Introduction to ICT/Computer Fundamentals

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What will we learn today?

- Introduction to ICT
- Introduction to Computer
- Computing Devices
- Early Computing Devices
- Modern Computing Devices
- Five Generations of Computers
- Computer and its basic operations
- Classification of Computers
- Hardware and Software
- System Software and Application Software

Computer Fundamentals by Rizwan Abbasi

Introduction To ICT

ICT: Information & Communication Technology

ICT is the technology required for information processing, in particular, the use of electronic computers, communication devices and software applications to convert, store, protect, process, transmit and retrieve information from anywhere, anytime.

- **INFORMATION**

Information refers to the knowledge obtained from reading, investigation, study or research. The tools to transmit information are the telephone, television and radio. Information is knowledge and helps us to fulfill our daily tasks.

- **COMMUNICATION**

Communication is an act of transmitting messages. It is a process whereby information is exchanged between individuals using symbols, signs or verbal interactions. Communication is important in order to gain knowledge.

- **TECHNOLOGY**

Technology is the use of scientific knowledge, experience and resources to create processes products that fulfill human needs. Technology is vital in communication.

Technologies that fall under the category of ICT

Information	Technologies
Creation	Personal Computers, Digital camera, Scanner, Smartphone
Processing	Calculator, PC, Smartphone
Storage	CD, DVD, Pen drive, Microchip, Cloud
Display	PC, TV, Projector, Smartphone,
Transmission	Internet, Teleconference, Video conferencing, Mobile technology, Radio
Exchange	e-mail, Cellphone,

Graphical Representation of ICT
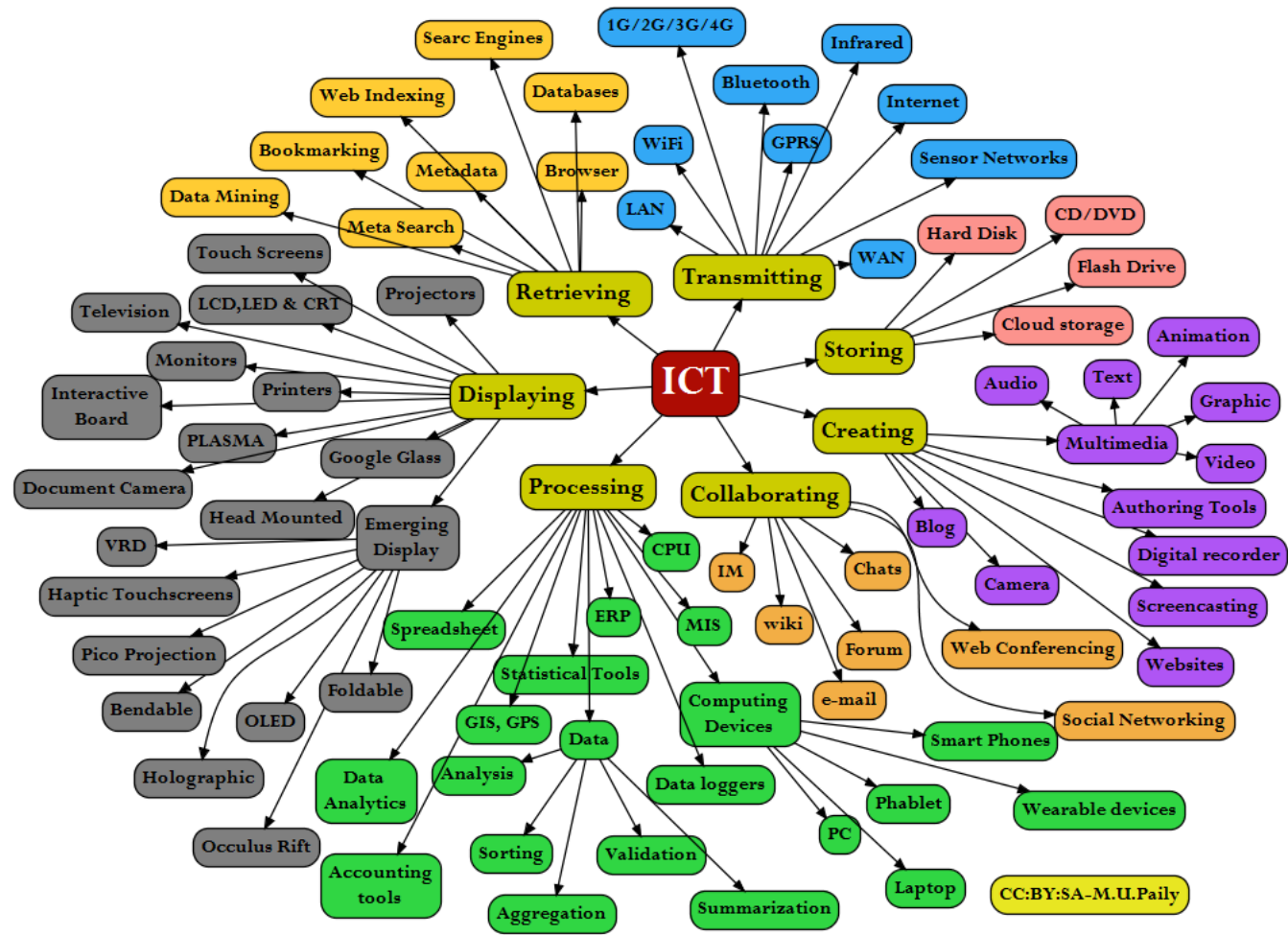
ICT IN EVERYDAY LIFE

