

Information and Communication Technology Fundamentals

Credits Hours: 2+1

Instructor: Ayesha Bint Saleem

A decorative graphic at the bottom of the slide features a horizontal band with a gradient from orange to grey. The band contains binary code (0s and 1s) in a light orange color. To the right of the band, there are several overlapping circles in shades of orange and grey, creating a modern, technological aesthetic.

Presentation Credits

- “Introduction to Computer” by Peter Norton
- “Using Information Technology” by Williams and Sawyer
- “Introduction to Computing” course offered at LUMS

About the course

- **Credit Hours: 2+1**
- **Text Book:**
 - “*Introduction to Computers*” by Peter Norton, 6th International Edition (McGraw-Hill)
- **Course Website:**
 - Not up yet
- **Reference Books:**
 - “*Using Information Technology: A Practical Introduction to Computer & Communications*” by Williams Sawyer, 6th Edition (McGraw HILL)
 - “*Introduction to Information Technology*” by V. Rajaraman (Prentice-Hall India)
- **Reference Web:**
 - www.howstuffworks.com
 - www.whatis.com

About Me

- **Email:**

- ayesha.saleem@niit.edu.pk
- Any course related query sent by email should have “**ICTFall08**” in the subject line.

- **Office Hours:**

- To be Announced.
- Room 109, Faculty Block

Grading Policy

- Quizzes 10%
- Assignments 10%
- Mid Semester Exam 25%
- End Semester Exam 45%
- Semester Project 10%

Total

100%

Plagiarism/Cheating Policy

- What is Plagiarism*: “using another person's ideas or creative work without giving credit to that person”.
 - Copying and Pasting from the Internet without citing source
 - Copying an assignment from a friend and turning it in as your own

*<http://www.cgcc.cc.or.us/Library/lib-instruction/define-terms.htm#M-term>

Plagiarism/Cheating Policy

- Zero Tolerance
 - Zero points in assignment/ quiz/ project/ exam
 - Reported to Dean

Quiz/Assignment Policy

- Quizzes will mostly be unannounced.
- Late submission of assignments will either not be entertained or will result in the deduction of marks.

Project Work

- Individual or group work.
- Presentations or term paper will be required

What is Information Technology

- Fusion of computer and communication technology
- Computer Technology
 - programmable, multiuse machine that accepts data and processes it into usable information
 - summaries, totals, or reports
 - used to speed up problem solving and increase productivity.

What is Information Technology

- Communication Technology
 - consists of electromagnetic/optical devices and systems for communicating over long distances
- InfoTech or IT is any technology that helps to produce, manipulate, store, communicate, and/or disseminate information
- merges computing with high-speed communications links carrying data, sound, and video

Exercise

- How have you been using computer Technology in your life?



Exercise

- How have you been using communication Technology in your life?



Some examples of IT

- Image Morphing
 - changing (or morphing) one image into another through a seamless transition



Image Courtesy: <http://en.wikipedia.org/wiki/Morphing>

- Image Morphing?
 - Turbo Teen



[Image Courtesy: www.retrojunk.com/details_articles/567/](http://www.retrojunk.com/details_articles/567/)



Some examples of IT

- First Person Games
 - Example: Golden Eye 007
 - Play as 007 yourself
 - Complete missions based on the film
 - Fight Intelligent Enemies

Image Courtesy:
http://en.wikipedia.org/wiki/GoldenEye_007



Some examples of IT

- Video Conferencing



[Image Courtesy: www.ivci.com/newsletter0907part2.html](http://www.ivci.com/newsletter0907part2.html)

Some examples of IT

- GPS Tracking
 - Track your vehicles, wherever they go, using GPS.



Image Courtesy: www.miamidetectorservices.com

Exercise

- **List some other uses of**
 - Computer Technology
 - Communication Technology

ICT Fundamentals

- **What are your expectation from this course?**

About the course

- **Prerequisites: None**
- **Course Overview**
 - This is an introductory course on Information and Communication Technologies (ICT). Topics include ICT terminologies, hardware and software components, the internet and world wide web, and ICT based applications

About the course

- **Course Outcome:** After completing this course, a student will be able to:
 - Understand different terms associated with ICT
 - Identify various components of a computer system
 - Identify the various categories of software and their usage
 - Define the basic terms associated with communications and networking
 - Understand different terms associated with the Internet and World Wide Web.
 - Use various web tools including Web Browsers, E-mail clients and search utilities.
 - Use text processing, spreadsheets and presentation tools
 - Understand the enabling/pervasive features of ICT

