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# COMPUTER



# Computers



- Computers are automatic electronic devices that can perform complex tasks by breaking them into simple calculations and doing them extremely quickly .They have the ability to store , manipulate , and communicate information . Computers had a massive impact on our lives.

BEGIN PREVIOUS NEXT END

# computer

- The need for counting was felt as early in the stone age.
- The exchange of goods needed a good accounting system - stones were counted before giving or taking the things.
- The next step was drawing lines on wall or on sand before selling or purchasing the goods.

# The major developments in computer

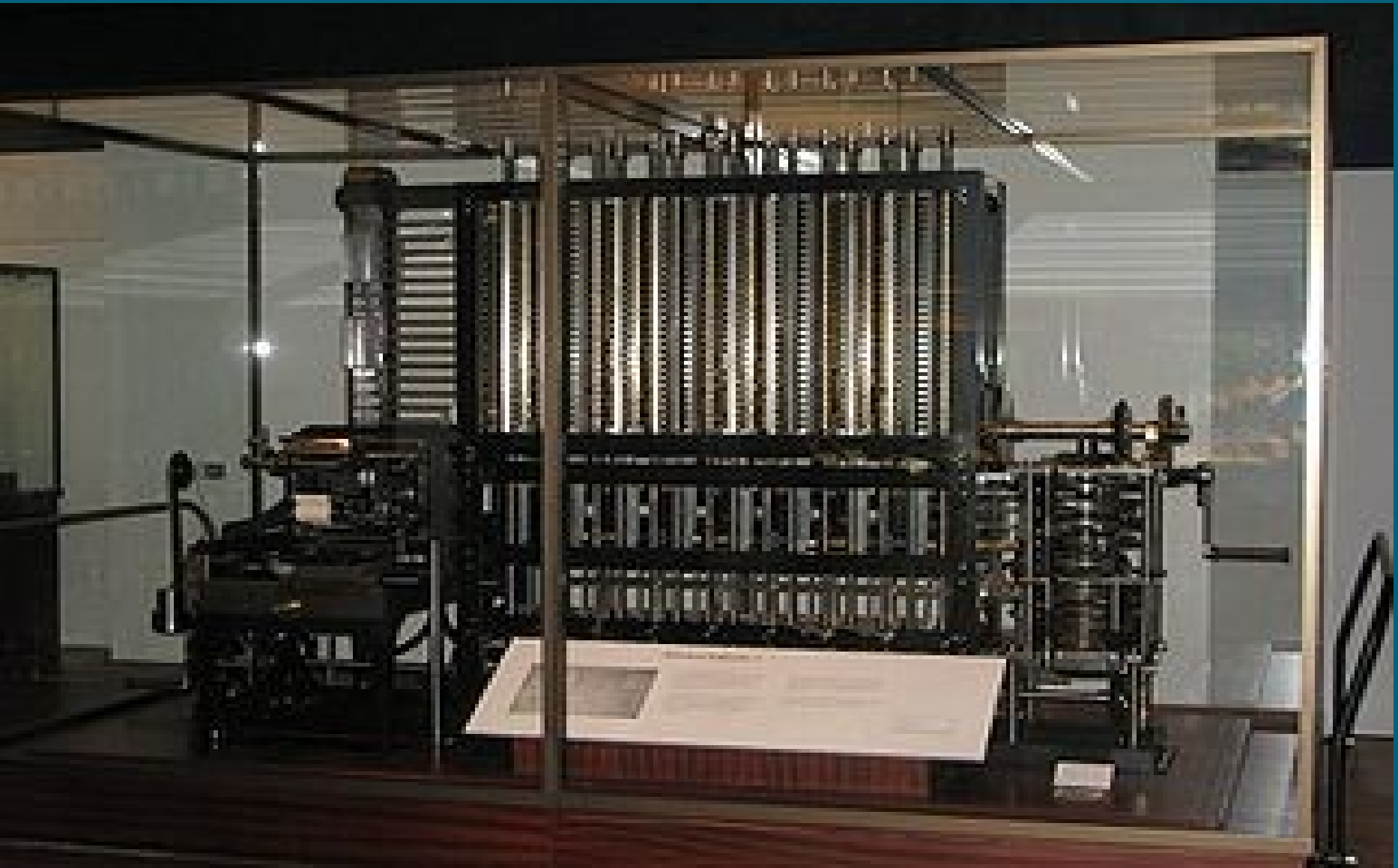
- 3000 BC - Abacus was invented by the Chinese - a major step towards calculation.



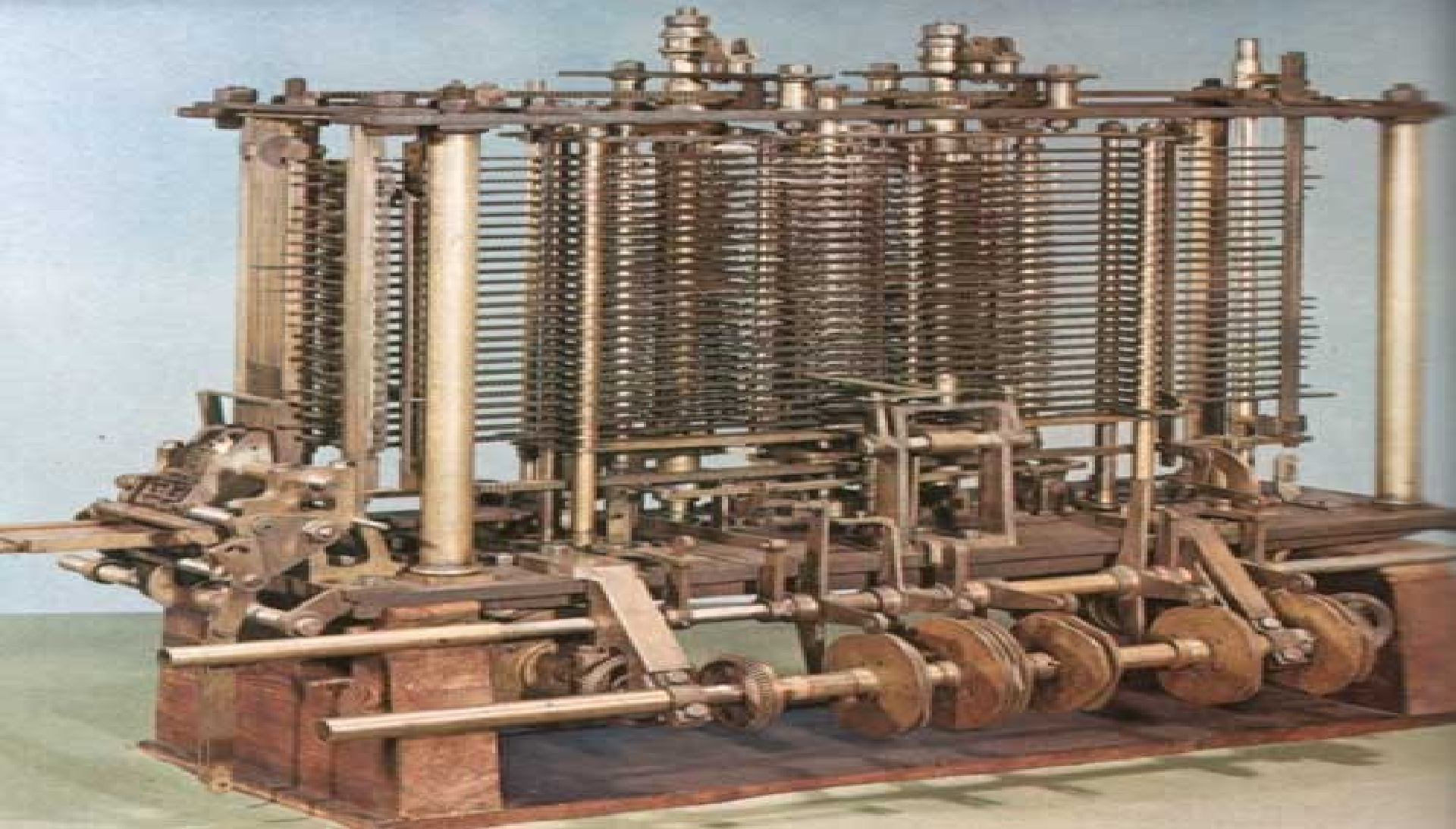
- 1614 – John Napier introduced logarithms.
- 1642 – A famous French mathematician Blaise Pascal developed the first mechanical calculating machine – Pascaline. Later in 1671 Ad Gofreid Leibrietzi modified it.



- 1792-1871 – Charles Babbage, an English Mathematician, designed a machine-Difference Engine.



- Later in 1833-84, he invented another machine with an automatic computing mechanism – Analytical Engine. It could store data in memory, which became the base of

