



Introduction To ICT

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- ❖ Understanding the computer system
- ❖ Characteristics of Computers
- ❖ Understanding Software
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What is ICT?

Information and Communication Technology is a more specific term that stresses the role of integrated communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information.

THE COMPUTER SYSTEM



**Apple Macintosh
1984**



Apple iMac





What is a Computer?

Computer came from the word “**Compute**” which means to “**Calculate**”.

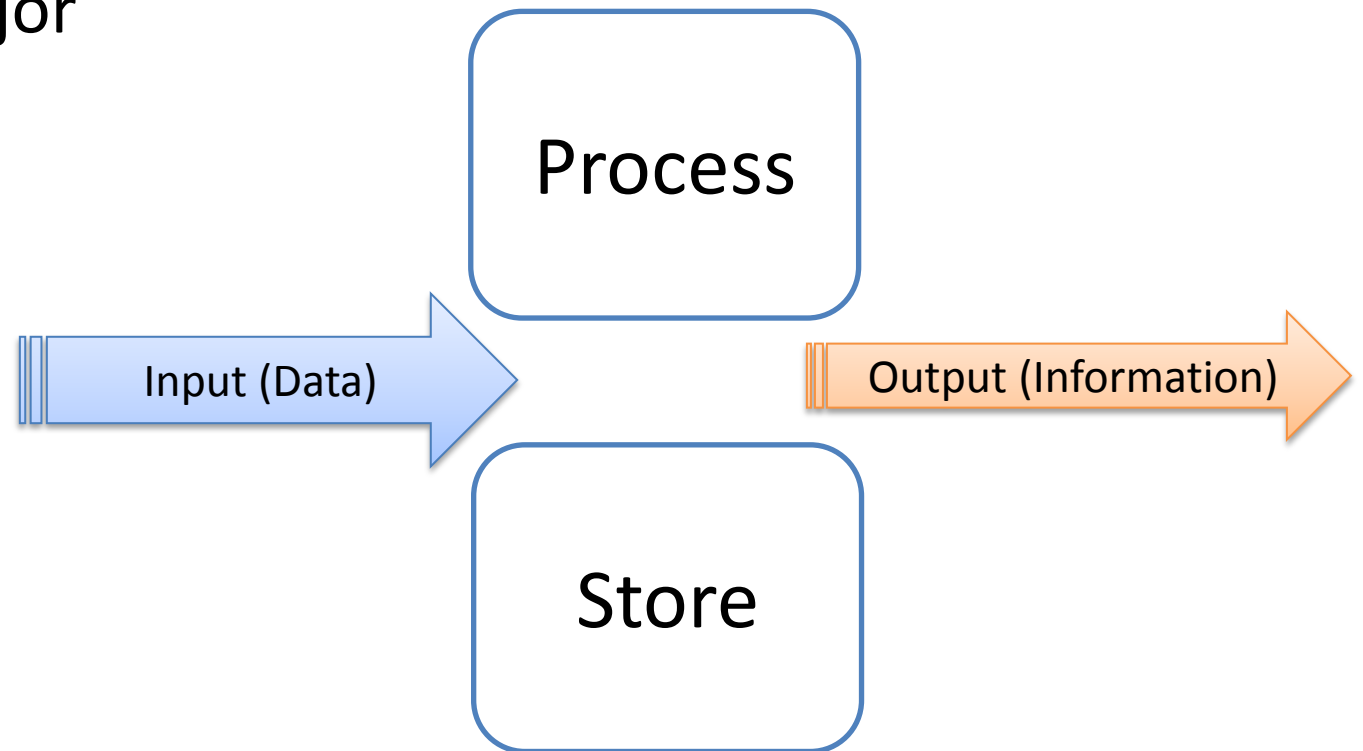
It's an electronic device which is capable of inputting data, process, store and output data or information according to instructions given to it in a program.

Basic computer concept



A computer is a data processing device that performs four major functions:

1. It gathers data, or allows users to *input* data.
2. It *processes* data into information.
3. It *outputs* data and information.
4. It *stores* data and information.





Data & Information

- **Data**-is a raw fact or unprocessed information, e.g. *number, text, image, video* and *sound*, in a form that is suitable for storage or processing by a computer.
- **Information**- The meaningful material derived from processed data, or the results achieved from a data, or the meaning that is attached to a data.



Characteristics of Computers

- Man developed computers so that it could perform operations such as calculation, data processing or entertainment.
- Today, computers are everywhere, in our offices, homes, appliances, automobiles etc. the list is endless and they perform different types of task from simple to complex.
- Most of the world's infrastructure runs on computers, and the computers have profoundly changed our lives, mostly for the better.



Speed

- The computer can process data very fast, at the rate of millions of instructions per second (**MIPS**). Some calculations that would have taken hours or days to complete can be done in few seconds using a computer.



Accuracy

- Computer provides a high degree of accuracy. The level of accuracy depends on the instructions given to it, because computers only do what it's told to do.



Storage Capability

- Large volumes of data and information can be stored in the computer and also retrieved whenever required.



Versatile

- The computer is versatile in nature. It can perform different types of tasks with ease. At one moment you can use the computer to prepare a letter and in the next moment you may play music or print a document.

Resource Sharing



Today's computers have the capability to connect with each other, which is called **Computer Networking**.





Diligence

- The computer does not get tired or fatigued when used for a longer period of time. It can perform long and complex calculations with the same speed and accuracy from the start till the end.

