

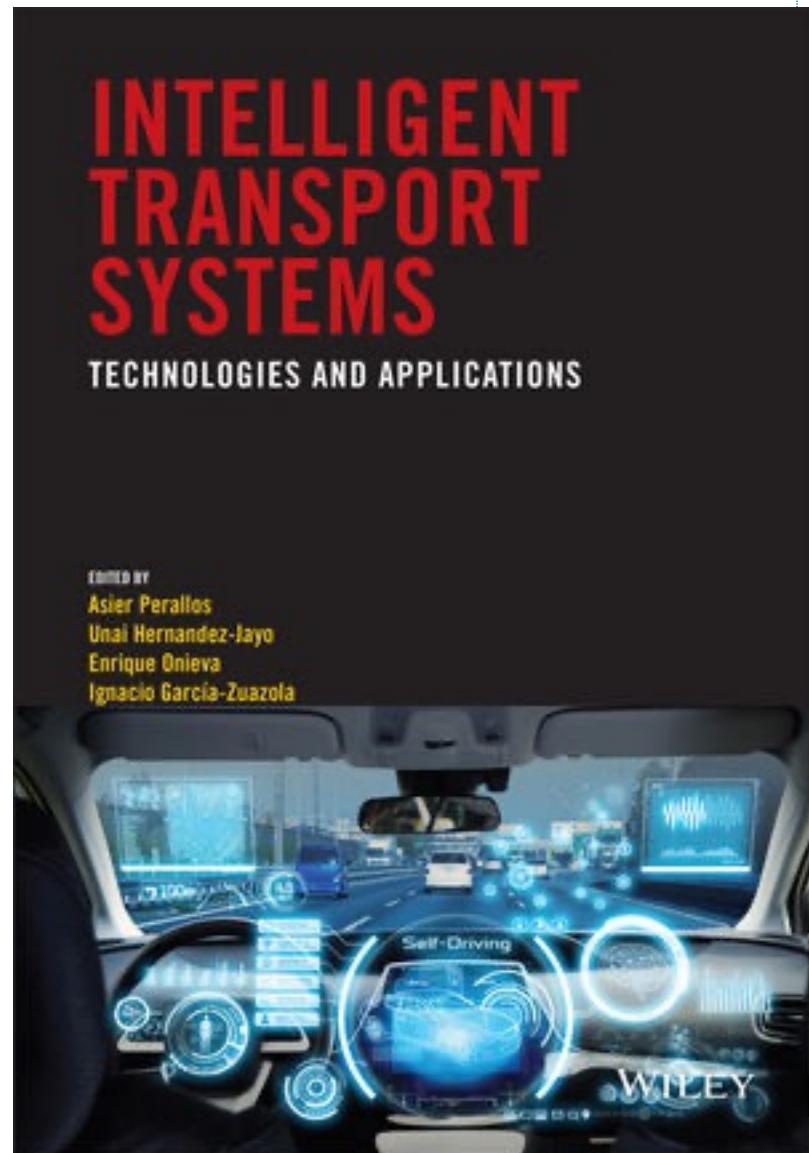
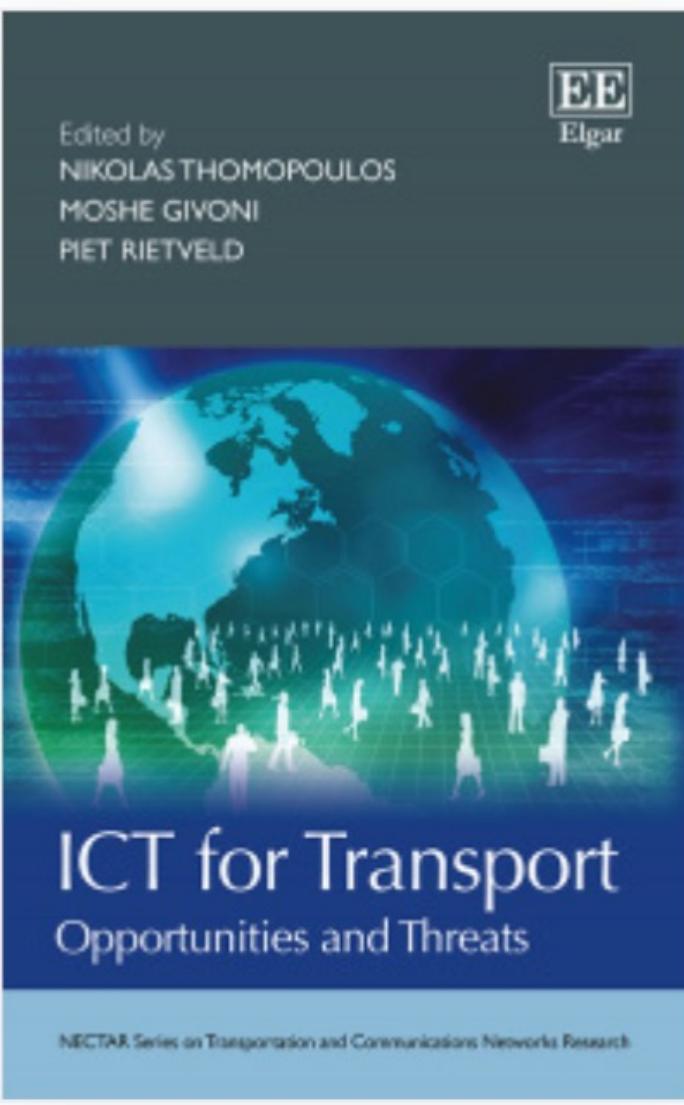
# ICT in Transport