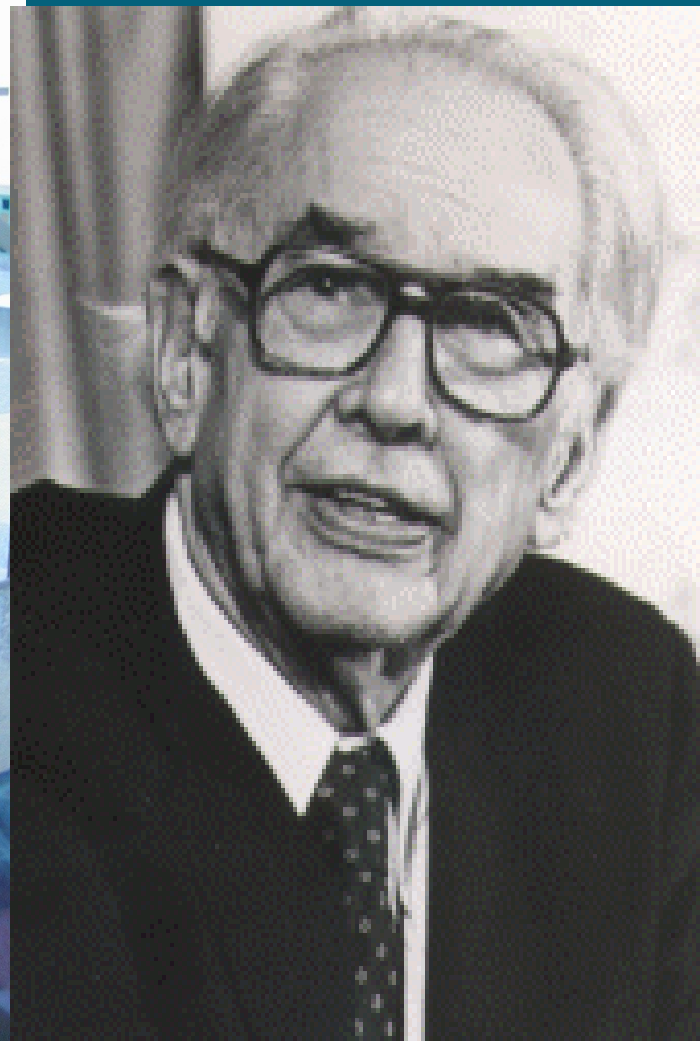
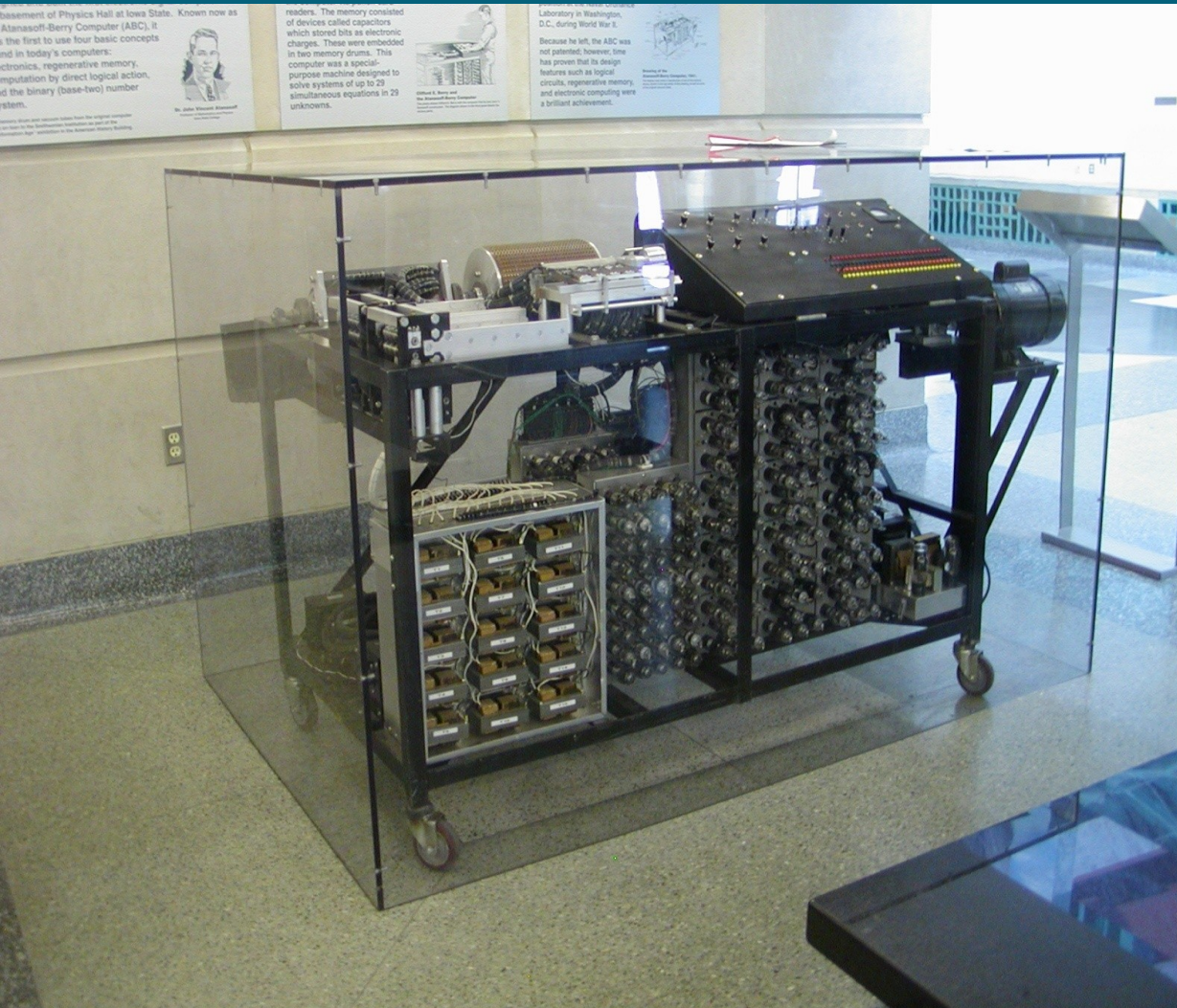




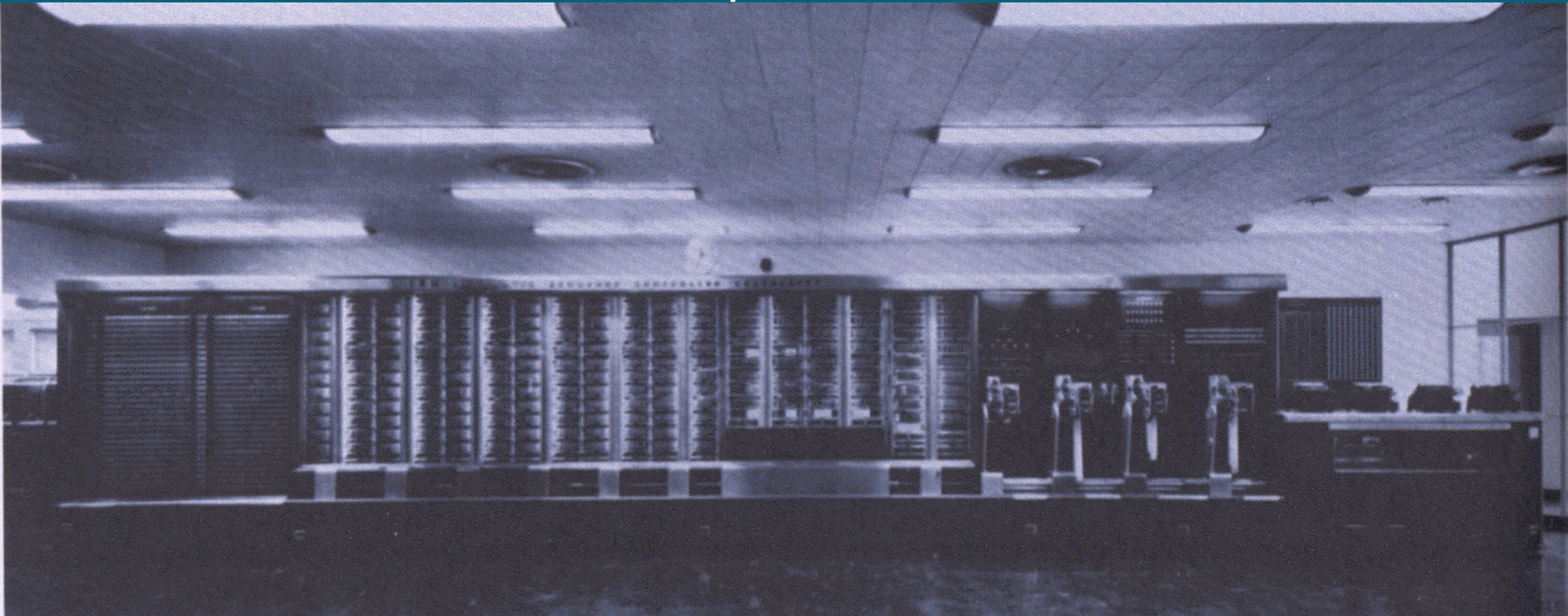
- This is why Charles Babbage is rightly known as the Father of Modern Computers.



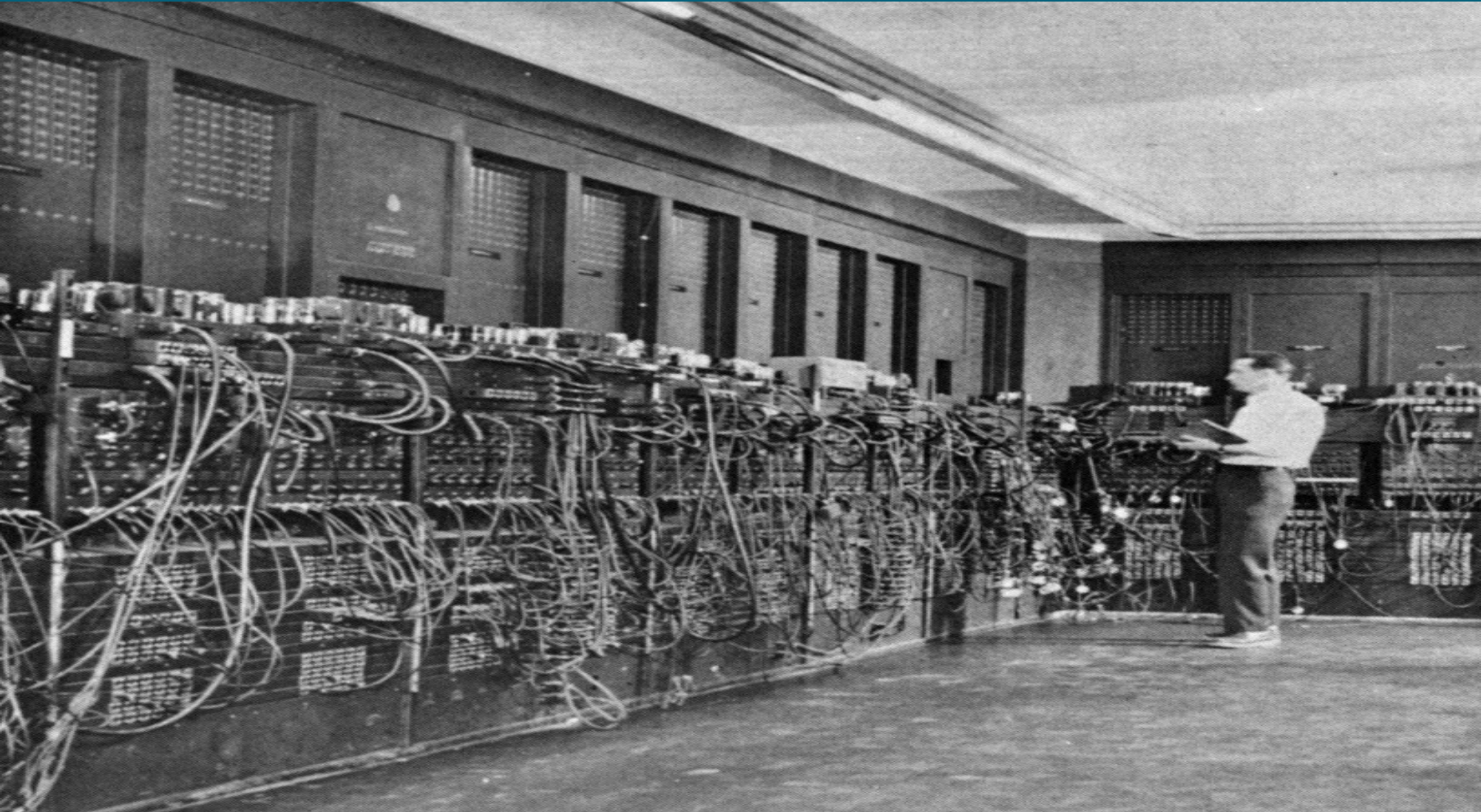
- 1930-1939 – The first electronic computer was built by Dr. John Vincent Atanasoff – It was known as Atanasoff –Berry Computer or ABC.