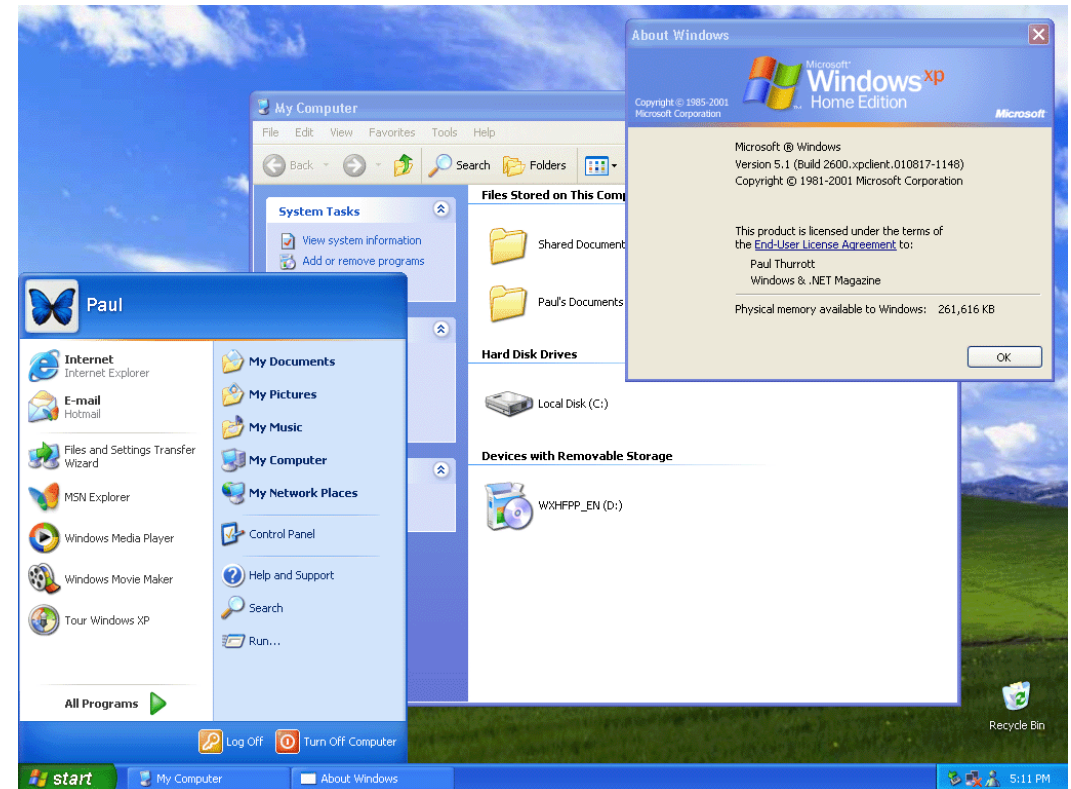


Computer Components

HARDWARE



SOFTWARE





Hardware

Computer hardware refers to the physical parts or components of a computer such as monitor, keyboard, hard drive, mouse, CPU, memory, motherboard etc. all of which are physical objects that you can actually touch.



Hardware Categories

SYSTEM UNIT



PERIPHERALS



System Unit



The System Unit is also known as a "**system Case**". Also sometimes incorrectly referred to as the "**CPU**". It is the enclosure that contains most of the components of a computer and protects the internal devices.



Central Processing Unit (CPU)



The **CPU** also called “**Processor**” or “**Microprocessor**”. The chip is located on the motherboard, it’s the brain of the computer because all data processing are done here, either calculation or data transport.

Parts Of A CPU

- 1. **Arithmetic & Logic Unit (ALU)**
- 2. **Control Unit (CU)**



Peripherals

A **peripherals** are devices that connects to a computer. They expands the computer's capabilities.

There are three different categories of peripheral devices:

- ❖ **Input Devices**
- ❖ **Output Devices**
- ❖ **Storage Devices**

Input Devices



These are devices that enable you to insert data into a computer.



Keyboard



Scanner



Webcam

Bar Code Scanner



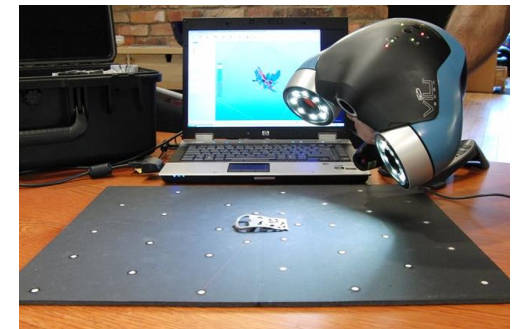
Mouse



Microphone



Touch Screen



3D Scanner

Output Devices



These are devices that outputs or displays information that has been process by a computer .



LCD Monitor



Speaker



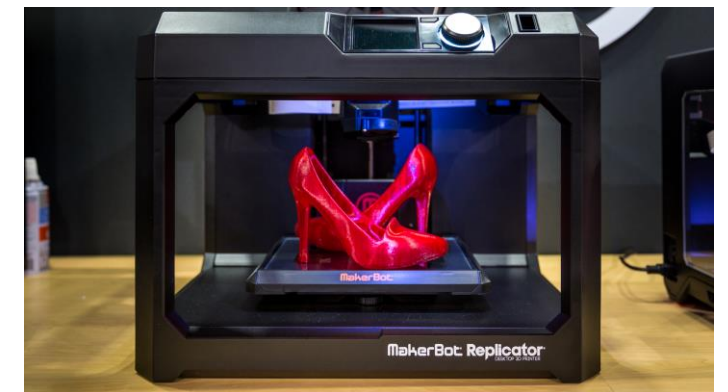
Plotter



Printer



Projector



3D Printer

Storage Devices



These are devices that are used to store data or information permanently.



USB Flash Drive



CD Rom



DVD Rom



External Hard Drive



Floppy Disk



Computer Memory

In computing, **memory** refers to the physical devices used to store programs or data in a temporary or permanent basis for use in a computer or other digital electronic devices.

There are two kinds of computer memory:

- **Primary Memory**
- **Secondary Memory**

Binary Digits (BITS)



Is the smallest unit of information in a computer. A bit is represented by the numbers **1** and **0**, which correspond to the states **on** and **off**, **true** and **false**, or **yes** and **no**.



- **8 Bits=1 Byte**
- **1024 Bytes= 1 Kilobyte**
- **1024 Kilobytes= 1 Megabyte**
- **1024 Megabytes= 1 Gigabyte**
- **1024 Gigabytes= 1 Terabyte**



Primary Memory

These are computer memories that have direct access to the CPU (Central Processing Unit).

Basically, there are two types **RAM (Random Access Memory)** and **ROM (Read Only Memory)**.



Types of Primary Memory

RAM

- A RAM is a temporal memory that allows stored data to be accessed directly in any random order.