Introduction to information and communication flow system

Dr. Abdur Rahim

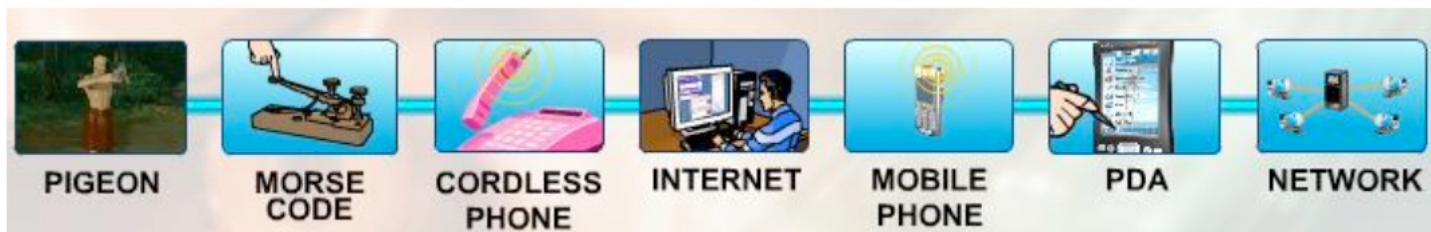
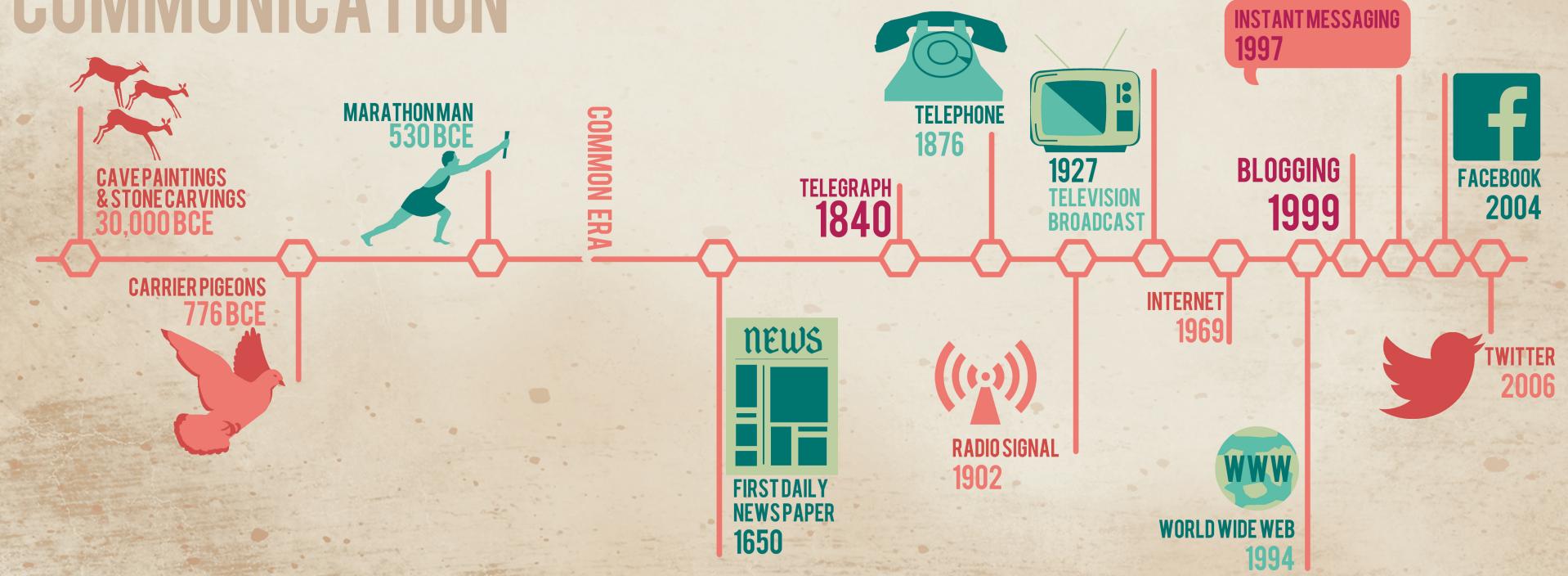
Department of Transportation Engineering & Management