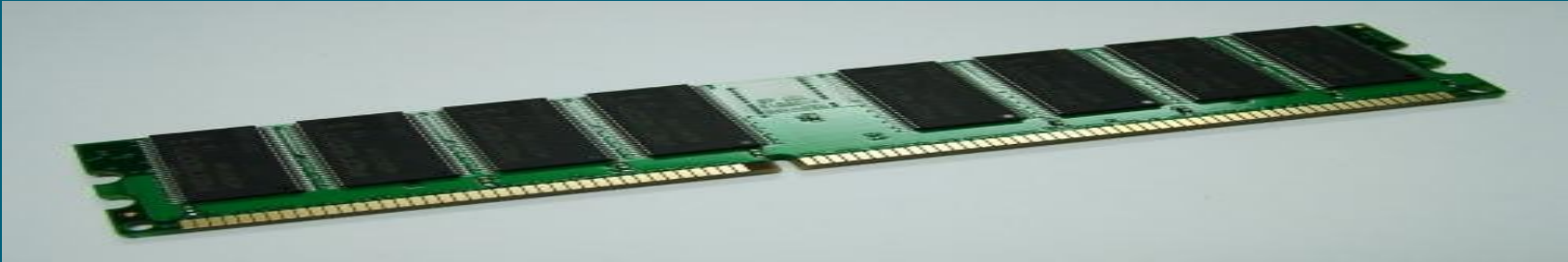
- The ***International Business Machines*** Corporation (commonly referred as ***IBM***) made a computer – Harvard Mark. It worked electro mechanically without any manual effort. It could perform three addition operations and one subtraction operation per second and in the case of multiplication, one operation per second.
- It was the first computer and was also called



- 1946- ENIAC (Electronic Numeric Integrator And Calculator) computer was developed by Mr. Mauchly and Eckert.



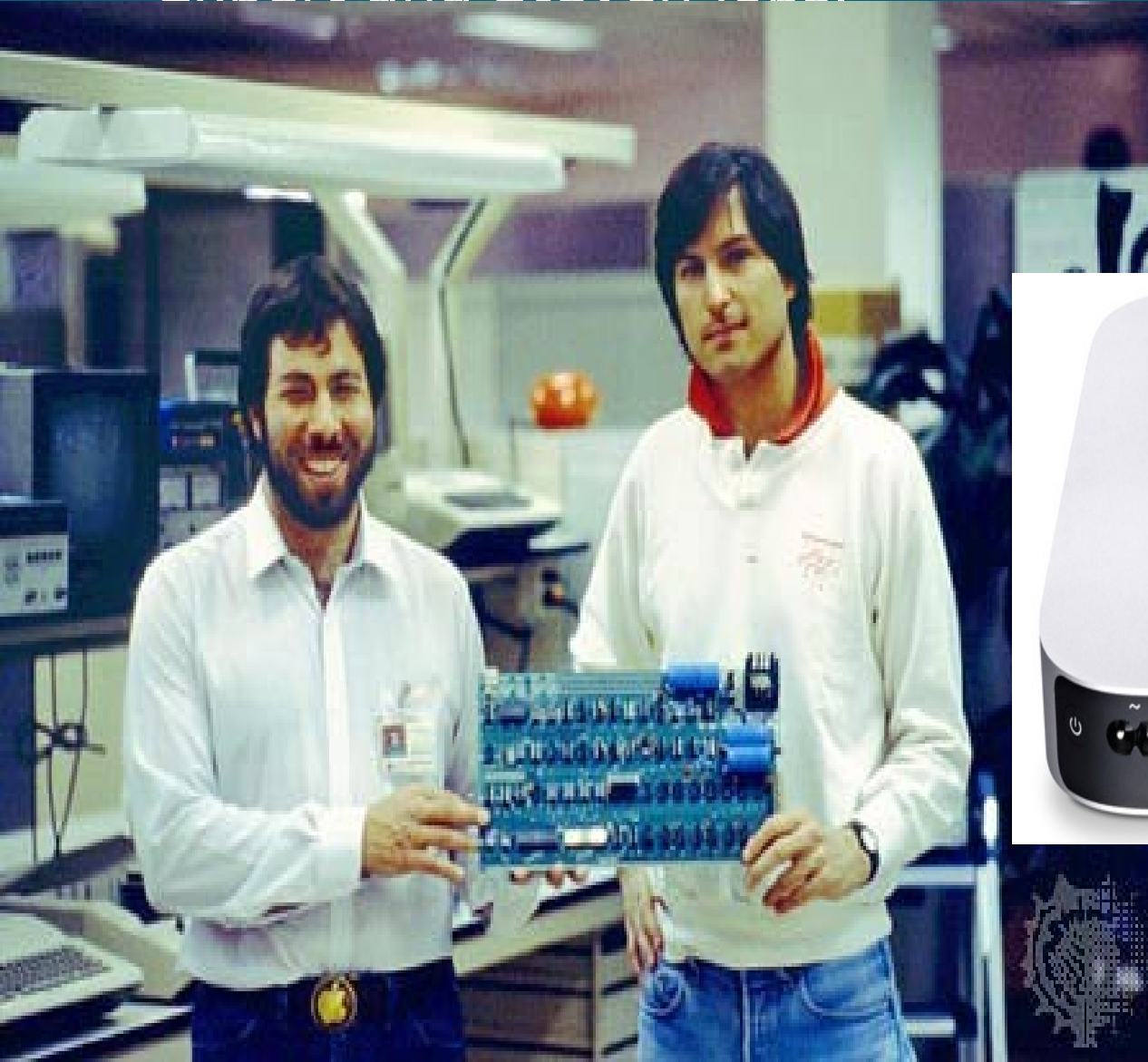
- 1970 - Memory Chip was introduced by Intel which could store a kilobit of information.



- 1975 - H. Edward Roberts, an electrical engineer designed the first Micro Computer.



- 1977 - The first Apple Micro Computer was invented by Mr. Stephen Wozniak, the Technical Expert and Steven Jobs.



1980 - Personal Computers were introduced.



From this point onwards computers developed can be classified into various generations - Five Generations.

# Computer Generations

- First Generation Computers (1950)

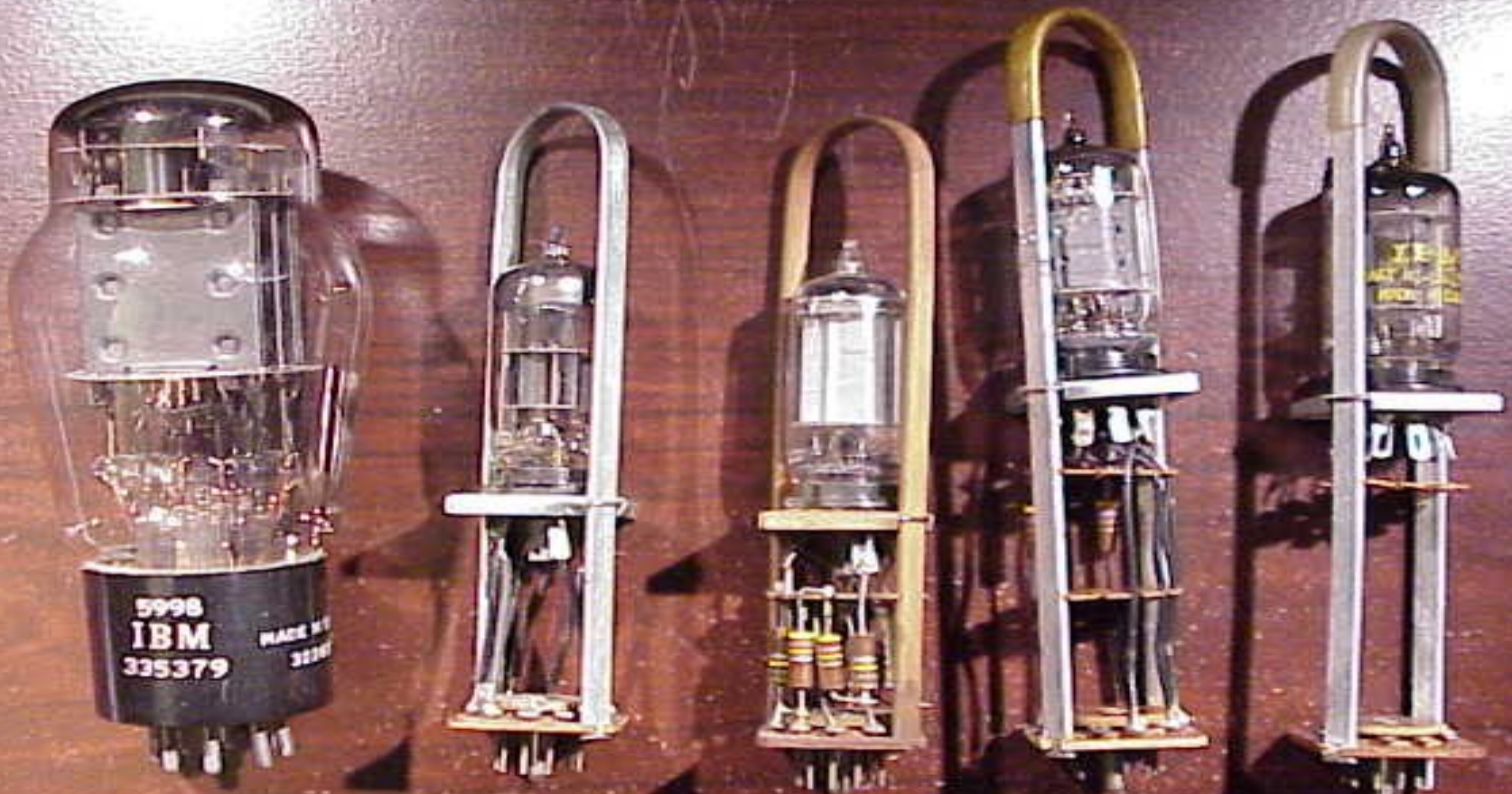
J.P.Eckert and J.W.Muchly developed the first generation computers known as UNIVAC I in 1951.

