CSC101 – Introduction to ICT
Lecture 01

Introduction

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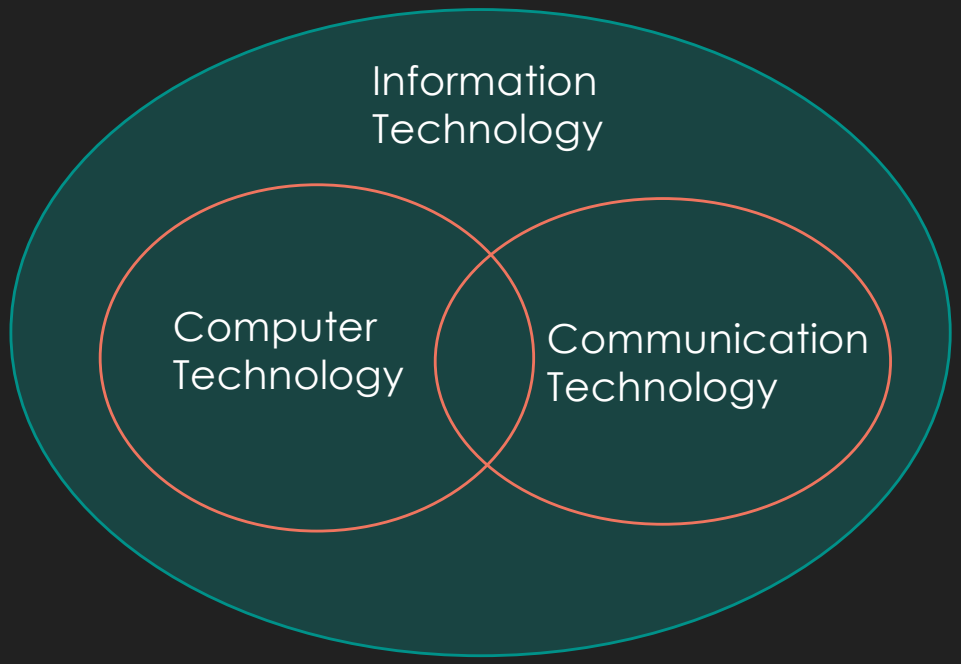
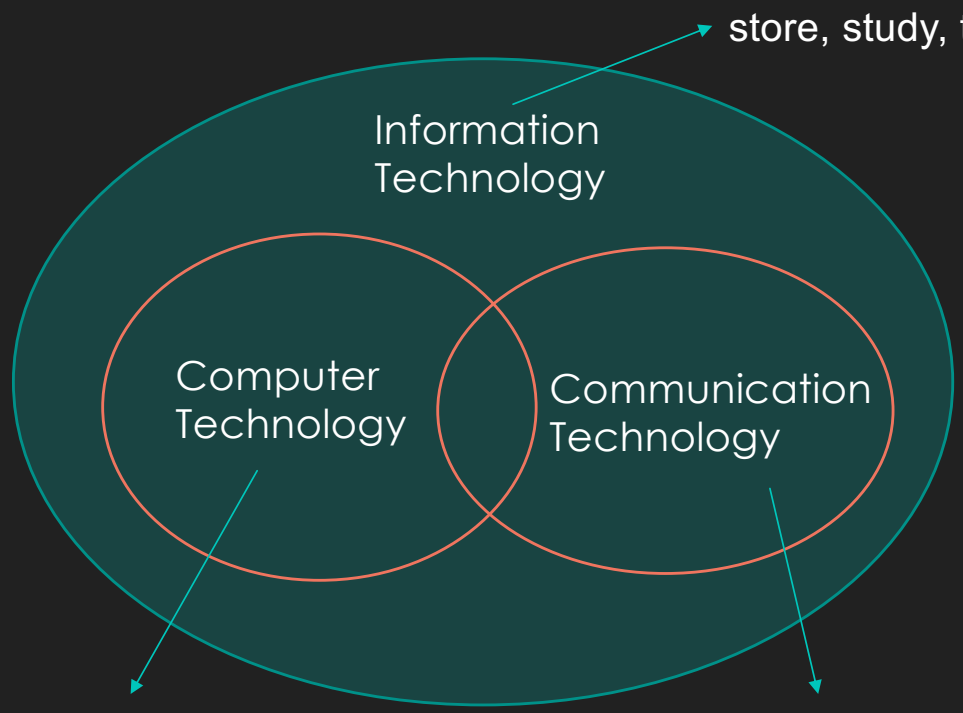
Information and Communications Technology (ICT)

ICT?