ROM

- ROM is a permanent memory storage medium used in computers and other electronic devices.





Secondary Memory

Secondary storage (also known as external memory or auxiliary storage), differs from primary memory in that it is not directly accessible by the CPU; they must be copied to a primary memory (RAM) before they can be processed by the CPU.



Types of Secondary Memory



Hard Drive



USB Flash Drive



SD Card



Memory Card



Magnetic Tape



Compact Disc



SOFTWARE

Software is any set of instructions that directs a computer's processor to perform specific operations.

Types of software:

- **System software (Operating System)**
- **Application software**



SYSTEM SOFTWARE

System software is an operating system designed to operate and control the computer hardware and to provide a platform for running application software.



Operating System

Categories of Operating systems :

- **Windows**
- **Linux**
- **Mac OS X (Unix)**



Windows 10

Windows

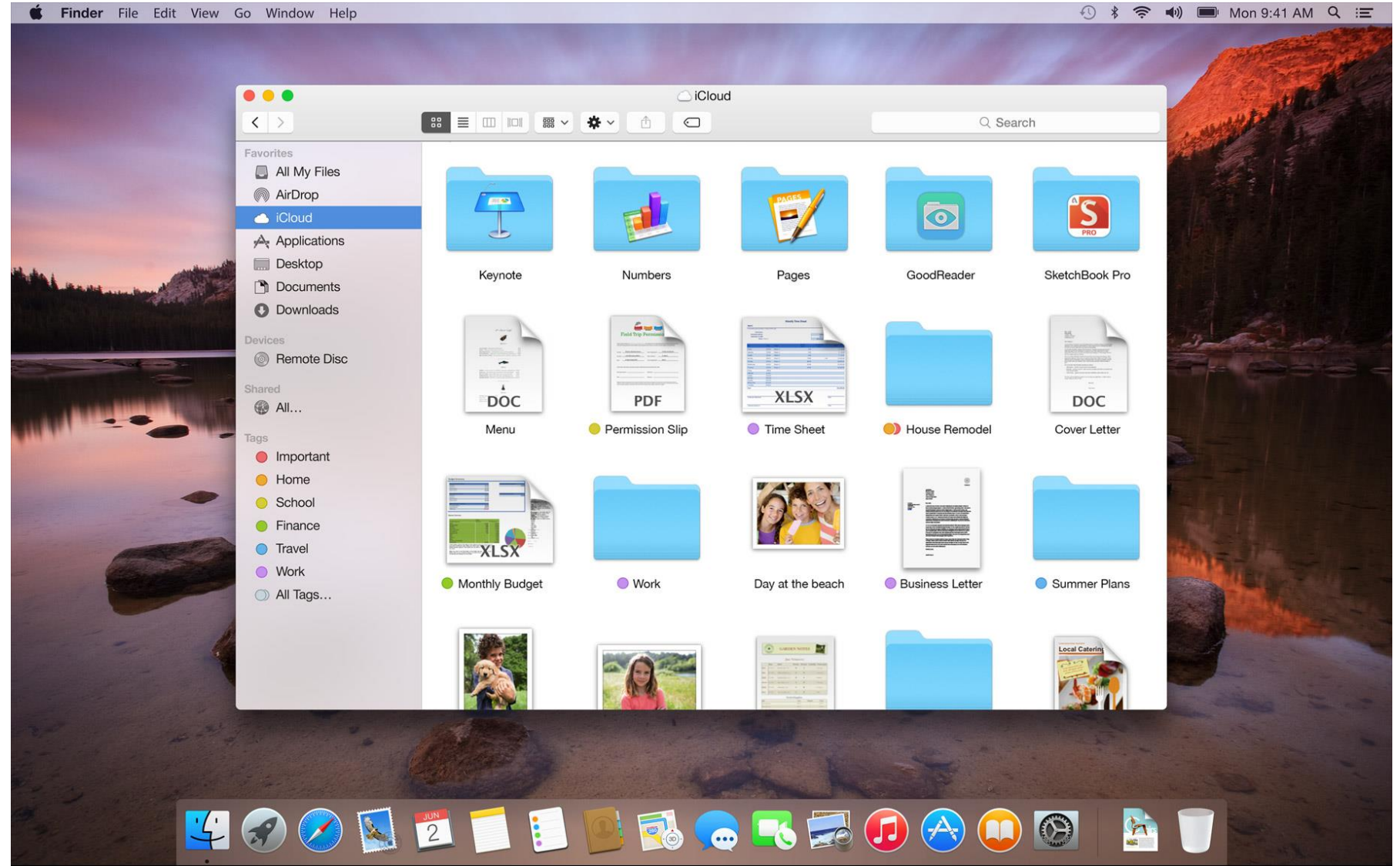


Windows 10



OS X Mavericks

OS X



OS X 10.11 (Unix-based OS)



Linux

A screenshot of the Ubuntu 14.04 LTS desktop environment. The desktop background is a green grass field. On the left, there is a vertical dock with various application icons. The main desktop area shows several folders: 'home', 'Java', 'photos', and 'Network Servers'. A 'Details' window is open in the center-right, displaying system information. The window has a title bar with 'Details' and two tabs: 'All Settings' and 'Details'. The 'Overview' tab is selected. The window displays the Ubuntu logo, the text 'ubuntu 14.04 LTS', and a list of system specifications: Device name (ubuntu-R580), Memory (3.6 GiB), Processor (Intel® Core™ i5 CPU M 430 @ 2.27GHz x 4), Graphics (Gallium 0.4 on NVA8), OS type (64-bit), and Disk (488.0 GB). There is a 'System Up-To-Date' button at the bottom right of the window. The top of the desktop shows a panel with system icons (Wi-Fi, En, battery, volume) and the date/time 'Fri Apr 18 7:22 AM'.