## General Features:

- Vacuum tubes were used in these computers.
- Punched cards were used to feed the information.
- For external storage Magnetic tapes were used.
- Assembly language and machine language were developed.
- The other computers which came into this category are NIVAC, EDVAC, IBM 650 etc.



# Vacuum Tubes





# Magnetic Taps



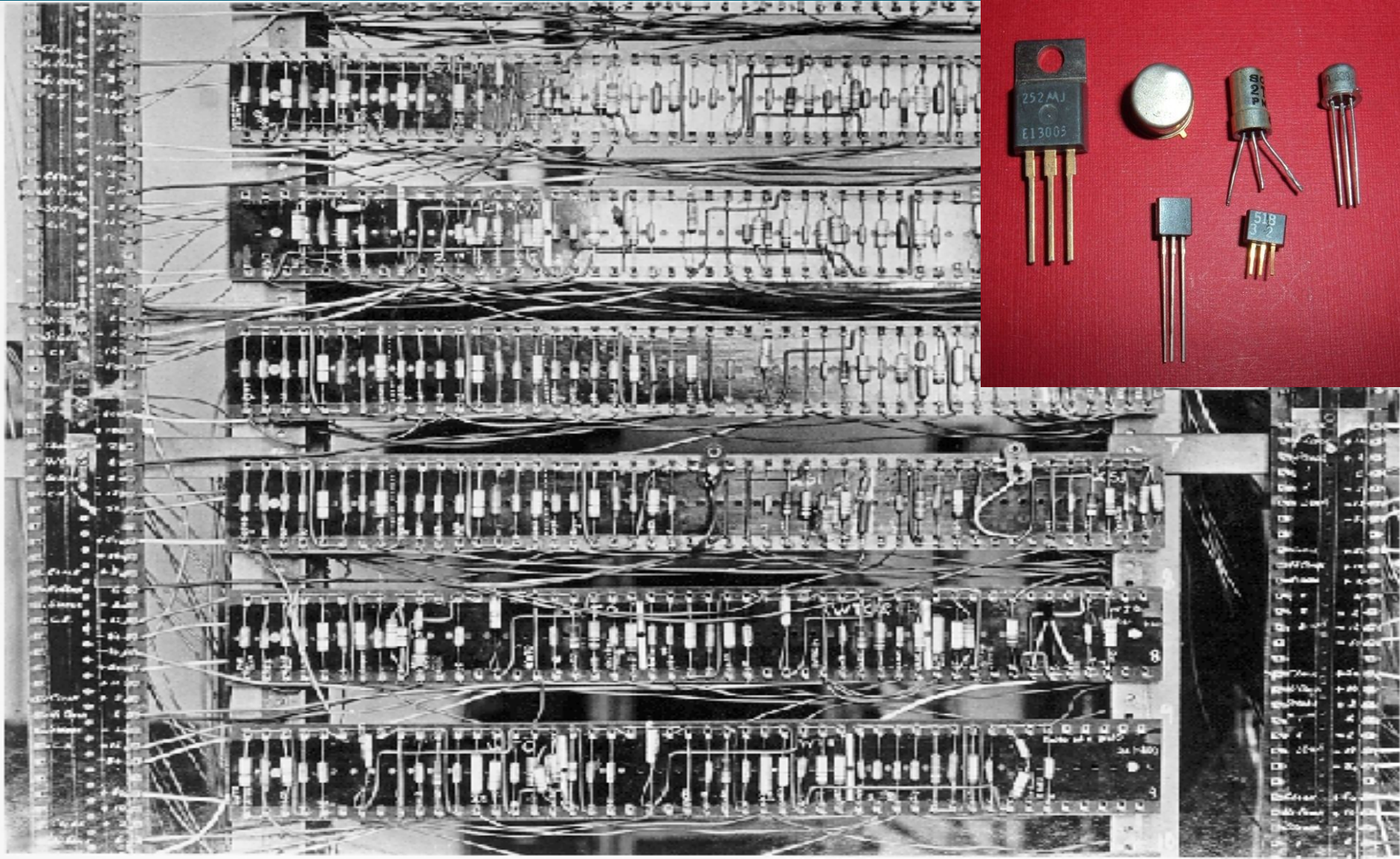
## ● Second Generation Computers (1960)

Second generation computers were introduced between 1959 and 1965.

### General Features:

- The computers were based on transistor technology which replaced vacuum tubes.
- Punched cards and magnetic tape were used to input the data.
- Outputs were taken on the punched cards and papers.
- For external storage Magnetic core storage ie., magnetic tape were used.
- FORTRAN, COBOL, BASIC, high level languages were used.
- Second generation computers are: UNIVAC 1108, IBM 700, 1401 CDC-1604,3600 etc.

# Transistor



## ● Third Generation Computers (1965)

Third Generation Computers included significant advances in machine hardware.

### General Features:

- The transistors were replaced with Integrated Circuits (ICs) or Chips.
- The computers included special Operating Systems and with its help, it was made possible for machine to perform several jobs concurrently with the help of human intervention.
- Instead of punched cards, keyboards and monitors were used to input and output the data.
- Magnetic tape was replaced by Magnetic disk for external storage of data.
- Report Program Generator (RPG) and PASCAL , high level languages were developed.
- Third generation computers are: IBM-360, 370, ICL-1900 etc.

## ● Fourth Generation Computers (1975)

These computers were based upon the development of Large Scale Integration (LSI) and Very Large Scale Integration (VLSI).

### General Features:

- Modification of input and output devices.
- Introduction of microcomputers with the help of efficiency of circuits.
- Magnetic disk became more popular for external storage.
- Special software were used to manage large data base.
- Fourth generation computers are: INTEL 4004, Apple Series I and II, Spectrum 7 etc.

## ● Fifth Generation Computers (1980)

Fifth Generation Computers focussed on connectivity.

General Features:

- In the mid of 1990s Japanese described the powerful intelligent computers.
- Later they covered the several research fields related to computer intelligence, artificial intelligence, expert systems and natural language.
- The true focus in this generation has been connectivity.
- This method of connecting computers is called Networking.
- Networking was used in the development of Internet.



- This all led to the most important computer of the century, called the Personal Computer.

Personal Computers were introduced by International Business Machine (IBM) in 1981. IBM brought out with different versions or models with variations of floppy disk, hard disk, chips etc. Making them faster and faster.

# Features of the Modern Personal Computer

## 1. Speed

- The computer process data at an extremely fast rate.
- The speed of computer is calculated in MHz (Megahertz), ie., one million instructions per second.
- At present, a powerful computer can perform billions of operations in just one second.

## 2. Accuracy

- The level accuracy depends on the instructions and type of machines being used.
- Faulty instructions for processing the data automatically lead to faulty results, known as GIGO (Garbage In Garbage Out).
- Due to increased efficiency of error-detecting techniques, errors may be minimised.
- Thus, probability of errors in a computer is negligible.

### 3. Reliability

- Reliability is the measurement of the performance of a computer, which is measured against some predetermined standard of operation without any failure.
- It does not require any human intervention between its processing operations.
- Computers have the built-in capabilities, which help in continuous monitoring of the system.

### 4. Storage capability

- Computers can store large amounts of data and it can recall the required information almost instantaneously.
- The memory of the computer is relatively small and it can hold only a certain amount of information, therefore, the data is stored on storage devices such as magnetic tape or disks.
- Storage capacity: CD-ROM and a Hard Disk
- A single CD-ROM can store up to 700 MB while a Hard Disk can have a capacity more than 750 GB.

1 byte = 1 character (0 to 9 or  
a to z or a special  
character like \$)

1 Kilobyte (KB) = 1024 Bytes

1 Megabyte (MB) = 1024 Kilobyte  
(KB)

1 Gigabyte (GB) = 1024  
Megabyte (MB)

## 5. Versatility

- Computers can perform multiple tasks simultaneously with equal ease, ie., at one moment it can be used to prepare a letter, the other moment it can be used to play music and in between a document can also be printed.
- A computer can perform various tasks by reducing the task to a series of logical steps.

## 6. Diligence

- Computer, being a machine, does not suffer from the human traits of tiredness and lack of concentration.
- If four million calculations have to be performed, then the computer will perform the last four-millionth calculation with the same accuracy and speed as the first calculation.