- Information and Communication Technology



ICT?

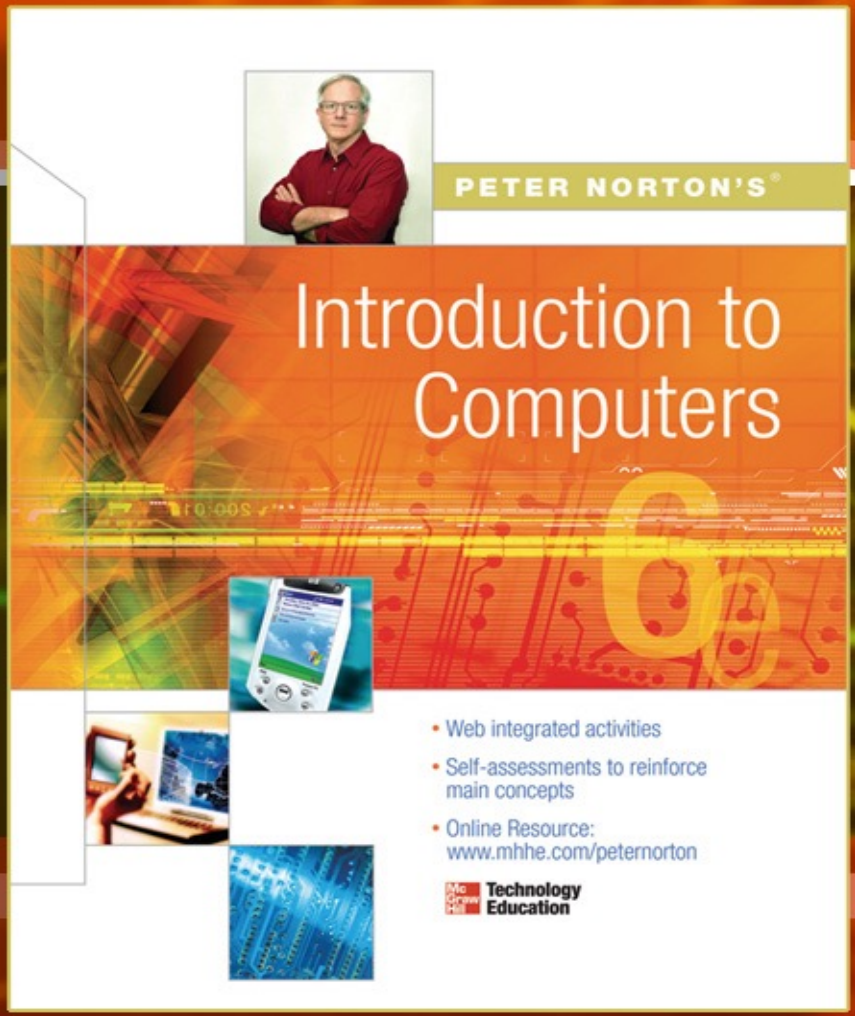

store, study, transmit, receive and manipulate data
Information Technology
Computer Technology
Communication Technology
How different devices store, study, and manipulate data?
How different devices communicate? (transmit, receive data)

What is Information and Communications Technology ?

- ICT is an extended form of Information Technology (IT)
- The term means all devices, networking components, applications and systems that combined allow people and organizations to interact in the digital world
- IT is subset of ICT
  - IT is an application of computers to store, study, transmit and manipulate data or information

A World of Computers

- Computers are everywhere



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Chapter 1A

Introducing Computer Systems

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A Computer?