Business

Financial Services

Entertainment

Public Service

Education

Introduction To Computer

"A Computer is an electronic device that accepts input data and instructions with the help of input devices, stores them until needed, processes it and then produces the output as a result with the help of output devices"
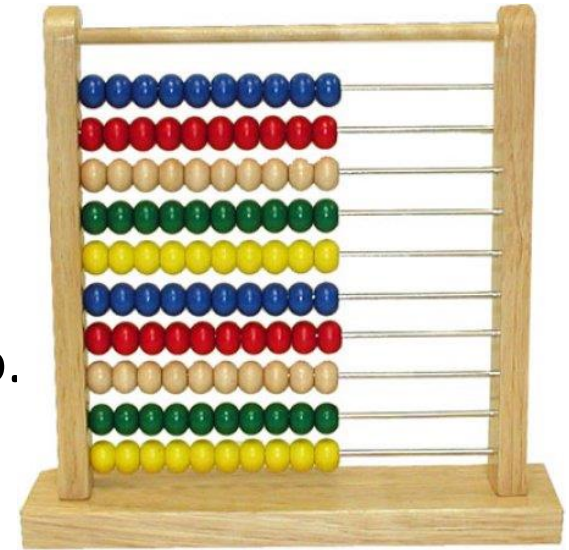
1. Computing Devices

The term "Computing Device" is used for all such machines that can perform calculations.

a. **Early Computing Devices**
   i. **Abacus**
      - First Computer that emerged about 5,000 years ago.
      - Make computations using a system of sliding beads

1. Computing Devices contd…

ii. **ENIAC : Electronic Numerical Integrator and Computer**

iii. **EDVAC: Electronic Discrete Variable Automatic Computer**

Developed by *Von Neumann* in 1945 with a memory to hold both stored programs and data.

iv. **UNIVAC-I: Univeral Automatic Computer**

Developed in 1951, became one of the first commercially available computer.

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b. Modern Computing Devices

b. Modern Computing Devices contd...

