Information Technology in Our Lives

- Digital Convergence
  - Converting whatever we can in the physical and communications world to binary on/off signals, called bits
    - Text
    - Voice
    - Picture
    - Movie

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A World of Computers

- Computers are everywhere

What Is a Computer?

- A computer is an electronic device, operating under the control of instructions stored in its own memory

The Components of a Computer

- A computer contains many electric, electronic, and mechanical components known as hardware
  - Input Device: Allows you to enter data and instructions into a computer
  - Output Device: Hardware component that conveys information to one or more people
  - System Unit: Case that contains the electronic components of the computer that are used to process data
  - Storage Device: Holds data, instructions, and information for future use
  - Communications Device: Enables a computer to send and receive data, instructions, and information to and from one or more computers or mobile devices
The Components of a Computer

Advantages and Disadvantages of Using Computers

Advantages of Using Computers
- Speed
- Reliability
- Consistency
- Storage
- Communications

Disadvantages of Using Computers
- Health Risks
- Violation of Privacy
- Public Safety
- Impact on Labor Force
- Impact on Environment

Advantages and Disadvantages of Using Computers
- **Green computing** involves reducing the electricity consumed and environmental waste generated when using a computer
- Strategies include:
  - Recycling
  - Regulating manufacturing processes
  - Extending the life of computers
  - Immediately donating or properly disposing of replaced computers

What makes a computer special?
- Most complex object made by humans
- Communication mechanism
- Reconfigurability
- Moore’s Law

The pieces
- How are computers built?
- How are computers programmed?
- How are computers networked?

Buying a machine
- [An ad for a computer]
What's in a Machine

- Processor (Quad Core)
- RAM (2 Gb to 4 Gb)
- Disk (01 TB)
- DVD/Bluray/
- 15" XGA TFT Display (1024x768 res.)
- 3.5" 1.44MB Floppy Disk Drive
- Graphic Card
  - 8MB memory, 3D Hardware acceleration, composite TV-Out support, ...
- Soundblaster Compatible Sound

What’s in a Machine (cont)

- 2 Type-I or Type-II slots or 1 Type-III slot
- 2 USB Ports
- Built-in 56Kbps V.90 Data/fax modem
- Built-in 10/100 Ethernet Adapter
- Also
  - Microsoft Windows 7 Edition, (any other OS)
  - MS Office (Open Office)
  - Anti Virus
  - Spyware

More for Less --Moore’s Law

- 2002 when I joined MUET
  - CS department machine
  - Rs. 85-90K (now < 50K)
  - 900 KHz – 1 GHz chip (now ___multiple times more)
  - 256 MB memory (now 2-4GB)
  - 80 -100 MB disk (now 1TB)
  - CD-ROM (now DVD, Bluray)
  - Minimal Internet connection
  - Communication 10Mbps (now 100/1000 Mbps)

Networks and the Internet

- A network is a collection of computers and devices connected together, often wirelessly, via communications devices and transmission media

Networks and the Internet

- The Internet is a worldwide collection of networks that connects millions of businesses, government agencies, educational institutions, and individuals

Networks and the Internet

- People use the Internet for a variety of reasons:
**Networks and the Internet**

- A social networking Web site encourages members to share their interests, ideas, stories, photos, music, and videos with other registered users.

**Computer Software**

- Software, also called a program, tells the computer what tasks to perform and how to perform them.

  - **System Software**
    - Operating system
    - Utility program

  - **Application Software**

**Computer Software**

- **Installing** is the process of setting up software to work with the computer, printer, and other hardware.

**Computer Software**

- A programmer develops software or writes the instructions that direct the computer to process data into information.

**Categories of Computers**

- Personal computers
- Mobile computers and mobile devices
- Game consoles
- Servers
- Mainframes
- Supercomputers
- Embedded computers

**Personal Computers**

- A personal computer can perform all of its input, processing, output, and storage activities by itself.
- Two popular architectures are the PC and the Apple.
  - Desktop computer
Mobile Computers and Mobile Devices

**Mobile Computer**
- Personal computer you can carry from place to place
- Examples include notebook computers, laptop computers, and Tablet PCs

**Mobile Device**
- Computing device small enough to hold in your hand
- Examples include smart phones, PDAs, handheld computers, portable media players, and digital cameras

Game Consoles
- A game console is a mobile computing device designed for single-player or multiplayer video games

Servers
- A server controls access to the hardware, software, and other resources on a network
  - Provides a centralized storage area for programs, data, and information

Mainframes
- A mainframe is a large, expensive, powerful computer that can handle hundreds or thousands of connected users simultaneously
Supercomputers

- A supercomputer is the fastest, most powerful computer
  - Fastest supercomputers are capable of processing more than one quadrillion instructions in a single second

Embedded Computers

- An embedded computer is a special-purpose computer that functions as a component in a larger product

Elements of an Information System

- Hardware
- Software
- Data
- People
- Procedures

Examples of Computer Usage

- Home User
  - Personal financial management
  - Web access
  - Communications
  - Entertainment

- Small Office/Home Office User
  - Sales and invoicing
  - Sales and distribution
  - E-mails
  - Answering machine calls

- Mobile User
  - Connect to other computers on a network or the Internet
  - Transfer information
  - Play video games
  - Listen to music
  - Watch movies
Examples of Computer Usage

Power User
- Work with multimedia
- Use industry-specific software

Enterprise User
- Communicate among employees
- Process high volumes of transactions
- Blog

Computer Applications in Society

Education
Finance
Government
Health Care

Computer Applications in Society

Science
Publishing
Travel
Manufacturing

Summary

Basic computer concepts
Components of a computer
Networks, the Internet, and computer software
Many different categories of computers, computer users, and computer applications in society