



# ***UACE Sub - ICT***

## **Topic 1: Introduction to Computing**

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# ***Presentation Outline***

## ***UACE Sub – ICT Topic 1:***

### **Introduction to Computing**

- Sub Topic 1: Introduction to Computers
- Sub Topic 2: World of ICTs
- Sub Topic 3: Implications of Using ICTs



## *Sub Topic 1: Introduction to Computers*

- **Sub topic Objectives:**
- Describing a computer.
- Identifying different parts of a computer and their uses.
- Making a distinction between information and data.
- Describes the information processing cycle.

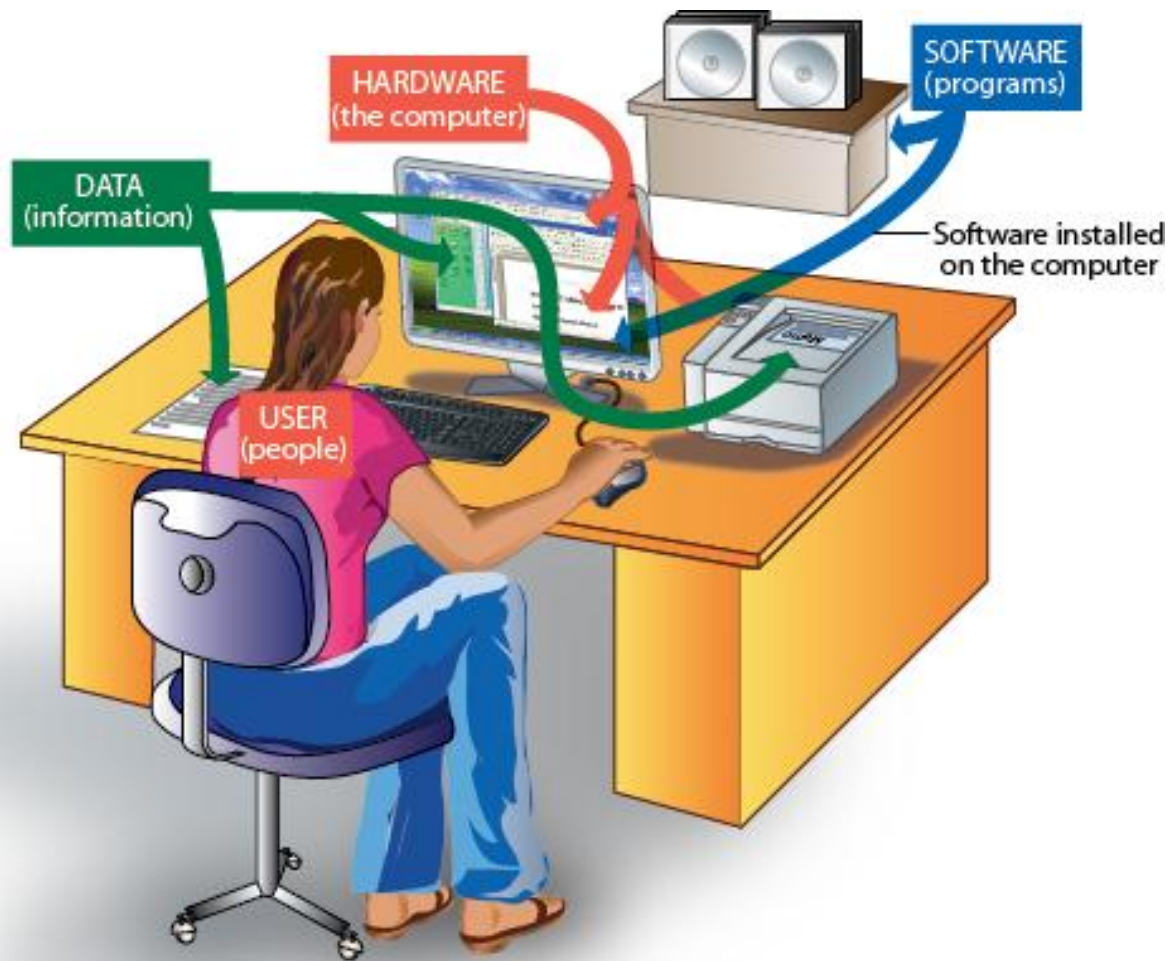


# Describing a computer.

- A **Computer** is electronic device that receives data, processes data, stores data, and produces a result (**output**).
- A **computer system** is more than a box with components; it encompasses four elements that make the machine fully useful:
  - Hardware
  - Software
  - Data
  - Users

# Describing a computer (cont)

- **Computer System (Illustration)**





# Describing a computer (cont)

- **Computer Hardware**
- This is a term used to describe all the various physical devices of a computer.
- Computer hardware components are tangible (they can be touched).
- Computer hardware includes.
  - Input devices like the keyboard and mouse,
  - Processing devices like the Microprocessor Chip,
  - Storage devices like the Hard disks and the CDs,
  - Output devices like the monitor and the printer.