01

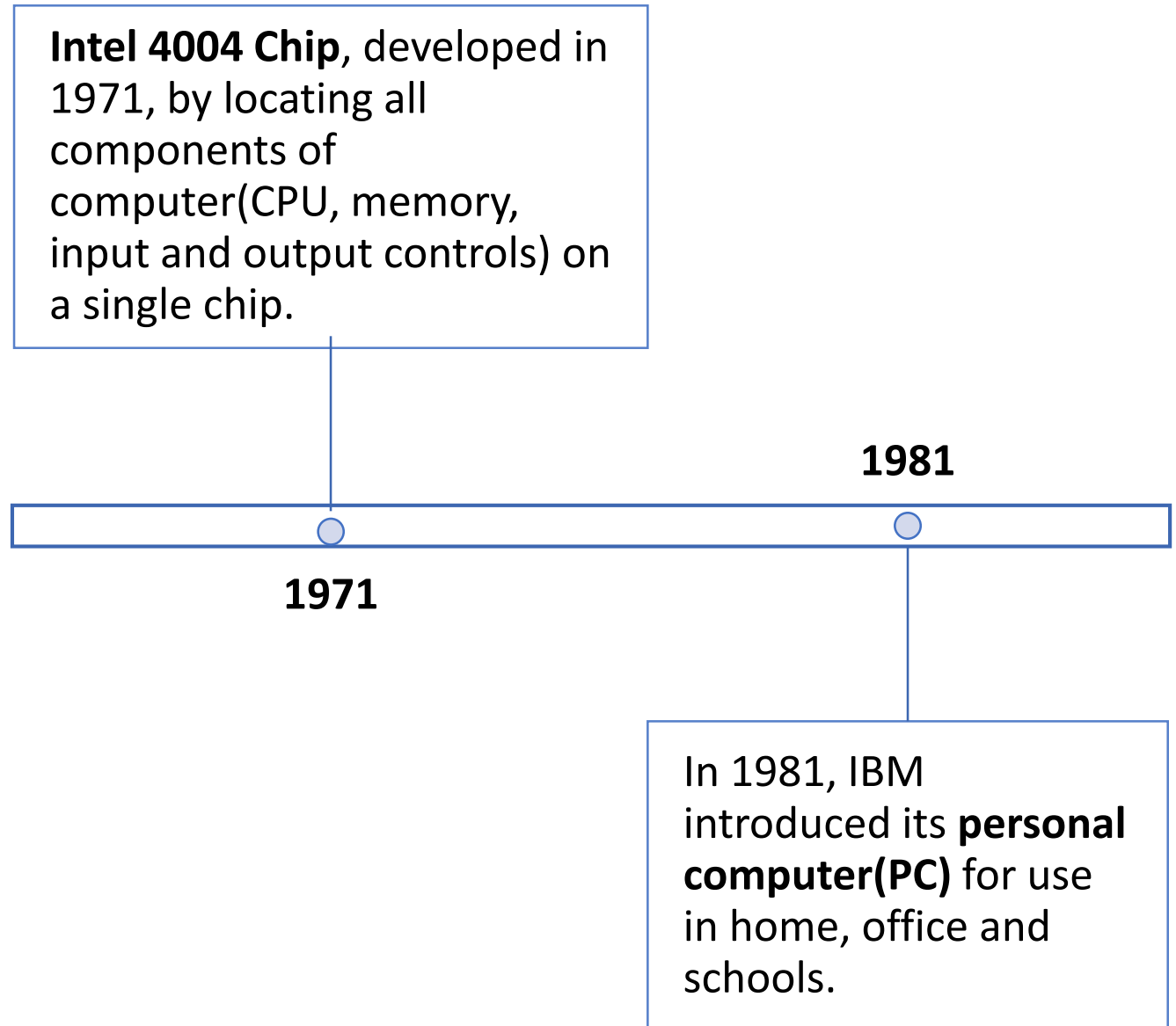Invention of Transistor in 1948 changed computer's development.

02

IBM 1401 Computer was universally accepted throughout industry.

03

Development of **Integrated Circuits(ICs)** in 1958 completely revolutionized computing devices in terms of processing speed, memory and peripherals.

b. Modern Computing Devices contd...

Intel 4004 Chip, developed in 1971, by locating all components of computer(CPU, memory, input and output controls) on a single chip.

1981

1971

In 1981, IBM introduced its **personal computer(PC)** for use in home, office and schools.

The Five Generations of Computers

1940 – 1956: First Generation – Vacuum Tubes

These early computers used vacuum tubes as circuitry and magnetic drums for memory. As a result they were enormous, literally taking up entire rooms and costing a fortune to run.