About the course

- **Would you like to add anything?**

Communication Defined

- Communication: To transfer data/information from one point to another
 - Using Wires
 - Electrical Signals
 - Optical Signals (Light)
 - Wirelessly
 - ElectroMagnetic Waves
 - Acoustic Waves (Sound)?
 - Using Analog Signals
 - Using Digital Signals

Related IT terms

- What is a Network?
 - communications system connecting two or more computers with/without wires
- What does being online mean?
 - using a computer or other information device, connected through a voice or data network, to access information and services from another computer or information device

Related IT terms

- Cyberspace
 - encompasses the whole wired and wireless world of communications
- The Internet
 - the “network of all networks”
- Multimedia
 - technology that presents information in more than one medium, such as text, still images, moving images, and sound
- World Wide Web
 - “graphical side of the Internet”
 - global network of linked documents on the Internet

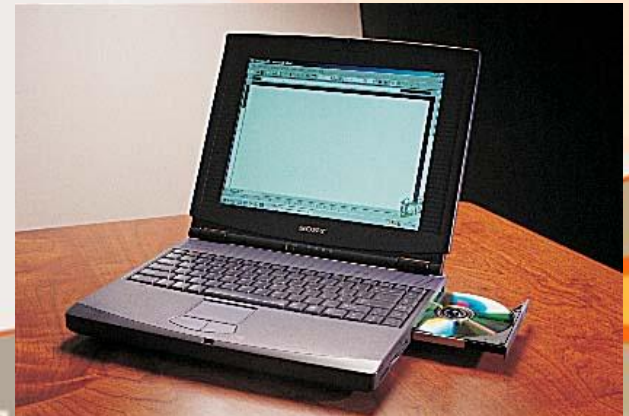


Related IT terms

- The E-word ; E Stands for Electronic
 - E-mail
 - E-learning
 - E-business
 - E-commerce
 - E-government

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



Exercise

- Contrast desktop and notebook computers. Focus on the pros and cons of each type of computer.



Computers For Individual Use

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



Smart Phone: Black Berry

- Features
 - Phone
 - IM
 - Internet (Email, Browsing)
 - Camera
 - Video Recording



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
 - Dumb Terminal
 - Intelligent 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



Specialized Computers

- Microcontrollers
 - also called embedded computers.
 - tiny, specialized microprocessors installed in “smart” appliances and automobiles.



Computers Everywhere

- Not just Desktops, Workstations, Tablet PCs, Handheld PCs (PDAs), Servers, Mainframe computers, Minicomputers
- But also...
 - Cell phones
 - Alarm Clocks
 - Microwave Ovens
 - Lighting control in a building
 - Washing Machines

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



Exercise

- Generate a list of ways the computer/IT has impacted the world.
 - Include both positive changes and negative changes.
 - think creatively.

Exercise

- How difficult would it be to live without computers?



Computers In Society

- Computers at home
 - 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

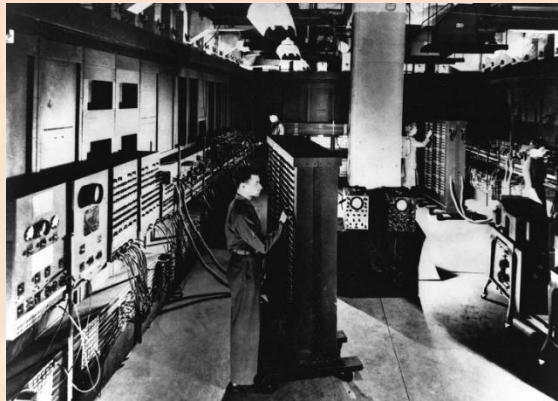
Computers In Society

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

Where Is Information Technology Headed?

Three Directions of Computer Development

- Miniaturization
- Speed
- Affordability



Then (1946)



Now

Where Is Information Technology Headed?

Three Directions of Communication Development

- Connectivity
- Interactivity
- Multimedia



Auto PC

Image Courtesy:
<http://blog.wired.com/cars/images/2007/05/31/telematics.jpg>

When Computers & Communications Combine: Convergence, Portability, & Personalization