## Limitations of Computer

- As a machine, a computer can only perform what it is programmed to do , nothing more and nothing less.
- It can only operate on the user provided data.
- It needs well-defined instructions to perform any operation.
- Its use is limited in areas where qualitative considerations are important.
- Though processing has become less tedious, it is still a time consuming and expensive.
- Computer parts require regular checking and maintenance in order to give correct results.
- Computers need to be installed in a dust free place.
- The ambient temperature of the computer system should be maintained to avoid computer parts getting heated due to heavy processing.

# Types of Computers

- Computers perform a vast range of functions. Some computers are so powerful that hundreds or even thousands of users can use them at a single instant. Computers have different types of capabilities and sizes. Classification of computers is based on the usage, speed, and size of computers. There are four main types of computers, namely Microcomputers, Minicomputers, Mainframes, and Supercomputers

# Super Computer

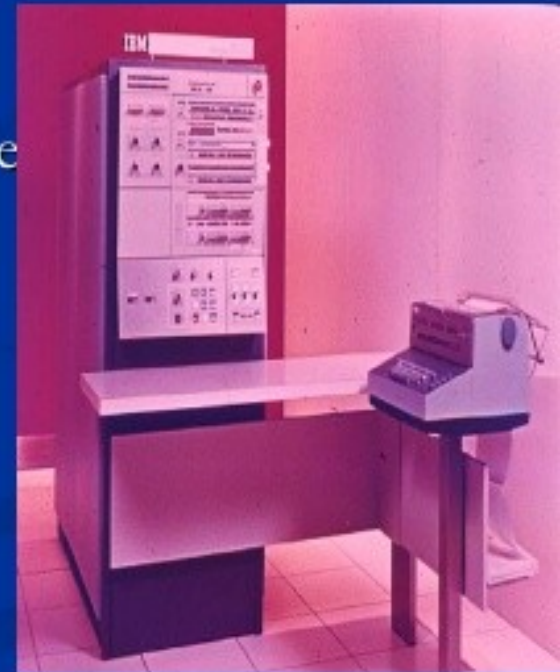
- Supercomputer is the fastest and most expensive type of computer. Supercomputers specialize in high-speed processing of data. The advantage of supercomputers is their speed, which is unmatched by any other type of computer. A major disadvantage of supercomputers is that they generate a large amount of heat during their operation. Hence, it is important to use effective cooling solutions.





# Mainframe Computer

In the beginning, mainframes were huge computers occupying entire rooms or floors. Mainframes were used to serve as the center of large systems in companies. They now serve distributed users and small servers in a computing network. They are also known as enterprise servers. Mainframes are very large and expensive computers. Thousands of people can use a mainframe at a time. The advantage of mainframes is that it can support so many users and instructions because of its incomparable memory. The disadvantage of mainframe is its huge size and enormous cost.



# Mini Computer

- Minicomputer is a medium sized multiprocessing and multi-user computer. Multiprocessing is the process of running multiple programs or processes at a given instant. The minicomputer is a medium range computer. It is also known as the mid-range server. Minicomputers fall in the category between the microcomputers and the mainframes. The advantage of using a minicomputer is that it can cater to multiple users at a lower cost than mainframes. Minicomputers are ideal for small-sized companies. The disadvantage of the minicomputers is that they are large and bulky.

# Micro Computer

- Microcomputer, also known as a personal computer, is a digital computer that works on a microprocessor. Average people who have a basic knowledge of computers can use microcomputers. Individuals at home and office are the major users of the microcomputer. Microcomputers are widely used for entertainment purposes such as for playing games, listening music, and watching movies. The microcomputer is also widely used to access the Internet. The microcomputer has several advantages such as small size, low cost, and portability. Its main disadvantage is that the speed of processing is low as compared to other types of computers.



# Types of Portable PCs

Portable PCs vary in size and features. One type of portable PC is the laptop that is comparable to a briefcase in size and structure. Notebooks and sub notebooks are smaller versions of laptops. The palmtop is small enough to be held in the palm of the hand. Example are as follow:-

**Laptops**

**Notebooks**

**Subnotebooks**

**Palmtops**

# Laptops



A laptop is a portable computer that can perform all of the tasks carried out by a desktop system. This type of computer is small enough to fit on the lap of a person, hence the name. You can use a laptop to create programs, multimedia applications, word documents, presentations, and spreadsheets. A laptop is like a briefcase in structure and you can carry it around wherever you go. A laptop appears

# Notebooks



A notebook is an extremely small and lightweight version of a portable computer. They can fit into a briefcase and be carried around. Currently, notebooks and laptops are virtually the same in most respects. Notebooks use flat panel technologies to produce a lightweight display screen. A notebook appears.

# Subnotebooks



Subnotebooks are a smaller and lighter version of the notebook. They generally have smaller keyboards and screens as compared to notebooks. Subnotebooks usually have external drives and may have the serial and parallel ports on an external device. A subnotebook appears.



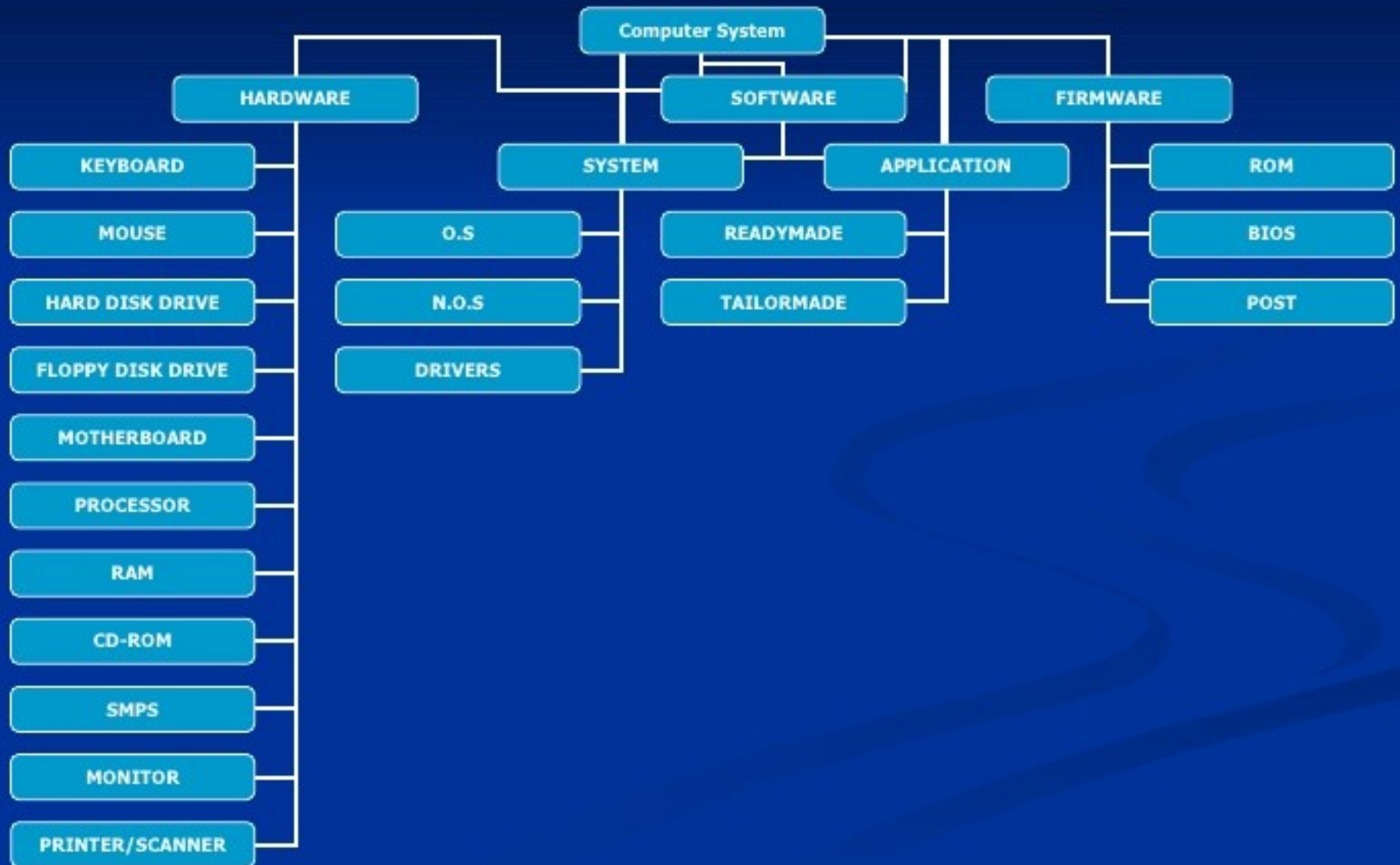
# Palmtops



As the name suggests, palmtops are computers that you can carry around in the palm of your hand. These computers use a pen for input and not the keyboard. Most palmtops do not have disk drives because of their size limitations. Palmtops are also called Personal Digital Assistants (PDAs), handheld computers or pocket computers. A palmtop and the pen appear.



# Computer System



# Computer Hardware

1. KEYBOARD
2. MOUSE
3. HARD DISK DRIVE
4. FLOPPY DISK DRIVE
5. MOTHERBOARD
6. PROCESSOR
7. SMPS
8. RAM
9. PRINTER
10. MONITOR
11. SCANNER
12. Web Cam
13. CD-ROM

# 1.KEYBOARD

Keyboard is the primary input device of the PC. You use the keyboard to enter commands and type text. The keyboards on computers are similar to typewriters. However, a computer has many additional keys. Computer keyboards have not changed a lot since they were introduced. The only changes have been additions to the number of keys in the original keyboards. Present day keyboards have 101 or more keys. Each of these keys performs a different operation.



Types of Keyboards

## 2.MOUSE

- Douglas Engelbart invented the computer mouse in 1963. It is a device that enables a computer user to move the cursor or pointer to a specific point on the screen. It was given its name because of its appearance and movement, which are similar to those of a mouse. When you move the mouse, the cursor on the screen also moves in the same direction. The mouse is the most used input device after the keyboard. The mouse is particularly important for Graphical User Interface (GUI) applications. You can also use the mouse for drawing objects on the screen by using the mouse as a pencil or paintbrush



## 3. Hard Disk Drive

- A hard disk is the primary and permanent data storage device that is placed in the system. It is similar to a human brain where all the past and present events are stored. It is made up of a magnetic material that helps in storing data for the system by following the magnetic recording techniques. A hard disk stores data from 1 GB to 160 GB or even more depending on the capacity of the hard disk. A hard disk consists of several circular platters and each platter has read/write heads on both the sides of it. The platters are divided into concentric rings, called as tracks, and each track is divided into number of sectors. The read/write heads examines and then records the data in these sectors.