Ubuntu 14 OS

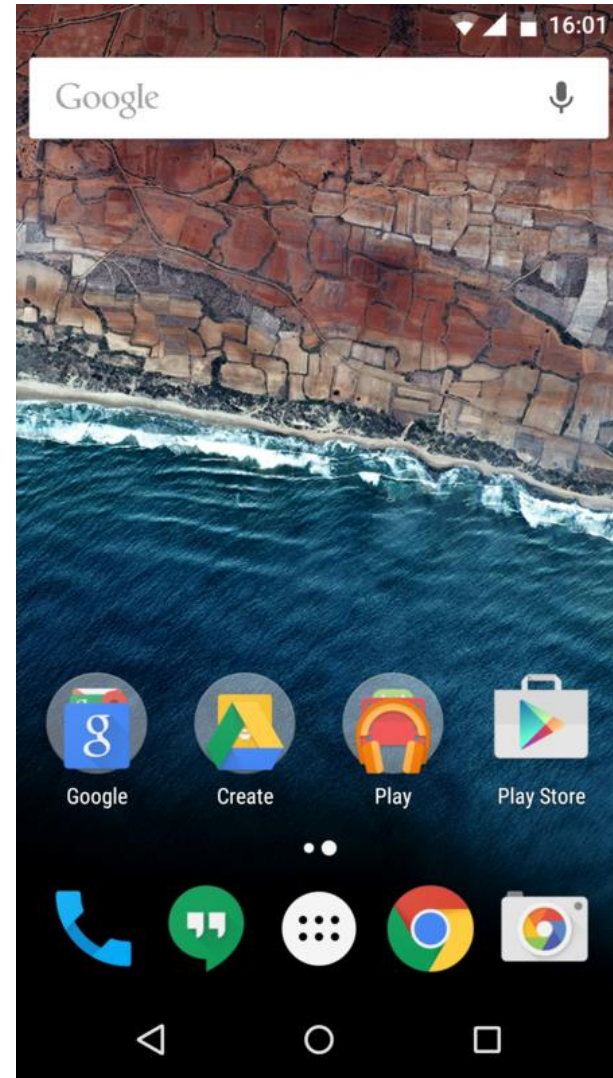


Mobile Operating Systems

A mobile operating system, also referred to as mobile OS, is the operating system that operates a Smartphone, tablet, PDA, or other digital mobile devices.

Common Mobile Operating Systems:

- **Android (Google)**
- **iOS (Apple)**
- **Blackberry OS (Blackberry Limited)**
- **Windows Phone (Microsoft)**
- **Symbian (Nokia)**
- **Firefox OS (Mozilla foundation)**



ANDROID 6.0







Windows Phone OS



Windows Phone 8



Windows 10 Mobile



Blackberry OS



symbian



symbian

Symbian OS - the mobile operating system







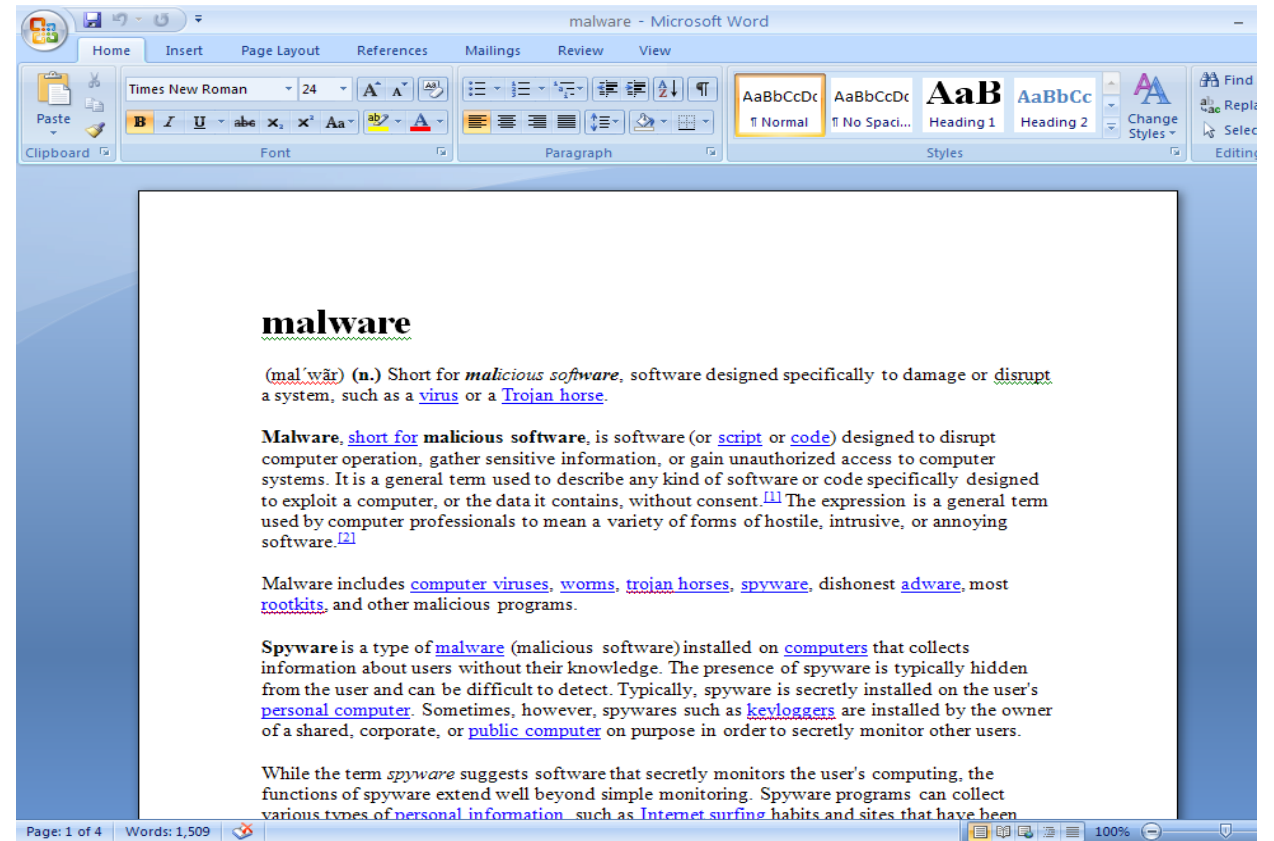
APPLICATION SOFTWARE

- These are computer programs installed within an **Operating System** that users access to carry out a task.
- Examples of **Application Software**.
 - **Word Processors** (Microsoft Word)
 - **Spreadsheet** (Microsoft Excel)
 - **Database** (Microsoft Access)
 - **Presentation** (Microsoft PowerPoint)
 - **Desktop Publishing** (Microsoft Publisher, InDesign)
 - **Graphics Applications** (Photoshop, CorelDraw)
 - **Media Players** (VLC, iTunes)
 - **Internet Utilities** (Skype, Firefox)