- Convergence
- Portability
- Personalization

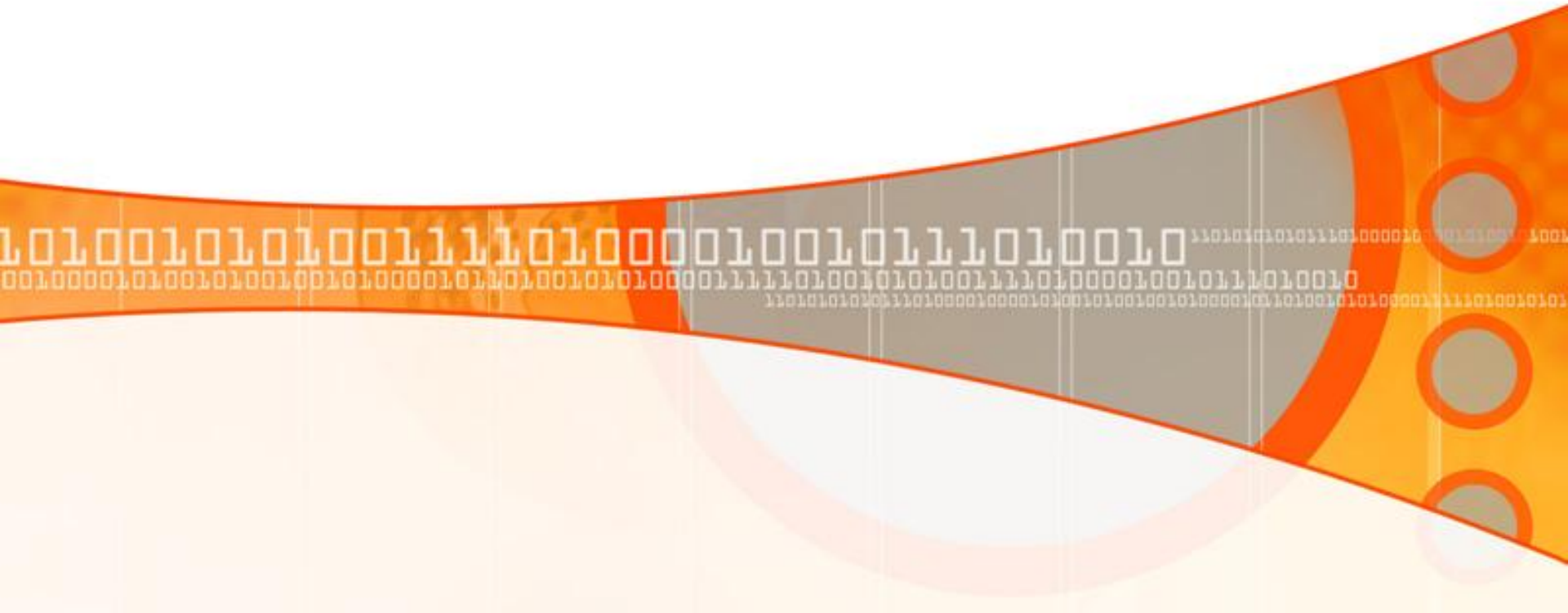


Image courtesy:
http://en.wikipedia.org/wiki/Wearable_computer

Assignment # 1:

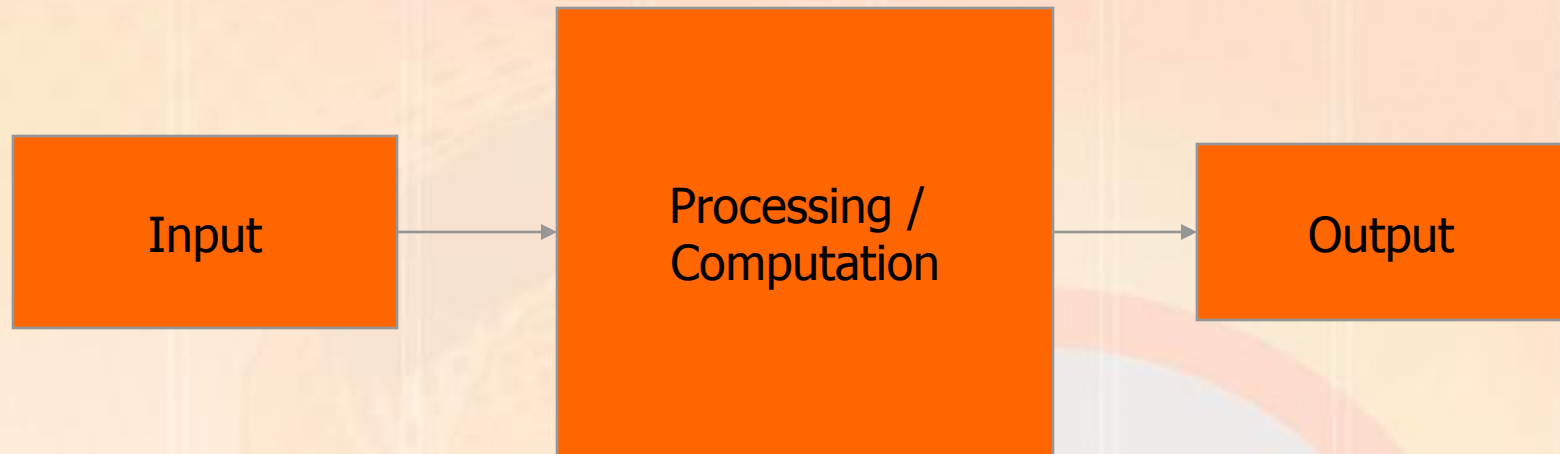
- What should be the next Technology?
 - What can be the applications of that technology?
 - Your own ideas/thoughts

Moving on to Computer...