- **A *computer* is a programmable, multiuse machine (hardware+software) that accepts data—raw facts and figures—and processes, or manipulates, it into information we can use,** such as summaries, totals, or reports.

data $\xrightarrow{\text{computer}}$ Information

- **Data:** Unproductive, useless information
- **Information:** Productive, Fruitful and Useful data

- **Example:** Information Retrieval System

The Computer Defined

- Electronic device
- Converts data into information
- Modern computers are digital
  - Two digits combine to make data
- Older computers were analog
  - A range of values made data

Computers For Individual Use

- Desktop computers
  - The most common type of computer
  - Sits on the desk or floor
  - Performs a variety of tasks
- Workstations
  - Specialized computers
  - Optimized for science or graphics
  - More powerful than a desktop

Computers For Individual Use

- Notebook computers
  - Small portable computers
  - Weighs between 3 and 8 pounds
  - About 8 ½ by 11 inches
  - Typically as powerful as a desktop
  - Can include a docking station

Computers For Individual Use

- Tablet computers
  - Newest development in portable computers
  - Input is through a pen
  - Run specialized versions of office products

Computers For Individual Use

- Handheld computers
  - Very small computers
  - Personal Digital Assistants (PDA)
  - Note taking or contact management
  - Data can synchronize with a desktop
- Smart phones
  - Hybrid of cell phone and PDA
  - Web surfing, e-mail access

Computers For Organizations

- Network servers
  - Centralized computer
  - All other computers connect
  - Provides access to network resources
  - Multiple servers are called server farms
  - Often simply a powerful desktop

Computers For Organizations

- Mainframes
  - Used in large organizations
  - Handle thousands of users
  - Users access through a terminal

Computers For Organizations

- Minicomputers
  - Called midrange computers
  - Power between mainframe and desktop
  - Handle hundreds of users
  - Used in smaller organizations
  - Users access through a terminal

Computers For Organizations

- Supercomputers
  - The most powerful computers made
  - Handle large and complex calculations
  - Process trillions of operations per second
  - Found in research organizations

Computers In Society

- More impact than any other invention
  - Changed work and leisure activities
  - Used by all demographic groups
- Computers are important because:
  - Provide information to users
  - Information is critical to our society
  - Managing information is difficult

Computers In Society

- Computers at home
  - Many homes have multiple computers
  - Most homes have Internet as well
  - Computers are used for
    - Business
    - Entertainment
    - Communication
    - Education

Computers In Society

- Computers in education
  - Computer literacy required at all levels
- Computers in small business
  - Makes businesses more profitable
  - Allows owners to manage
- Computers in industry
  - Computers are used to design products
  - Assembly lines are automated

Computers In Society

- Computers in government
  - Necessary to track data for population
    - Police officers
    - Tax calculation and collection
  - Governments were the first computer users

Computers In Society

- Computers in health care
  - Revolutionized health care
  - New treatments possible
  - Scheduling of patients has improved
  - Delivery of medicine is safer