Word Processor



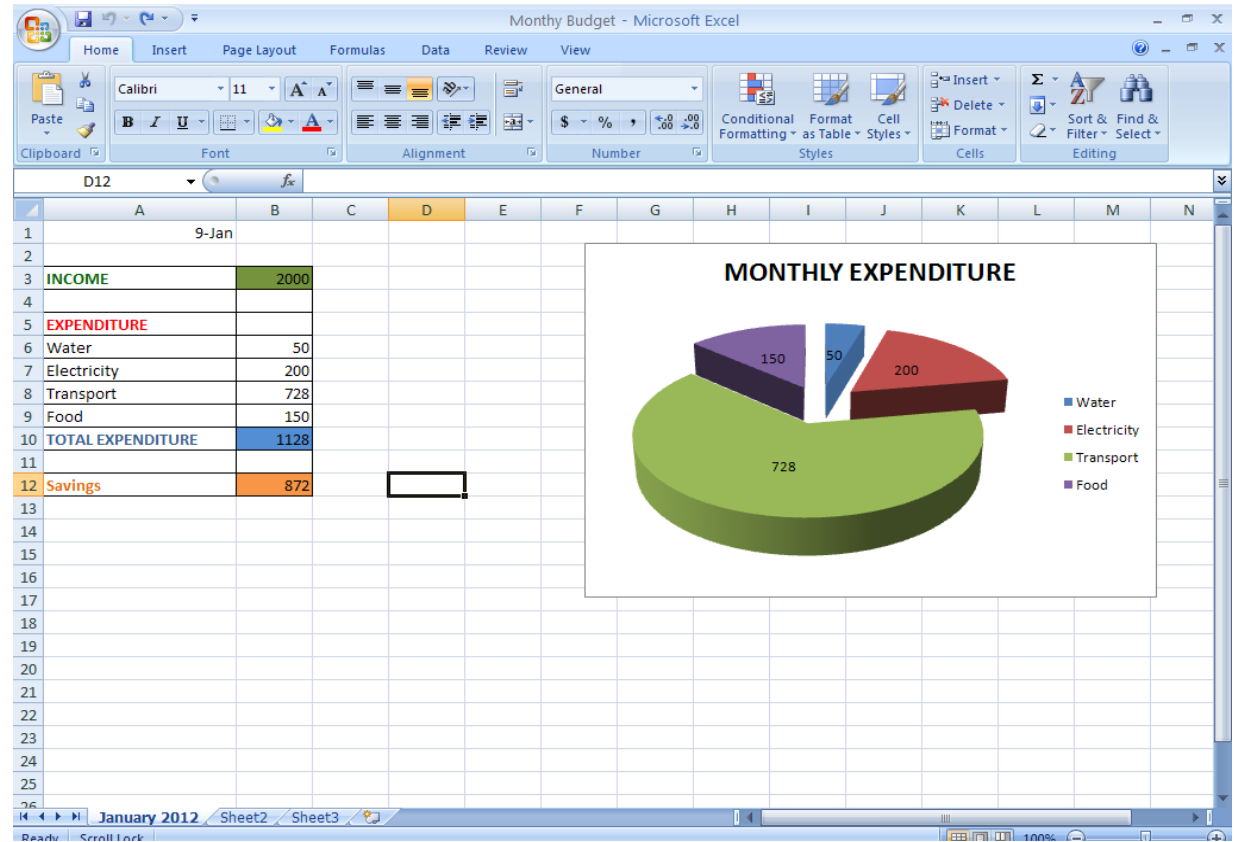
- ***Word Processor*** - is an application program for manipulating text-based documents; the electronic equivalent of paper, pen, typewriter and eraser.



Spreadsheet



- A **Spreadsheet** -is an application program commonly used for budgets, forecasting, and analyzing other financial-related tasks.



Database



- **Database** - is an application that can collect data or information and organize it for easy retrieval.

ABC Bank : Database (Access 2007) - Microsoft Access

Home Create External Data Database Tools

Security Warning Certain content in the database has been disabled Options...

All Access Objects

Tables

- Accounts
- Customers

Queries

- Current Account Query
- Customers Query
- Customers Query1
- Q
- Query
- Savings Accounts Query

Forms

- Customers form

Reports

- Customers

Customers form ABC Bank

ID: 2

CustomerID: 102

FirstName: Ebrima

LastName: Cham

Gender: Male

Address: Sukuta

PhoneNumber: 7544474

Record: 14 of 5

Form View



Malware (Malicious Software)

- **malicious software**, is an application (script or code) designed to disrupt computer operation, gather sensitive information, or gain unauthorized access to computer systems. It is a general term used to describe any kind of software or code specifically designed to exploit a computer, or the data it contains, without consent.