- ~ Introduction to information and communication flow systems
- ~ Knowledge about the types, functioning, structure (formation), appearance and use of ICT



# Evolution of communication

## THE EVOLUTION OF COMMUNICATION



# What is ICT

---

↗ 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 data/facts/knowledge obtained from reading, investigation, study or research.
- ~ How we transmit information?
- ~ Why we need information?
- ~ It is more meaningful than data and refers to the processed data

# Communication

---

☞ Communication is an act of transmitting ideas or messages. It is a process whereby information is exchanged between individuals using symbols, signs or verbal interactions.

# Technology

---

- ~ Technology is the use of scientific knowledge, experience and resources to create processes and products that fulfill human needs.  
Technology is vital in communication. Or
- ~ Technology is generally defined as making, modification, adaptation and usage of tools, techniques, systems or machines for the purpose of solving problems or achieving goals in less time period.
- ~ What is difference between technology and engineering?

# Information technology

---

Information technology is the technology that uses computing with high-speed communication links to spread information from one place to another. The interconnection of computers enables people to send and receive information. The communication links are also used to communicate with different people in the world.

- ☞ The world has become global village due to information technology

# ICT

---

- ☞ Any system, product or machine which can receive, store or transmit data/information electronically in digital form.
  - ▣ ICT equipment (hardware)
  - ▣ Numerous service activities ranging from telecommunication to software development (software).
- ☞ What are examples of ICTs?
- ☞ How it is different from IT?

## **Information & Communication Technology**

**Radio**

**Television**

**Satellite System**

**Internet**

**Cellular Phones**

**Computers**

**ICT**

# Computer

- ~ How Chinese performed calculations in ancient times?
- ~ Napier's bones
- ~ Pascaline



# Computer

---

- ~ Leibniz's calculator
- ~ Jacquard machine (Weaving loom)
- ~ Charles Babbage's calculator
- ~ Mark 1
- ~ 1<sup>st</sup> generation: ENIAC using vacuum tube
- ~ 2<sup>nd</sup> generation using transistors
- ~ 3<sup>rd</sup> generation: IBM series, integrated circuit (IC), microchip
- ~ 4<sup>th</sup> Generation: Intel's first microprocessor, Macintosh, IBM personal computer
- ~ 5th generation

# What is Process?

---

- ~ Computer works on data as per program is called process.
- ~ Processing means operations like
  - # Calculations,
  - # Logical decision making,
  - # Outputting data,
  - # Communicating with others computer etc.

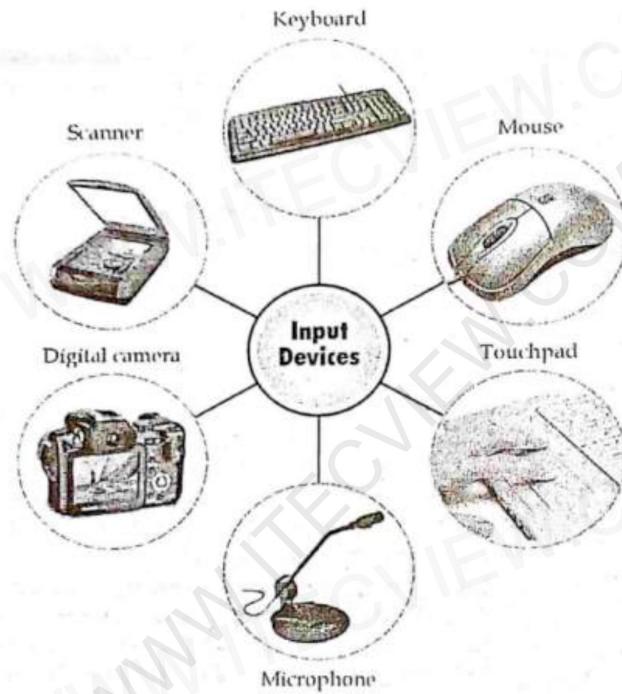
# Characteristics

---

- Speed
- Arithmetical and Logical Operations
- Accuracy
- Reliability
- Storage
- Retrieving Data and Programme
- Automation
- Versatility (Flexible)
- Consistency
- Communications