What is a computer?

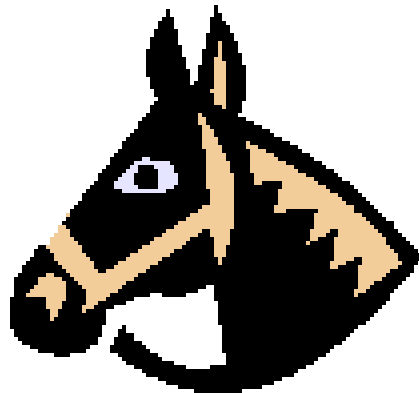
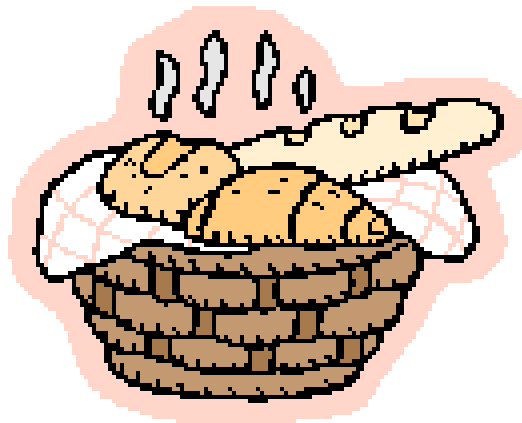
a device that computes



What is Processing?

- Conversion of Data into Information
- Data
 - The raw facts and figures that are processed into information
- Information
 - Data that has been summarized or otherwise manipulated for use in decision making

Place the following Data Items into Categories



Types of Data

- Numeric
 - Record Daily Milk Expenses
 - Sun 20 Rs
 - Mon 30 Rs
 - Tues 35 Rs
 - Wed 23 Rs
 - Thurs 34 Rs
 - Fri 50 Rs
 - Sat 30 Rs

Types of Data

- Numeric
 - Processing Data
 - Finding Weekly expenditure on Milk
 - Finding a Daily Average of milk expenditure



Types of Data

- Text

- Raw:

one of the most important concepts students must understand is the fundamental difference between data and information

- Processed (1): Formatted

“One of the **most important concepts** students **must understand** is the fundamental **difference between data and information.**”

- Processed (2): Words arranged alphabetically

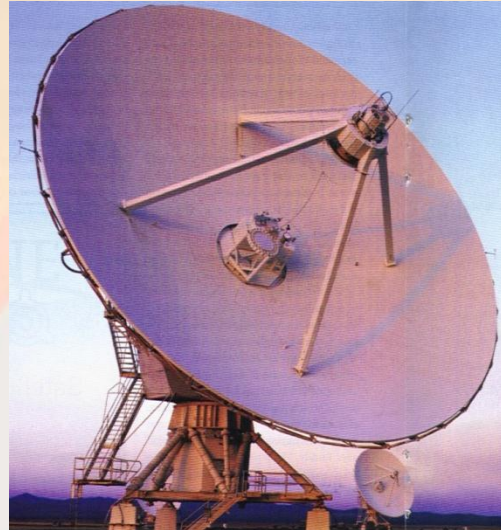
and between concepts data difference fundamental important information is most must of one students the the understand

Types of Data

- Image
 - Raw



- Processed



Types of Data

- Image
 - Other Examples
 - Fingerprint Recognition
 - Arrangement of your photo albums on PC

Types of Data

- Audio
 - Raw: Conversation between people in cockpit of aircraft and Flight Controller recorded in Black box
 - Processed: In case of air crash, the recorded audio will be converted to digital form, background noise will be removed, and the clarity of speech will be improved to assist investigators

Types of Data

- Video
 - Raw: Old Black and White movies
 - Processed: Black and white movie made colored

- Raw: Any Video in foreign language
- Processed: Dub it in Urdu

Assignment # 2

- Think and name any other form of Data.
Other than numeric, text, image, audio, video
- Think and describe in what ways can that form of Data be processed.

Concept Check

- What are the two key components of information technology?

Concept Check

- Arrange the five sizes of computers from largest to smallest?
- Mainframe, microcomputer, microcontroller, supercomputer, workstation,,

Concept Check

- What is the term for a computer used to hold collections of data and programs for connecting PCs, workstations, and other devices?

Concept Check

- What is the difference between data and information