Chapter 1B

Looking Inside the Computer System

McGraw-Hill Technology Education

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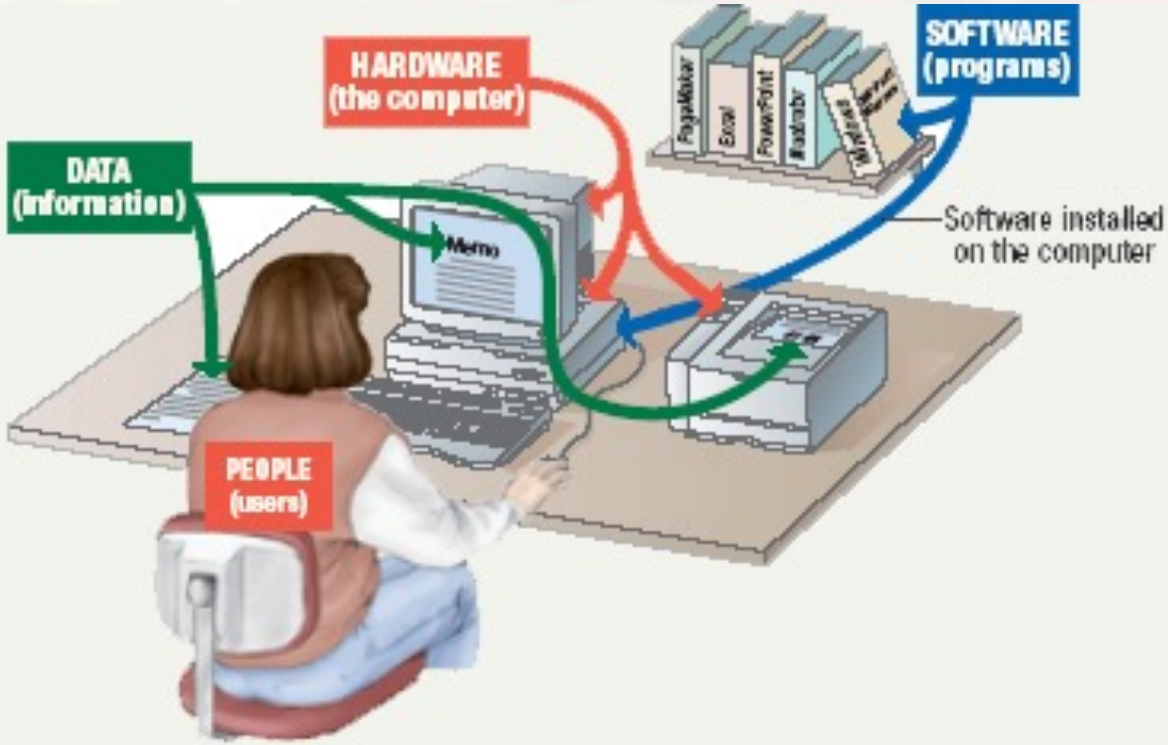
Parts of the Computer System

- Computer systems have four parts
  - Hardware
  - Software
  - Data
  - User



Parts of the Computer System

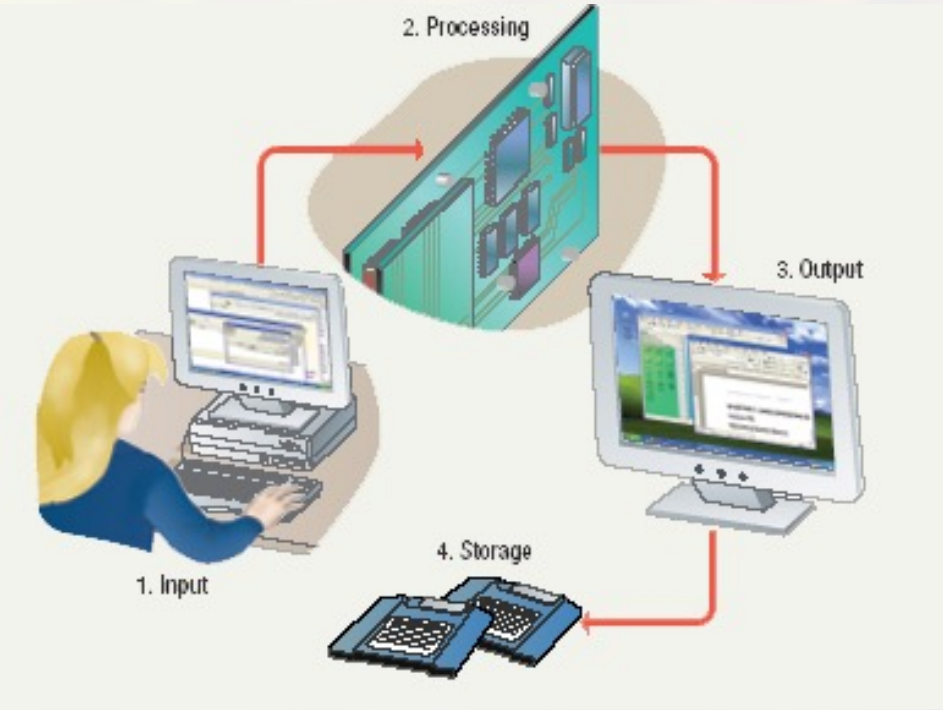
- Hardware
  - Mechanical devices in the computer
  - Anything that can be touched
- Software
  - Tell the computer what to do
  - Also called a program
  - Thousands of programs exist