# Parts of Computer Hardware



Can you name other devices that can work with a computer that were not listed?



# Describing a computer (cont)

- **Computer Software**
- Software is a term for electronic instructions that tell the computer how to perform a task.
- These are a series of programs (instructions) that tell the computer what and how to work.
- Computer software can be grouped into System software and Application software.
- System software like the Operating system (such as Windows, Linux, UNIX, DOS, Mac Os etc.) are used to manage and coordinate all the computer resources and activities.
- Application software (such as Games, Calculator and Media Player, Word Processors, etc.) solve the specific or exact needs of the user.





# Describing a computer (cont)

- **Computer User**
- Computer Users (Humanware) refers to the people who operate and initialize instructions to the computer system.
- They design and develop computer systems, operate the computer hardware, create the software, and establish procedures for carrying out tasks.
- There are two kinds of Computer Users:
  - **Ordinary user** - is someone without much technical knowledge of computers but uses computers to produce information for professional or personal tasks, enhance learning, or have fun. Ordinary users include Computer students, Typists (Secretaries), etc.
  - **Professional user** - is a person in a profession involving computers who has had formal education in the technical aspects of computers; Examples include Computer programmers, webmasters, etc.



# Computer Data and Information

- **Data** refers to raw facts and figures used to create information
- This is entered into the computer by the user via input devices, in a form suitable for processing.
- Data may consist of characters, symbols, sounds and graphics, videos etc.





# Computer Information

- It refers to the processed data that makes meaning and is useful.
- For example the figure 10082006 may be input as data, but once this same figure is converted to the format 10/08/2006, you realize that it's a date.
- Computer Information is organized into **files**, which are collections of data grouped together and given a name
- A file that a user can open and use is often called a **document**



# The Information Processing Cycle

- The **information processing cycle** is a series of steps the computer follows to receive data:
  - **Input:** The computer accepts data from some source
  - **Processing:** The computer's processing components perform actions on or with the data
  - **Output:** The computer provides the results of its processing
  - **Storage:** The computer stores the results of its processing.
- Looking at the parts of the computer that we looked at, in what stage do you think each computer part would be listed under?



# Sub Topic 2: World of ICTs

- **Sub topic**

- **Objectives:**

- Explaining the meaning of ICTs.
- Justifying the use of ICTs in society in..
  - business
  - education
  - health

- security
- politics and governance
- art, leisure and entertainment
- industrial, technical and scientific uses
- Searching the Internet.



# *The meaning of ICTs*

- The term Information and communication Technology (ICT) combines three items i.e. [information, communication, and technology]
- **Communication** in this regard refers to the electronic transfer of data from one point to another.
- **Technology** refers to the technique and way of doing something.
- What is Information? We shall define this ahead...



# *The meaning of ICTs cont'd*

- **GENERAL DEFINITION:** Information and Communication Technology (ICT) refers to the broad range of hardware, software, network infrastructure and media that enable the processing, storage and sharing of information among humans and computers, locally and globally”
- ICT devices range from radio, television, cellular phones, compact disks, Fax machines, computers, biometric devices, internet and network hardware and software platforms, satellite systems and so on. It involves to all means which facilitate information or data capture processing storage and output.





# The use of ICTs in society

- Today people use ICTs in almost every walk of life.
- However, along with these advancements of science there arises the dilemma of development of technology as it affects human individuals.
- They have come with both positive and negative impacts to our society.
- Computers are applied in the areas of
  - 1) Education,
  - 2) Business,
  - 3) Health,
  - 4) security,
  - 5) Politics, E.t.c
  - 6) Communication,
  - 7) Entertainment / leisure,
  - 8) Technical and scientific uses





# Uses Of ICTs In the Area of Education (Cont'd)

- In education, we use Computer Assisted Instruction (CAI), Computer Aided Learning (CAL) and Computer Aided Assessment (CAA)
- Schools use computers to create school websites for sharing information with the public.
- Productivity tools like desktop publishing and presentation software are used in projects and other school activities.
- Computers are used for calculating mathematical arithmetic by students and teachers in class.



# Uses Of ICTs in the Area of Education (Cont'd)

- With Use of School Administration and Management Systems. (SAMS) Records management is made easier because all details of learners can be held on computer, and easily retrieved, reducing administrative costs.
- Students' Progressive Report Cards can be produced electronically by use of computers instead of hand written ones.
- Distance learning through computer based training. People get award such as degrees without going to class.
- Teachers use simulation software to perform difficult or dangerous experiments in class.
- Use of special facilities for students with disabilities like text to speech and speech recognition to help blind students.