# Components of computer

**Input devices**



**Output devices**

**System unit**

**Storage devices**

**Communication devices**

# What is Internet

---

- **Inter**connection of many computers via **network**.
- Global connected through network (through LAN or WAN)
- To provide the various application services i.e. E-Mail, Usenet (News), WWW, Telnet, FTP, etc

# Uses of Internet

---

- ~ Searching
- ~ E-mail service
- ~ Commercial Services
- ~ Electronic books & Publication
- ~ Video Conferencing
- ~ Sharing data and results quickly
- ~ Retrieving files & Program of all types
- ~ Find information databases and tutorials
- ~ News paper columns
- ~ Banking
- ~ Downloading / Uploading any information
- ~ News, sports, stocks, music etc.
- ~ Use of internet in various fields like education, Business, governance, etc.
- ~ Use of internet in various fields like Engineering, Medical etc.
- ~ And many more .....



# **Internet as an ICT tool**

# What is ICT?

---

- ~ During last decade of twentieth century there was extraordinary development in information and communication technology (ICT) which led to a transmutation of processes and practices in almost all aspects of human activities.
- ~ Information and communication technologies (ICTs) are the technologies used in the conveying, manipulation and storage of data by electronic means.

# Information and Communication Technologies

---

- ☞ Information is data that has been sorted and arranged.
- ☞ It consists of organized facts and opinions people receive during daily life.
- ☞ Changing data into information is called data processing or information processing.
- ☞ It involves gathering, organizing, and reporting data so it is useful to people.
- ☞ It is often done using information technology.

# ICT Tools

---

- ~ Radio, television, video, DVD, telephone (fixed line & mobile), satellite systems, computer and network hardware and software; (equipment and services associated with these technologies, such as video conferencing and electronic mail.), blogs etc.
- ~ Introduction to working of RADAR and LIDAR

# Information and Communication Technologies

- ~ People often use the terms information and communication together.
- ~ These terms are related, but each means something different.
- ~ Two words we need to know to understand communication technology are **data and information**.
- ~ Data includes individual facts, statistics (numerical data), and ideas.
- ~ These facts and ideas are not sorted or arranged in any manner.

# What is Communication?

---

- ~ Communication is simply the act of transferring information from one place to another.
- ~ Exchanging Information from computer to another computer.
- ~ The classic communication system is made up of an information source, an encoder, a transmitter, a receiver, a decoder, storage, retrieval, and an information destination.

# Synchronous Communication

- ~ Online Chat
  - ¤ Text based
  - ¤ Audio based
  - ¤ Video based
- ~ Mobile Technology
  - ¤ Conferencing
  - ¤ Phone
- ~ Satellite
  - ¤ Television channel
  - ¤ Video Conferencing



# Asynchronous Communication

Discussion Forums

Blogs

e-Groups

Wikipedia (Knowledge base)

Google (search engine)

Mobile SMS, MMS & Podcasting



Synchronous	Asynchronous
<ul style="list-style-type: none"><li>• Fast transmission</li><li>• Needs a common clock signal, or some way of sharing it</li><li>• May have to wait briefly until data can be sent</li></ul> <ul style="list-style-type: none"><li>• Almost all parallel transmission is synchronous</li><li>• Asynchronous transmission is used when data is sent sporadically, e.g. via a mouse or keyboard</li></ul>	<ul style="list-style-type: none"><li>• Slower transmission, due to the extra bits and the gaps</li><li>• Cheap and easy to implement = no clock sharing</li><li>• Can transmit when ready</li></ul>

# Useful Keys Internet

- ~ Network: Connecting computers with each other For exchanging information
- ~ Client : It is a programme or computer for getting special information from another compute.
- ~ Server: It is a programme or computer, which gives information to the client computer.
- ~ Protocol: It's a rules for connecting to the internet. (TCP/IP)
- ~ Portal: It is a website. Known as a gateway of internet.  
(Search engine)