# 3.Floppy Disk Drive (FDD)

## ■ Introduction :

- The floppy is an external storage device. It is a magnetic round disk enclosed in a plastic jacket. The data is stored on the magnetic surface of the floppy disk. You can transfer data from one computer to another using a floppy disk. The floppy disk drive reads and writes data to a floppy disk



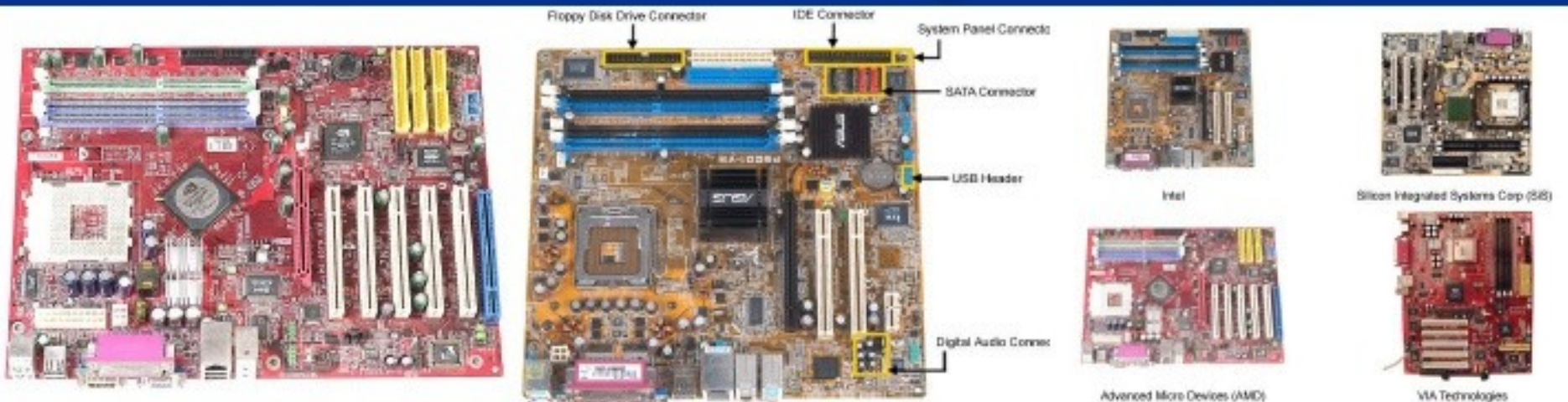
Floppy Disk Drive



3.5 inch Floppy

# 6. Motherboard

- The motherboard connects the CPU, hard drives, memory, and every other part of a system by means of slots, connectors, and sockets. The motherboard chipset is a series of chips that is a part of the motherboard. The chipset is very important to the operation of the system.



# RAM





# Switched-mode Power Supply (SMPS)



# RAM



# Printer



# Monitor

Start

Justin Harrison 



The Start screen features a grid of live tiles. Key tiles include:

- Mail:** Wendy Teo, with a snippet: "RE: Dinner tonight? Sounds good. How about the new place with the back patio?"
- Internet Explorer** and **Store** icons.
- Bing** tile with a sunset landscape.
- ADATUM** stock tile: 143.71, ▲ +0.53%, +0.76.
- Travel** and **Sports** tiles.
- Games** and **Camera** tiles.
- Music** and **Video** tiles.
- Messaging** tile with a speech bubble icon.
- Weather** tile: 71° Seattle, WA, Mostly sunny 72° / 53°.
- Desktop** tile with a daisy image.
- Hot air balloon festival** tile: "Hot air balloon festival takes off in the valley this weekend".
- Skype.com** and **Skype** tiles.
- Music Maker Jam**, **Xbox.com**, **MSN.com**, and **News Republic** tiles.

DELL



# Scanner



# Web Cam



# 5. CD-ROM AND CD WRITER DRIVES

## Introduction :

- The data stored on the CD can last for many years. The CD can store large amounts of data and is used to distribute software, music, and movies. The CD drive reads the data stored on the CD. The CD-ROM drive can only read data from a CD. Today CD-R and CD-RW drives are available that can read, and also burn data on a CD.



CD Drive



CDs



DVDS

# Application software

- **Application software** is all the computer software that causes a computer to perform useful tasks beyond the running of the computer itself. A specific instance of such software is called a **software application, program, application**.
- The term is used to contrast such software with system software, which manages and integrates a computer's capabilities but does not directly perform tasks that benefit the user. The system software serves the application, which in turn serves the user.
- Examples include accounting software, enterprise software, graphics software, media players, and office suites.



# Productivity software

- Productivity software is all about helping you to do that, making easier to keep your budget, sent your letters or keep of the track of the kids' school events.
- Productivity software includes programmes that enable you to perform various tasks generally required in home, school and business.
- This includes word processing, spreadsheet, presentation, database, and personal information manager (PIM) programmes.

# 1. word processing software

- Most students use word processing software to create and edit documents such as research papers, letters and resumes.
- Microsoft word and Coral word-perfect are popular word-processing programs.
- Writer, a word processing program is gaining in popularity because it is available as a free download from the internet.
- Because of its general usefulness, W P S is the most widely used software application.
- W P S has a key advantage over its ancestral counterpart, the typewriter: one can make revisions and corrections without having to retype an entire document.

- One quickly and easily can insert, delete, and move pieces of text.
- One can remove and insert text from one document into another.

Atlantis 1.6 - [C:\Program Files\Atlantis\Templates\Stories\Book.rtf]


File Edit View Insert Format Tools Window Help

Body Text Verdana 10 B / U

Part Two THE RED RAT SAVES THE WORLD

## Chapter Two

### *The Doll Has a Very Good Appetite*



delighted

Ignore All  
Add to Dictionary  
Edit Dictionary...  
Add to AutoCorrect  
Language  
Spellcheck Dialog...  
Spellcheck Options

"What Alice. "As to? And c see you? she spok except a green lea As the getting h delighted to find that her neck would bend about easily in any direction, like a serpent. She had just succeeded in curving it down

be?" said lders got s it I can't about as to follow, he distant chance of she tried she tried to get her head down to them, and was

I should be free of them at last, they must needs come wriggling down from the sky! Ugh, Serpent!"

"But I'm not a serpent, I tell you!" said Alice. "I'm a - I'm a -"

"Well! what are you?" said the Pigeon. "I can see you're trying to invent something!"

"I - I'm a little girl," said Alice, rather doubtfully, as she remembered the number of changes she had gone through that day.

"A likely story indeed!" said the Pigeon in a tone of the deepest contempt. "I've seen a good many little girls in my time, but never

Up folders:  
Closings  
Greetings  
Headers & Footers  
Miscellaneous  
Phrases  
Salutations  
Images

Doc:  
Sincerely  
Take care  
Thanks for your time  
Thanks in anticipation  
With best wishes  
With kind regards  
With kindest regards  
With Signature 1  
With Signature 2  
Your friend

Show preview

Sincerely yours,  
Vicki L. Sporn

Book.rtf  
With Signature 1.rtf

Clippy Bank  
Full Header.rtf

Encryption Algorithms...  
Fax.rtf

Excluding words from...  
Letter.rtf

Performing complex f...  
Table Of Contents 4.rtf

Controlling how new ...  
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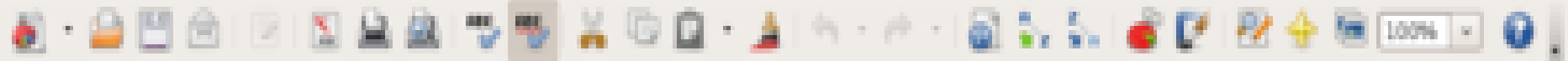
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Atlantis.doc

Page 10/12 Sec 11/12 At 4.2" Line 17 Col 9 Modified Ins English (United States) Words: 3 303

# 2. Spreadsheet

- Spreadsheet software such as Microsoft-Excel or Lotus 1-2-3, enables one to do calculations and numerical analysis easily.
- Microsoft Excel is a spreadsheet program included in the Microsoft Office suite of applications. Spreadsheets present tables of values arranged in rows and columns that can be manipulated mathematically using both basic and complex arithmetic operations and functions.
- Several type of data can be entered into a cell such as: labels –descriptive text, numeric data, formulas, functions – formulas that are pre-programmed into the spreadsheet software.
- It allows to create a variety of charts.

File Edit View Insert Format Tools Data Window Help



A1  $\sum$  =

	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2													
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Sheet1 / Sheet2 / Sheet3

# software

- Everyone has to face doing their taxes, and having the right computer software can make this burden much simpler and keep it completely under the control.
- Tax-preparation software such as Intuit Turbo Tax and H & R Block Tax Cut enable one to prepare one's state federal taxes on their own rather than hiring a professional.
- Both programs offer a complete set of tax forms and instructions, as well as videos that contain expert advice on how to complete each other.
- In addition error checking features are built into the programs to catch mistakes.

- Turbo tax also can run a check for audit alerts, file your return electronically, and offer guidance on financial planning to help effectively plan and manage your financial resources for the following year.
- Personal finance software can help you manage your bank accounts, credit cards and investments, as well as details of your income and expenditure, all in one place on your laptop or computer.