1956 – 1963: Second Generation – Transistors

The replacement of vacuum tubes by transistors saw the advent of the second generation of computing
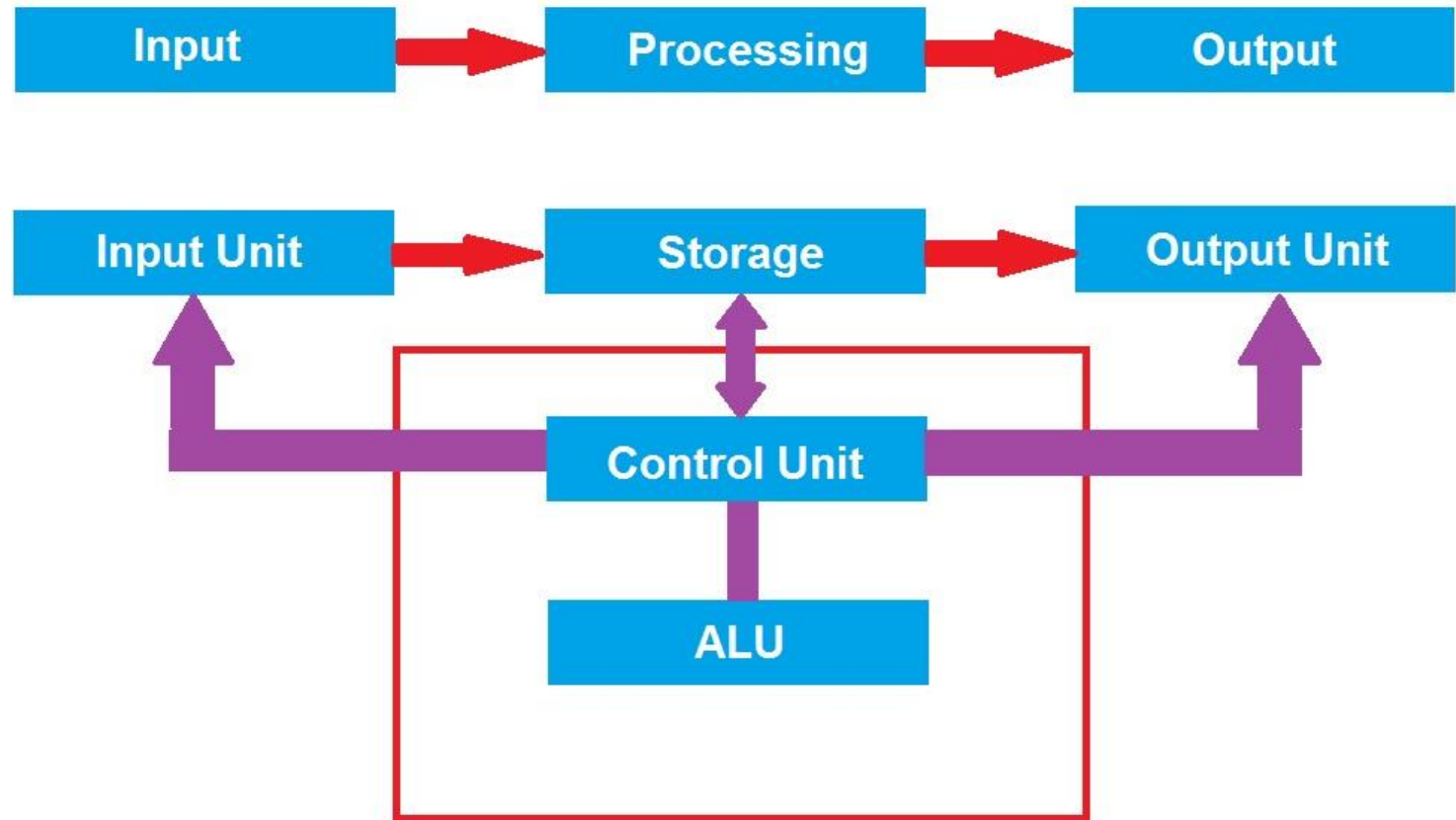
The Five Generations of Computers contd...

1964 – 1971: Third Generation – Integrated Circuits

1972 – 2010: Fourth Generation – Microprocessors

2010 - Onwards : Fifth Generation – Artificial Intelligence

Computer and its Basic Operations

Classification of Computers

1. **Microcomputers** are commonly known as personal computers
   i. Desktop Computers
   ii. Notebook Computers
   iii. Laptop Computers
   iv. Handheld Computer

Classification of Computers contd…

2. Mainframe Computers

- Second powerful and expensive computers than super computers.
- Powerful processors and large memories to process billions of instructions per second (BIPS).
- Mainly used by Airline companies, government departments, banks and insurance companies.

Classification of Computers contd...

3. Super Computers

- The most powerful and the most expensive computers

- Can process billions to trillions of instructions per second

- Used for worldwide weather forecasting, weapon research, stock analysis, automobile designing, special effects for movies. Also used at NASA.

4. Mobile Computers

Processing and transmission of data, voice and video via a computer.

Hardware and Software

Computer Hardware refers to the physical parts or components of a computer such as monitor, keyboard, hard disk, mouse, CPU, memory and all the physical objects that we can touch.

Computer Software refers to the set of programs or instructions that enable the computer to do something and operate the hardware.

Combination of hardware and software forms a usable computing system.

	Hardware	Software
1	Hardware refers to the physical components of the computer required to store and execute software	Set of instructions that enable user to interact with the computer.
2	It is Physical in nature.	It is logical in nature.
3	Hardware understands only Binary data or digits i.e, 0s and 1s in the form of voltage pulses.	Software tells the hardware everything in the form of Binary Data or digits i.e, 0s and 1s only.
4	**Types:** Input, storage, processing and output.	**Types:** System software and Application software.
5	Hardware faults are physical.	Software faults are logical.
6	**Examples:** Monitor, printer, hard disk, video card, scanners, routers and modems etc.	**Examples:** Windows, Word, Excel, Video Games, etc.

Types of Software

1. System Software
2. Application Software

1. System Software

Set of programs that operate and control the computer system.

- Supports the development of other application software

- Supports the execution of other application software

- Monitors the efficient use of various hardware resources.

- Communicate and control the operation of peripheral devices.

Examples: Operating system, device drivers and language processors.

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2. Application Software

Application Software is a type of software that can be used for a variety of tasks.

- It is not limited to one particular function.

- It helps to solve problems in real world.

Examples: Enterprise software, accounting software, office suites, graphics software and media players.