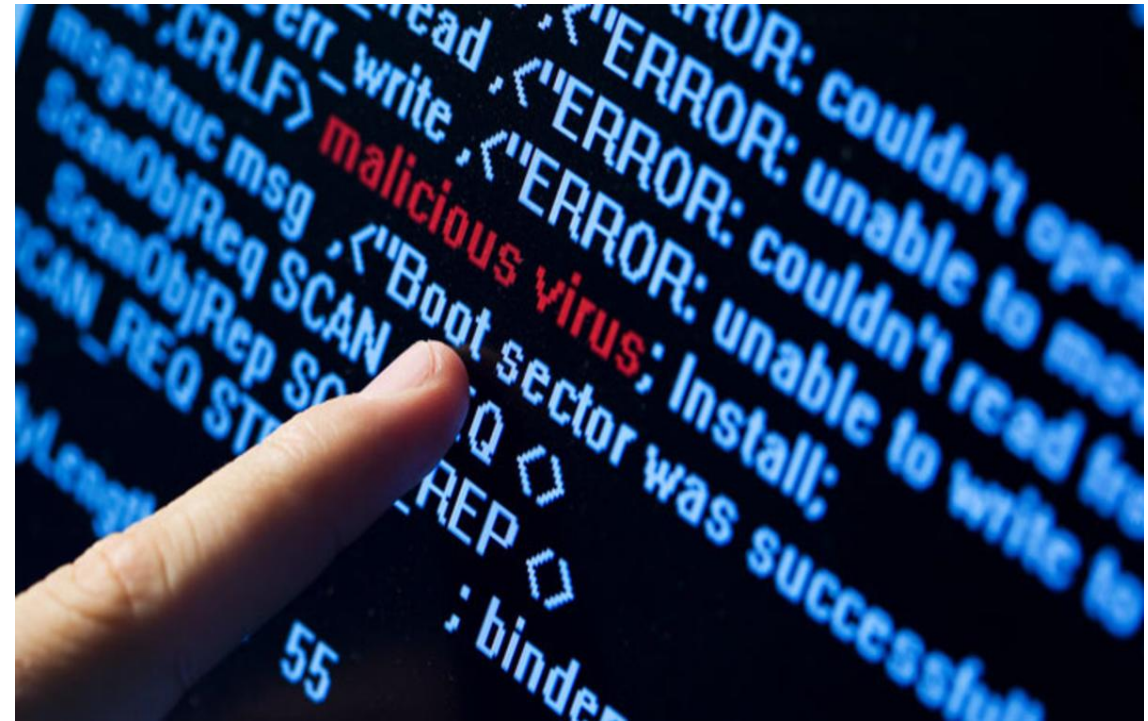
Types of Malware

- **Virus**
- **Worm**
- **Trojan Horse**
- **Spyware**
- **Adware**
- **Zombie**

Virus



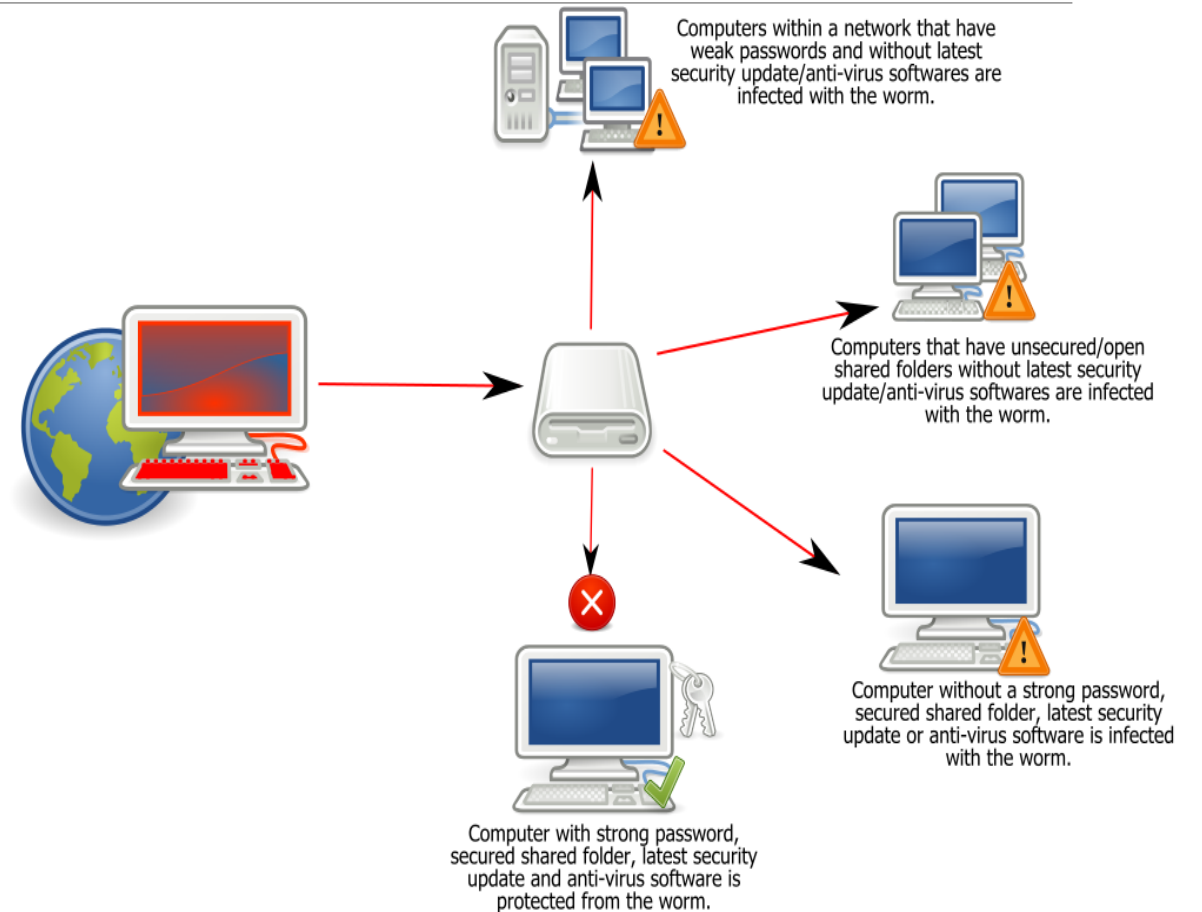
- A computer virus is a malware program that, when executed, replicates by inserting copies of itself into other computer programs, data files, or the boot sector of the hard drive; when this replication succeeds, the affected areas are then said to be "infected".



Worm



- A computer worm is a standalone malware computer program that replicates itself in order to spread to other computers. Often, it uses a computer network to spread itself, relying on security failures on the target computer to access it. Unlike a computer virus, it does not need to attach itself to an existing program.



Trojan Horse



- A Trojan horse, or Trojan, in computing is any malicious computer program which misrepresents itself as useful, routine, or interesting in order to persuade a victim to install it.



Adware



- The term adware is frequently used to describe a form of malware which presents unwanted advertisements to the user of a computer. The advertisements produced by adware are sometimes in the form of a pop-up or sometimes in an "unclosable window".