Budget Results Display Configuration

Time-frame: Annual  
 Category Filter: Sub-Categories

Pie  Bar  
 Chart Type  
 Display Chart

Chart Category: Clothing  
 Chart Sub-Category: All  
 Chart Range: 1 Years  Forward  Backward

All Category Estimates - 2004



**Key**

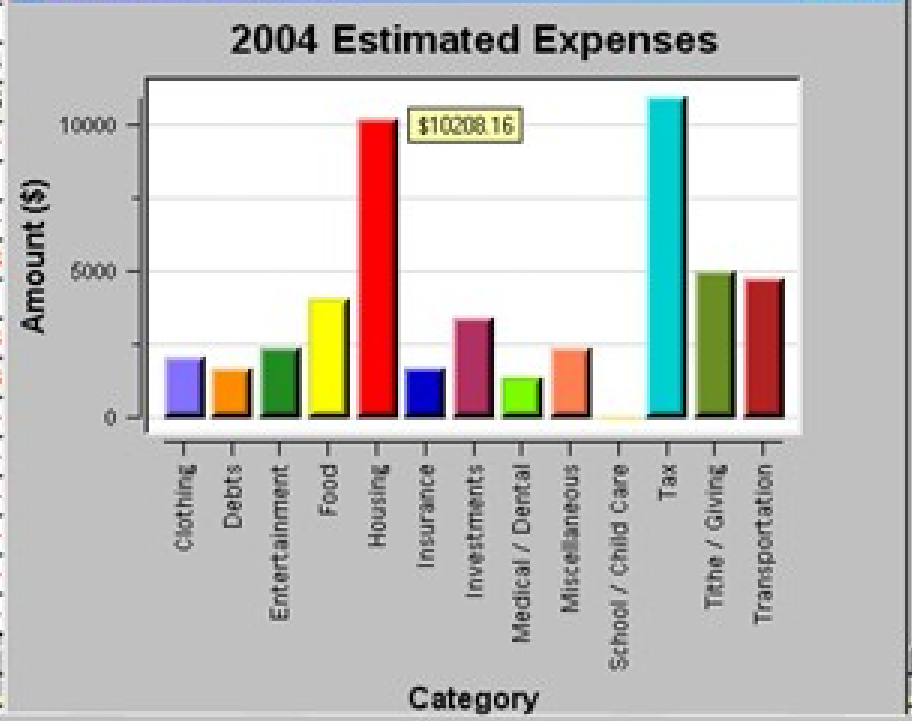
Clothing	\$2041.68	4.08%
Debts	\$1701.36	3.40%
Entertainment	\$2381.88	4.76%
Food	\$4083.24	8.16%
Housing	\$10208.16	20.40%
Insurance	\$1701.36	3.40%
Investments	\$3402.72	6.80%
Medical / Dental	\$1361.04	2.72%

Re-color Close

Financial Summary

Category	Amount Estimated	Actual Amount	%	Over / Under Est.
Dividends	\$1200.00	\$900.00	75.00%	-\$300.00
Gift	\$240.00	\$0.00	0.00%	-\$240.00
Interest				
Other				
Salary	\$4			
<Total>	\$5			
Clothes				
Other				
Shoes				
<Total>		-\$		
Mortgage				
Other		-\$		
<Total>		-\$		
Activities				
Babysitters				
Eating Out				
Movies				
Other				
Pets				

Bar Chart Budget Summary





My Money

July 31, 2006

Microsoft Money Essentials

Account List
Account Register
Manage Online Services
More

Bills Summary
Bill Calendar
More

Budget Summary
Spending Tracker

Reports Home
Monthly Reports

My Money

Choose a task: Enter a transaction Go

Customize content or layout

Favorite accounts

Table with columns: Account, Updated, Balance. Rows: Chase CREDIT CARD, Wells Fargo Checking

Go to the list of accounts
Add accounts to my favorites
Set up a new account

Spending Tracker: Current month

Table with columns: Category, Plan. Rows: Clothing, Dining Out with progress bars

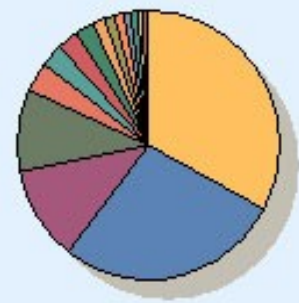
Change the spending areas you watch closely

Reminders

Receive account updates from MSN Money My Accounts

Spending by category

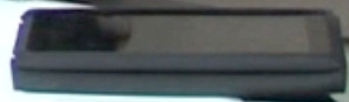
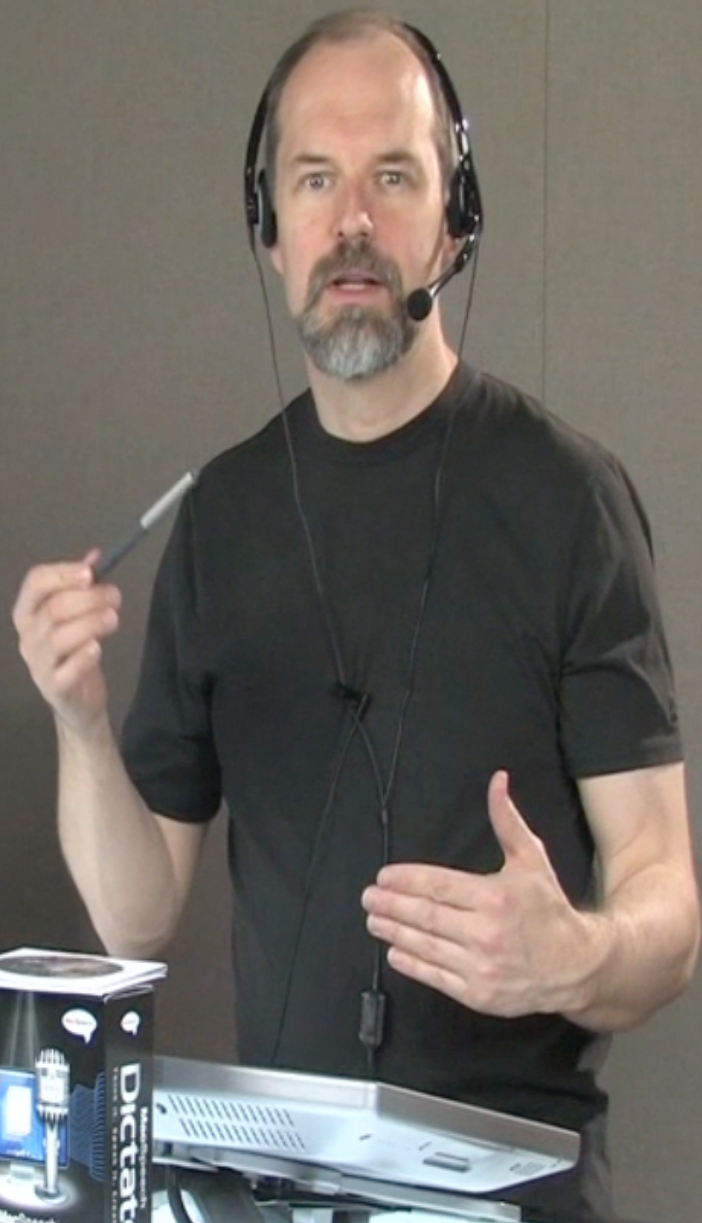
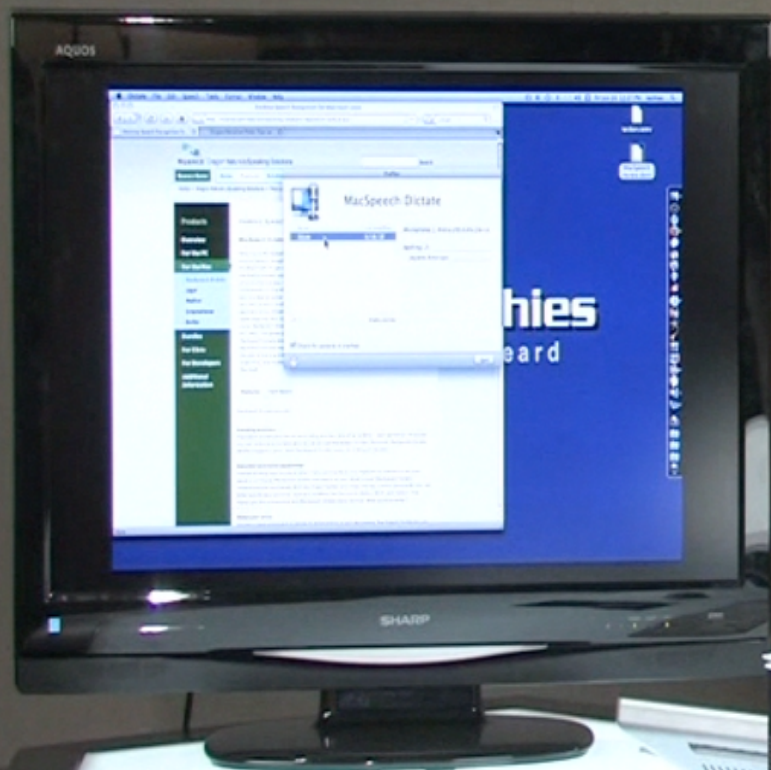
7/2/2006 through 7/31/2006



- Expense - Unassi...
Credit Card Paym...
Cash Withdrawal
Travel/Vacation
Clothing
More...

# software

- Microsoft has incorporated Speech-recognition software into its latest operating system – Windows Vista.
- Speech-recognition software or voice-recognition software, translate one's spoken word into typed text.
- One can dictate documents and email messages; use voice commands to start and switch between applications and control the operating system; and even fill out forms on the web.
- Accuracy levels of 95 to 99.5 can be achieved in quiet environments with a quality microphone.



