jobs (وظائف الحاسوب)

1. Receive data (input)
2. Performing mathematical and logical operations (processing)
3. Store data and facilitate its retrieval (storage)
4. Sending and receiving data and information over local and international networks (output)



### ❖ Computer features

1. The speed of completion of operations and the speed of data entry and information retrieval.
2. The accuracy of the results, which also depends on the accuracy of the information entered into the computer.
3. The ability to store information.
4. Reducing the role of the human element, especially in automated factories.
5. The possibility of computer work continuously without getting tired.
6. The possibility of making decisions by searching for all solutions to a specific issue and presenting the best of them according to the conditions set and the requirements of the issue at hand.