Spyware



•Spyware is a type of malware that is installed on a computer without the knowledge of the owner in order to collect the owner's private information. Spyware is often hidden from the user in order to gather information about internet interaction, keystrokes (also known as keylogging), passwords, and other valuable data.

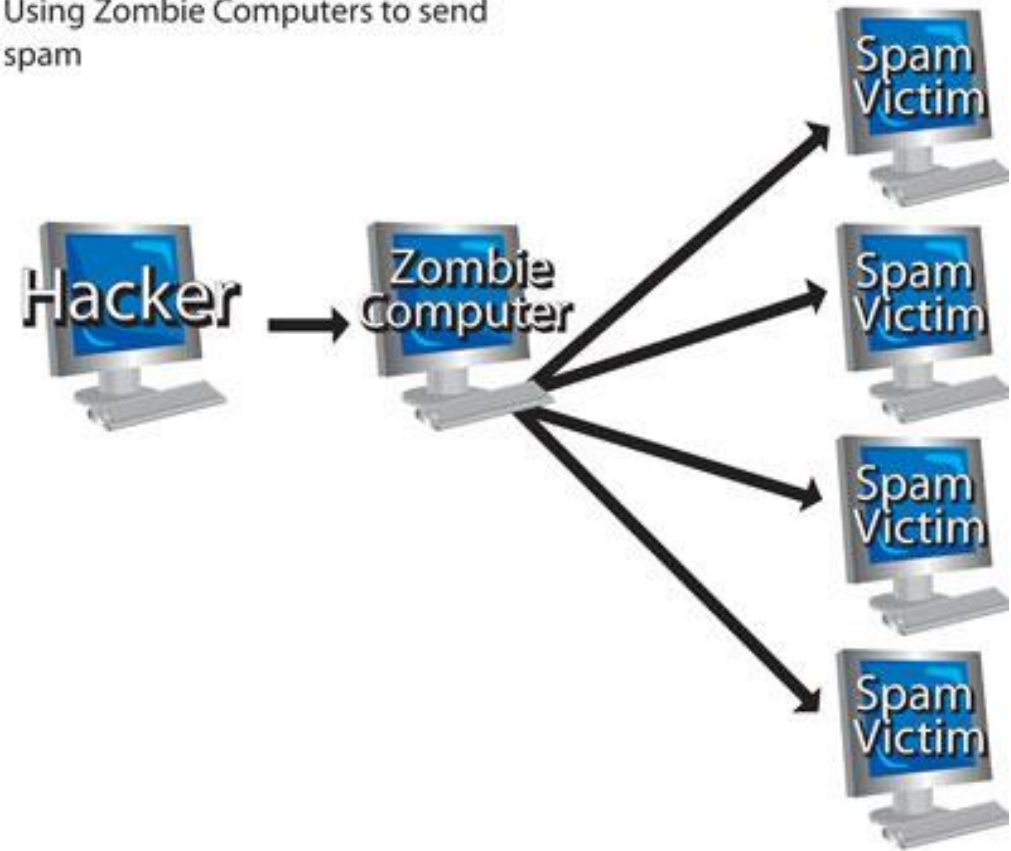


Zombie



- In computer science, a zombie is a computer connected to the Internet that has been compromised by a hacker, computer virus or trojan horse and can be used to perform malicious tasks of one sort or another under remote direction.

Using Zombie Computers to send spam





Sources of Malware

Malicious websites

Most free downloads from the web

Adware (advertising software)

Email attachments

File sharing

Installing untrusted applications

Cracked softwares



Symptoms of Malware

Reduction in computer performance

unexpected crashes

Anti-virus software disabled

Unfamiliar error messages

Missing files

Some applications not responding

Pop-up advertisements



Preventing Malware Infection

Run up-to-date security software (anti-virus)

Always get latest software updates

Understand how malware works

Scan removable media drives before using

Regular scanning of your device with your Anti-Virus software

Secure your network

Don't use open Wi-Fi

Think before you click...



Classes Of Computers



Classes Of Computers

Supercomputers

Mainframes

Mini Computers

Microcomputers (Personal Computers)

- **Desktop Computers**
- **Laptops/Notebook Computers**
- **Handheld/Palmtops**
- **Tablet PCs**
- **Smartphone**
- **SmartWatch**

Supercomputer

A **supercomputer** is a computer at the frontline of current processing capacity, particularly speed of calculation.

Supercomputers play an important role in the field of computational science, and are used for a wide range of computationally intensive tasks in various fields, including weather forecasting, climate research etc.



Mainframes

Mainframe computers are computers used primarily by corporate and governmental organizations for critical applications, bulk data processing such as census, industry and consumer statistics, enterprise resource planning and transaction processing.



Desktop Computers

Is a **personal computer (PC)** is a general-purpose computer, whose size, capabilities, and original sale price makes it useful for individuals, and which is intended to be operated directly by an end-user with no intervening computer operator.



Desktop PC



Apple iMac



Laptop (Notebook)

A laptop computer is a personal computer for portability. A laptop has most of the same components as a desktop computer.

Windows Laptop PC



Apple MacBook Air



Handheld Computers (Palmtops)

A Handheld PC, is a computer built around a form factor which is smaller than any standard laptop computer. It is sometimes referred to as a **Palmtop**.

Handheld PC



PDA (Personal Digital Assistant)



Tablet PC

A **tablet computer**, or simply **tablet**, is a one-piece mobile computer that is between a Laptop and a Smartphone. Devices typically offer a touch screen, with finger (or stylus) gestures acting as the primary means of control.



iPad Air (with iOS)



Samsung Galaxy Tab (with Android OS)

Smartphone

A **smartphone** is a mobile phone built on a mobile operating system, with more advanced computing capability and connectivity than a feature phone.



Computer Network



A computer network is defined as having two or more devices (such as, printers or storage media) that are linked together for the purpose of sharing information and resources.