# 5. Database Software

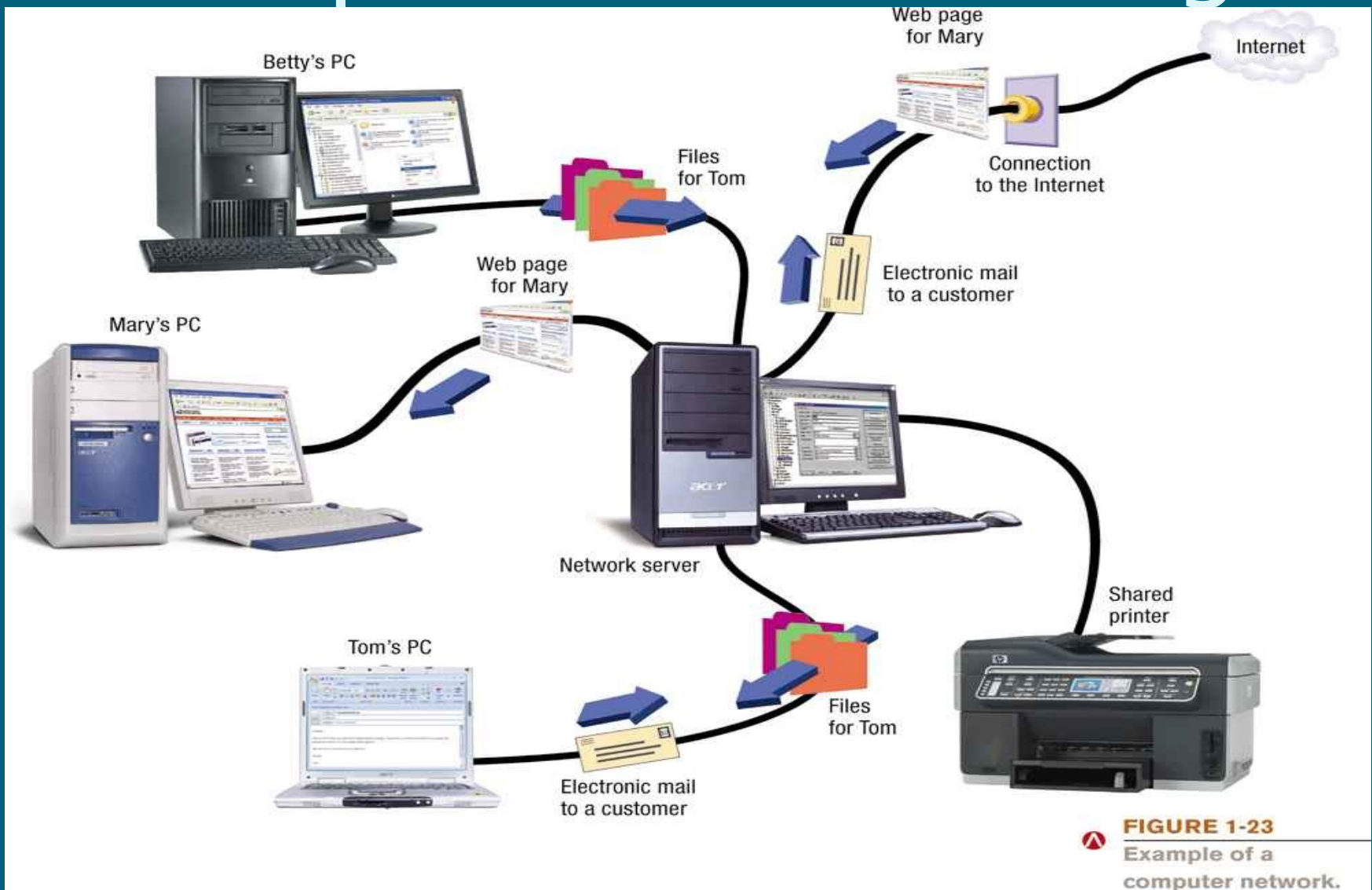
# 5. Digital image editing software

- Once the image information is in digital format, one can use it easily with all his other software.
- With the digital file, it is simple to store a picture of each person in one's outlook contacts list or add an image one captured into a newsletter he is writing.
- Products like Microsoft photo story or Google Picasa, both free downloads, make it is easy for one to use his collection of digital images in new ways.
- In photo story, one can add text, music and camera movement to create full featured slide shows.
- Using Picasa, one can create a poster from an image or several different styles of collages-a creative work that resembles such a composition in incorporating various materials or elements like the album .
- Adobe Photoshop CS3 and coral Paint shop pro full-pledged image-editing application software.

# What is Computer Networking?

- In the world of computers, **networking** is the practice of linking two or more computing devices together for the purpose of sharing data. Networks are built with a mix of computer hardware and computer software.
- A computer network is simply two or more computers that are connected via software and hardware so that they can communicate with each other.
- A computer network consists of a collection of computers, printers and other equipment that is connected together so that they can communicate with each other.

# Computer Networking



**FIGURE 1-23**  
Example of a  
computer network.



- **Benefits Of computer networking:** There are a lot of benefits of computer networking.
- **file sharing** - Network file sharing between computers gives you more flexibility than using floppy drives or Zip drives. Not only can you share photos, music files, and documents, you can also use a home network to save copies of all of your important data on a different computer. *Backups* are one of the most critical yet overlooked tasks in home networking.
- **printer / peripheral sharing** - Once a home network is in place, it's easy to then set up all of the computers to share a single printer. No longer will you need to bounce from one system or another just to print out an email message. Other computer peripherals can be shared similarly such as network scanners, Web cams, and CD burners.

- **Networking helps in sharing of hardware:**

Networks help in sharing of different kinds of hardware devices. For example, sharing of a single printer in an office of twenty people is done through networking of wires. This saves lot of cost that could otherwise have incurred if twenty different printers were provided for each computer in use.

- **Sharing applications:**

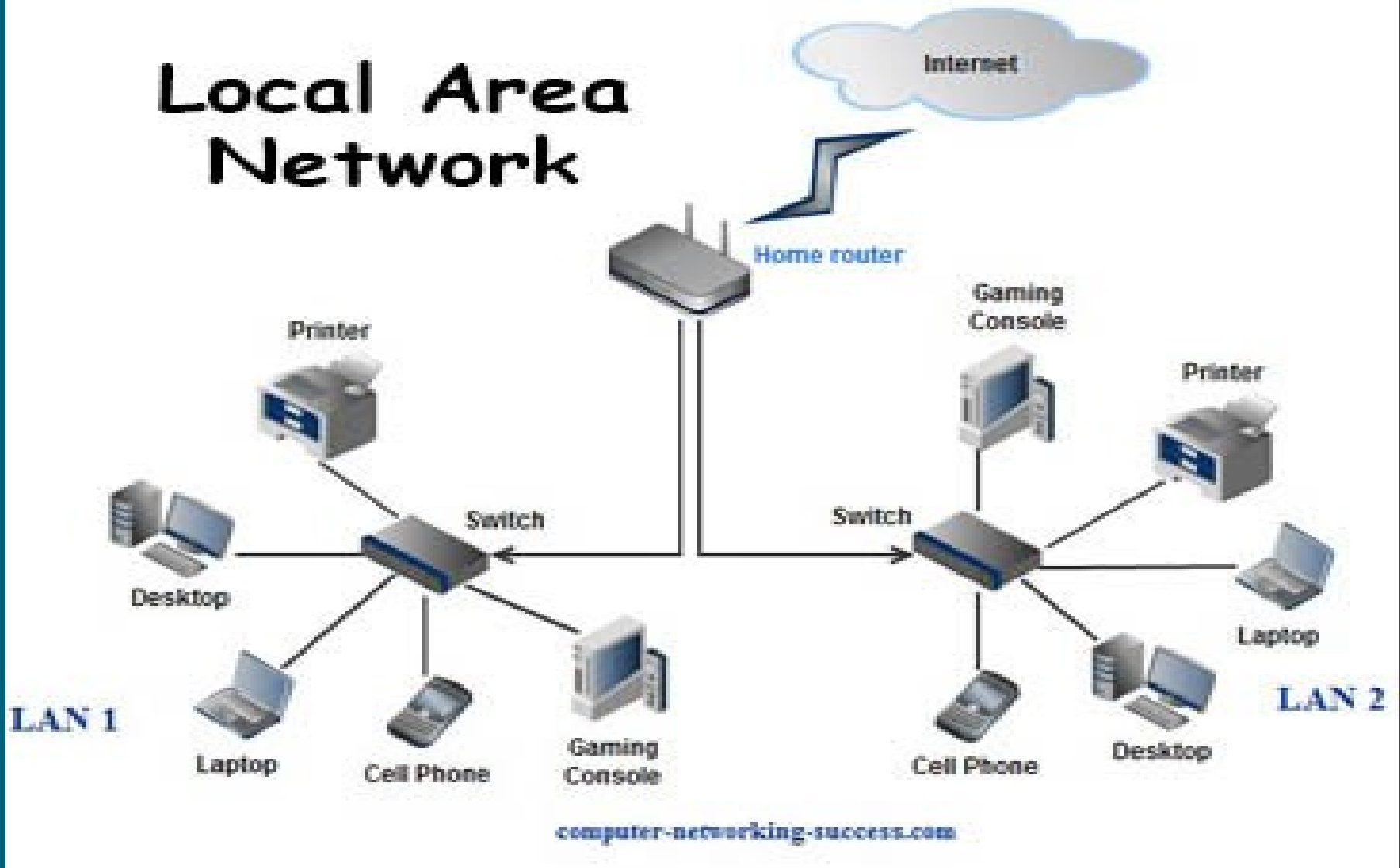
One of the most common reasons for networking in many businesses is so that several users can work together on a single business application. For example, an accounting department may have accounting software that can be used from several computers at the same time. Or a sales-processing department may have an order-entry application that runs on several computers to handle a large volume of orders.

# Types Of Networking

- **Wireless Networks:** Wireless networks are computer networks that are not connected by cables of any kind. The use of a wireless network enables enterprises to avoid the costly process of introducing cables into buildings or as a connection between different equipment locations. The basis of wireless systems are radio waves, an implementation that takes place at the physical level of network structure.
- **Local Area Network(LAN):** LAN connects networking devices within a short span of area, i.e. small offices, home, internet cafes etc. LAN uses TCP/IP network protocol for communication between computers. It is often but not always implemented as a single IP subnet. Since LAN is operated in a short area so it can be controlled and administrated by a single person or organization.

# Local Area Network(LAN)

## Local Area Network





- **Wide Area Network(WAN):**As “word” Wide implies, WAN, wide area network cover large distance for communication between computers. The Internet itself is the biggest example of Wide area network, WAN, which is covering the entire earth. WAN is distributed collection of geographically LANs. A network connecting device router connects LANs to WANs. WAN used network protocols like ATM, X.25, and Frame Relay for long distance connectivity.

# Wide Area Network(WAN)

La Croissance du monde Internet et du nombre de Serveurs Web



Internautes : Mondial 1 milliard – France 25 millions – UK 40 millions.