Parts of the Computer System

- Data
  - Pieces of information
  - Computers organize and present data
- Users
  - People operating the computer
  - Most important part
  - Tell the computer what to do

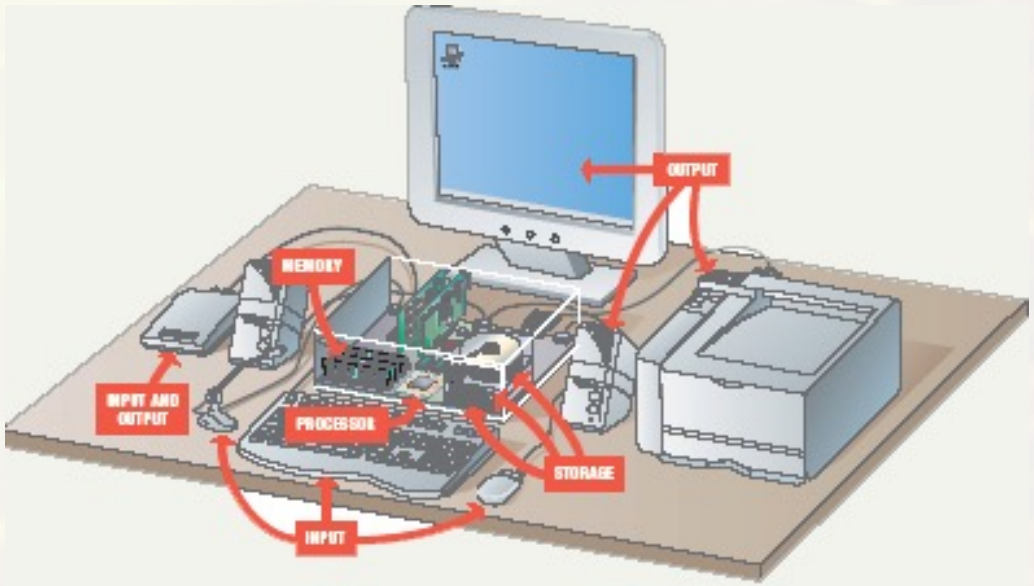
Information Processing Cycle

- Steps followed to process data
  - Input
  - Processing
  - Output
  - Storage



Essential Computer Hardware

- Computers use the same basic hardware
- Hardware categorized into four types



Essential Computer Hardware

- Processing devices
  - Brains of the computer
  - Carries out instructions from the program
  - Manipulate the data
  - Most computers have several processors
  - Central Processing Unit (CPU)
  - Secondary processors
  - Processors made of silicon and copper

Essential Computer Hardware

- Memory devices
  - Stores data or programs
  - Random Access Memory (RAM)
    - Volatile
    - Stores current data and programs
    - More RAM results in a faster system
  - Read Only Memory (ROM)
    - Permanent storage of programs
    - Holds the computer boot directions

Essential Computer Hardware

- Input and output devices
  - Allows the user to interact
  - Input devices accept data
    - Keyboard, mouse
  - Output devices deliver data
    - Monitor, printer, speaker
  - Some devices are input and output
    - Touch screens

Essential Computer Hardware

- Storage devices
  - Hold data and programs permanently
  - Different from RAM
  - Magnetic storage
    - Floppy and hard drive
    - Uses a magnet to access data
  - Optical storage
    - CD and DVD drives
    - Uses a laser to access data

Software Runs the Machine

- Tells the computer what to do
- Reason people purchase computers
- Two types
  - System software
  - Application software

Software Runs the Machine

- System software
  - Most important software
  - Operating system
    - Windows XP
  - Network operating system (OS)
    - Windows Server 2003
  - Utility
    - Symantec AntiVirus

Software Runs the Machine

- Application software
  - Accomplishes a specific task
  - Most common type of software
    - MS Word
  - Covers most common uses of computers

Computer Data

- Fact with no meaning on its own
- Stored using the binary number system
- Data can be organized into files

Computer Users

- Role depends on ability
  - Setup the system
  - Install software
  - Manage files
  - Maintain the system
- “Userless” computers
  - Run with no user input
  - Automated systems