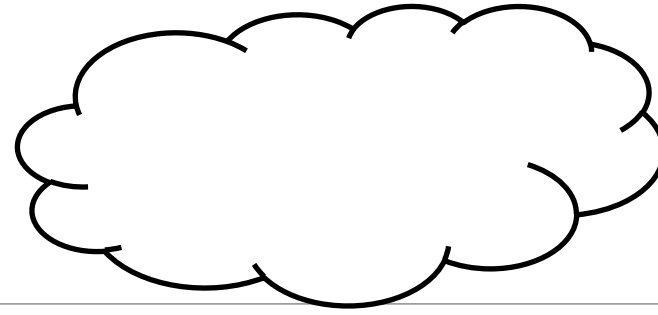
Types of Networks

LAN (LOCAL AREA NETWORK)

WAN (WIDE AREA NETWORK)



The Internet?



Internet, computer-based global information system or the global interconnection of networks.



Uses of The Internet



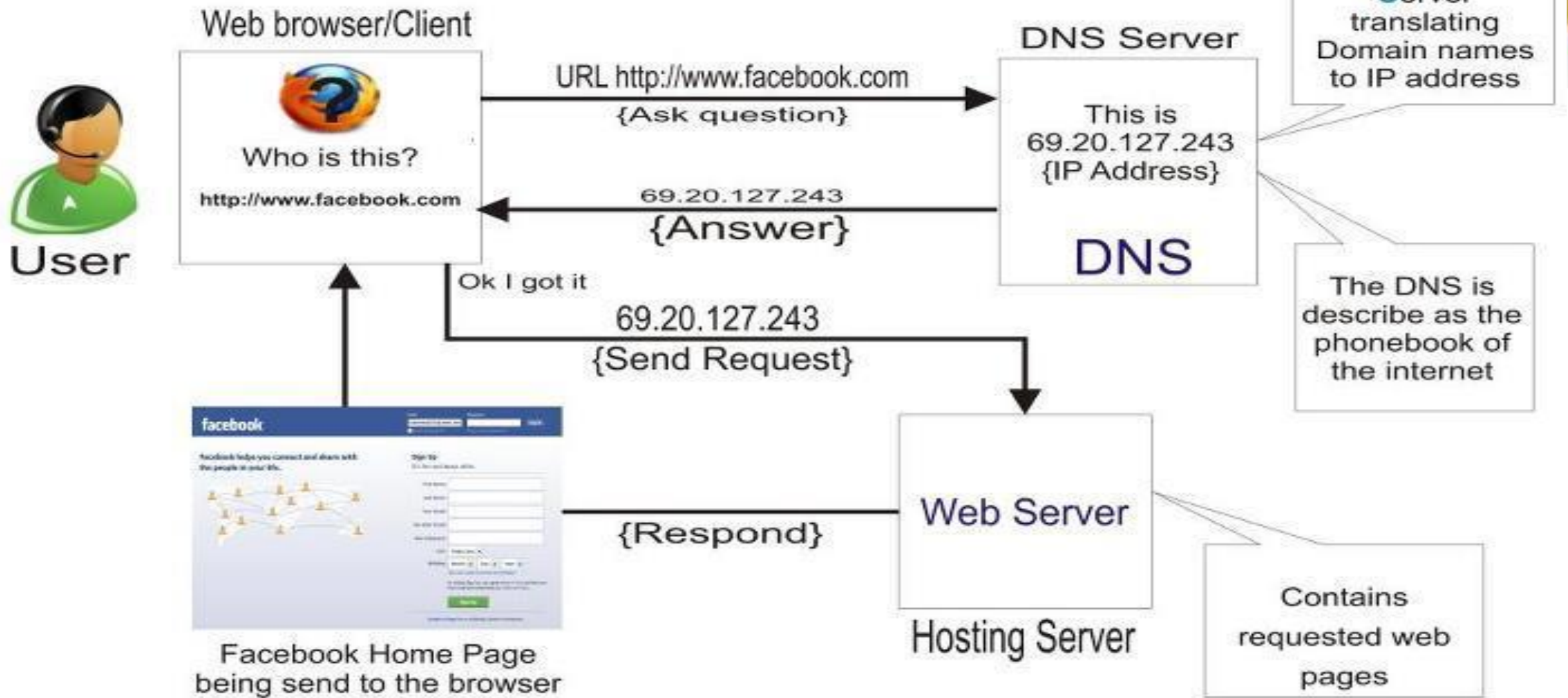
-
- Communication
 - Education
 - Science and technology
 - Research
 - Friends & Dating
 - Advertisement
 - Sports
 - News
 - E-commerce
 - Fun & Gaming



The World Wide Web

World Wide Web (WWW), computer-based network of information resources that combines text and multimedia. The information on the World Wide Web can be accessed and searched through the Internet, a global computer network. The World Wide Web is often referred to simply as “***The Web.***”

How The *Web* Works



Design By Ousman Faal



Website

A Web Site is a place in the web that contains web pages of information located on a server connected to the internet.

Websites have many functions and can be used in various fashions; a website can be a personal website, a commercial website, a government website or a nonprofit organization website. Websites can be the work of an individual, a business or other organization, and are typically dedicated to a particular topic or purpose.

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Common IT Abbreviations



•CPU

- Central Processing Unit

•RAM

- Random Access Memory

•ROM

- Read Only Memory

•LCD

- Liquid Crystal Display

•USB

- Universal Serial Bus

•PC

- Personal Computer

•ALU

- Arithmetic & Logic Unit

•HTTP

- HyperText Transfer Protocol

•3G

- 3rd Generation of Wireless Technology

Common IT Abbreviations



•SIM

- Subscriber Identity Module

•APN

- Access Point Name

•OS

- Operating System

•SMS

- Short Message Service

•MMS

- Multimedia Message Service

•APP

- Application

•Ad

- Advertisement

•IP

- Internet Protocol

•WWW

- World Wide Web

•GPS

- Global Positioning System

Common IT Abbreviations



- **MAC**
 - Macintosh
- **ATM**
 - Automated Teller Machine
- **GSM**
 - Global System for Mobile
- **GPRS**
 - General Packet Radio Service
- **CRT**
 - Cathode Ray Tube
- **DVD**
 - Digital Versatile Disc
- **CD**
 - Compact Disc
- **GUI**
 - Graphical User Interface
- **CLI**
 - Command Line Interface



The End