- 
- 
- Router:** It is a device, which decides where data will be send (Network point)
  - www:** World Wide Web
  - Browser:** It is a programme which helps us to use internet
  - Website:** Group of different web pages.
  - URL :** Universal Resource Locator

# Types of Website (Domain)

.com :	<b>Commercial organization</b>
.net :	<b>Large Networks</b>
.gov :	<b>Government organization</b>
.org :	<b>non-profit making organization</b>
.edu :	<b>educational organization</b>
.us :	<b>United States</b>
.uk :	<b>United Kingdom</b>
.pk :	<b>Pakistan</b>

**What are current trending domains?**

# Operating systems

---

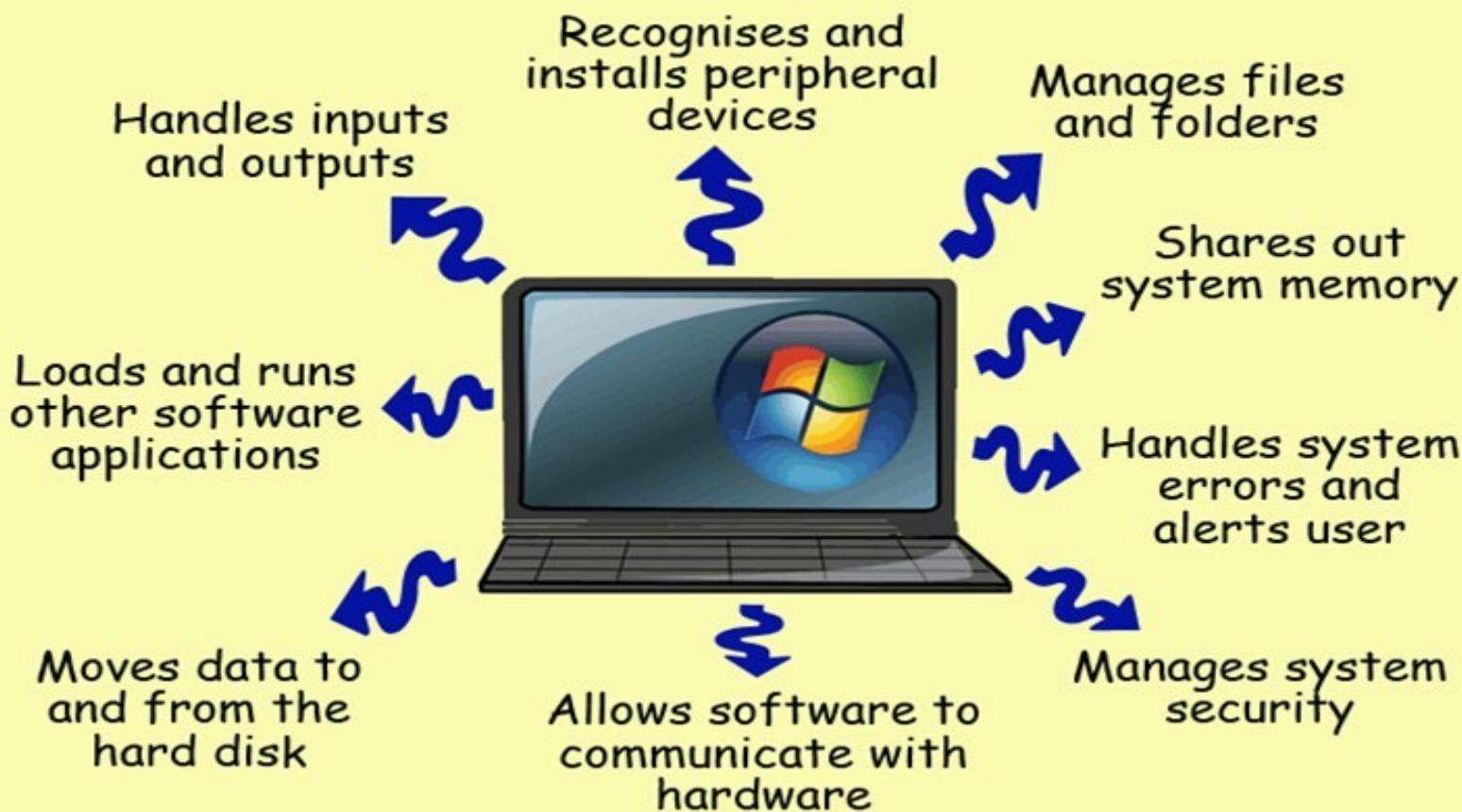
- ~ List few operating systems

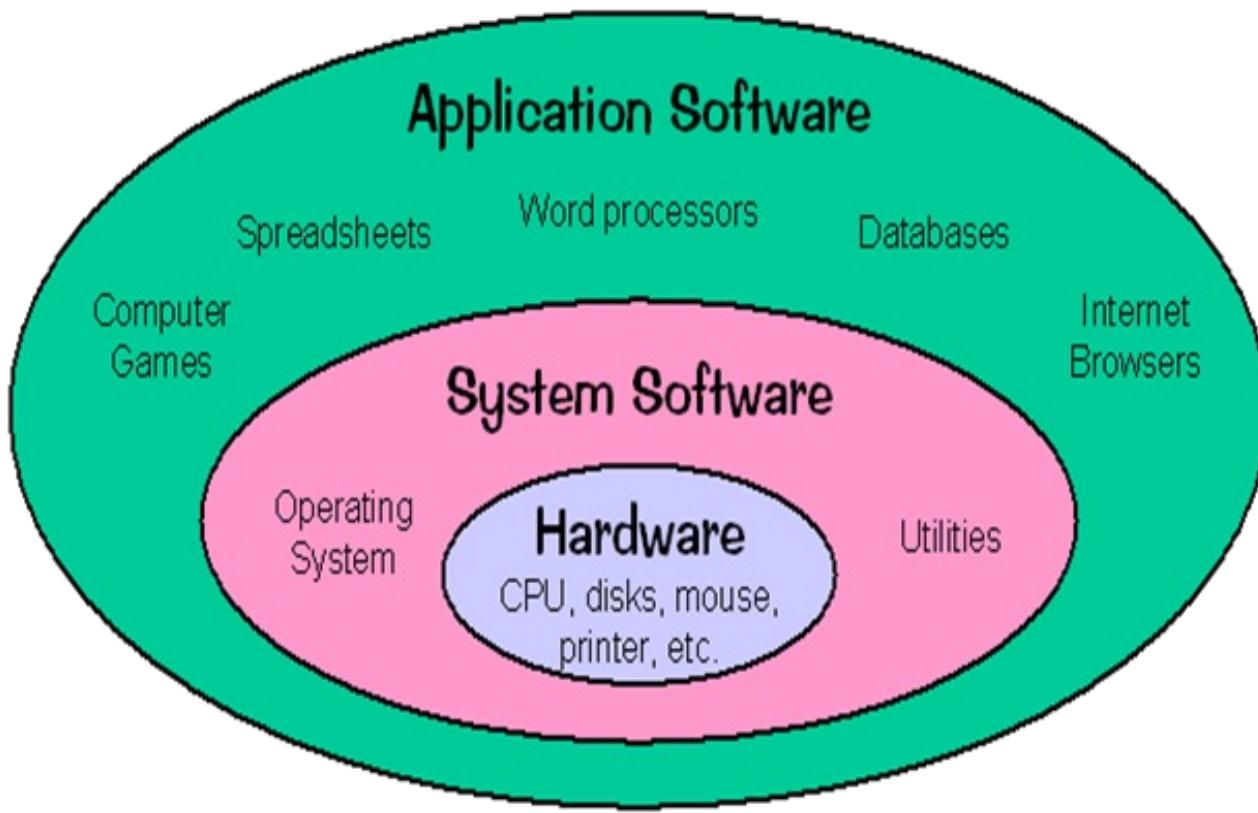
# What is an operating system

---

- An OS is software that manages a computers basic functions such as scheduling tasks ,executing programs and controlling peripherals
- Not all computers have an operating system -within a washing machine or a microwave there are a set of specific tasks to perform that never change so it does not need an operating system
- If you do have an operating system you have a variety of purposes ,can interact with the user in more complex ways than making selections with buttons such as a washing machine

# Tasks of the operating System





# Class activity

---

- ~ How to work on a document collaboratively?
- ~ Who controls the Internet?

# Application Software

---

## How is software distributed?

- **Packaged software**, mass-produced
- **Custom software**, performs functions specific to a business or industry
- **Web-based software**, hosted by a Web site
- **Open source software**, provided for use, modification, and redistribution
- **Shareware**, copyrighted software that is distributed free for trial period
- **Freeware**, copyrighted software provided at no cost
- **Public-domain software**, freeware with no copyright restrictions