# Uses Of ICTs In The Area Of Business

- Computers enable people to Working from home, using a computer connected to the employer's network or via the Internet. This is known as Telecommuting.
- Computers have created more jobs such as Computer technicians, Computer teachers, etc.
- Buying and selling Computers and its components is a source of income to individuals, and companies.
- Through, Computer Aided Design (CAD), scale drawings, and excellent designs can be created easily.
- Computers are used for sending and receiving Mobile Money and making world wide money transfers.



# Uses of ICTs in The Area Of Business cont'd

- Banks use Computers to manage transactions and Automatic Teller Machines ATMs for 24 hours banking.
- Computers help in Business Advertisement through creating websites, internet, flyers, brochures and billboards.
- Computers are used in typesetting business for production of document printouts and publication of Books for sale.
- Computers are used for E-Commerce: the sale of goods and services over the internet.



# Uses of ICTs in the Area of Health

- Hospitals use computers for managing and storing Records electronically, rather than paper files.
- Hospital Administration is also aided by printing labels, allocating beds, make appointments, staff rotas, etc.
- Internet helps us get Web sites for information on health care, treatments, conditions, etc.
- Monitoring/Diagnosis such as Heart rate, blood pressure, etc. is aided by Computer Expert systems.
- Medical Training is facilitated by Simulation software and on-line data sources.



# Uses of ICTs in the Area of Security

- Computers aid monitoring security through cameras, Automatic number plate recognition, etc.
- Communication systems are widely used in the military to coordinate the personnel.
- Some computer systems can detect temperatures and alarm in case of danger of fire outbreaks.
- Computers are used for capturing data for Police National Computer Databases – , vehicle number plates, criminals fingerprints, etc.
- Computers are used to detect presence of illegal devices such as bombs.
- Computers are also used for controlling dangerous weapons such as missiles.



# Uses of ICTs in the Area of Politics

- Paying government tax online through a government website
- Online forms such as vehicle registration and passport forms
- Advertising government tenders and Applying for government tenders
- Public records - A maintained database of statistical information such as electoral register and census data can be availed online.
- Use of electronic voting during elections
- Government departments can use a computer based platform to get feedback from the citizens.



# Uses of ICTs in the Area of Communication

- E-mail: Electronic Mail sent from one person to another using connected computers helps a lot in the area of communication.
- Video Conferencing enables people in different locations to conduct meeting as if they are in the same location.
- Computers are used for Faxing: Sending an image of a document electronically.
- Computers enable people to send voice, image, text and data through telephones and mobile cell phones.
- Social Networks such as Facebook, and Twitter enable people to stay in touch with their relatives, friends and interests.





# Technical and Scientific Uses of ICTs

- In Astronomy, Computers are essential tools to study the behavior of the complex systems in space as regards to their movements, interactions etc.
- Through Computer Aided Manufacture (CAM), computers can be used to control the production of goods in factories.
- Computers perform Telescope pointing and tracking (including error correction), Camera operation, image download and storage, Image reduction (the measurement of the image), and Data processing.
- Monitoring highway traffic
- Computers are used to tell schedules of water vessels, train, buses to their respective stations. You only need to use your PDA device or cello phone and check it out.
- Computers are used very extensively in design of roads. Roadways and bridges are designed using software programs like CAD etc.





# Searching the Internet

- The **internet** is a global connection of computer networks.
- The internet connects together billions of computers and other ICT devices, to exchange and share information all over the world.
- To find the information that we want, we search or '**browse**' or '**surf**' the **World Wide Web (WWW)**.
- The WWW is a service on the Internet that consists of **Websites**, containing **hyperlinked** electronic documents (**webpages**) with different kinds of information.



# Searching the Internet

- You can open a Web page by entering a Web address in the Address bar of a **web browser**.
- A URL (Uniform Resource Locator) is another term for Web address. Web addresses uniquely identify websites on the www, for example <http://www.newvision.co.ug>
- Web browsers are software programs that are used for displaying Webpages on computers.  
**Examples Include:**
  - – Mozilla Firefox, 
  - – Internet Explorer, 
  - – Safari,
  - – Opera
  - – Netscape Navigator, etc.



# Searching the Internet

- If you don't know the URL of the website you want to visit, you can use a web **search engine**
- Search Engines are Software programs or systems that look through the www to locate sites matching a keyword entered by the user.
- **Keyword:** A string of letters or words that indicates the subject to be searched.
- Popular search engines include Yahoo, Bing and **Google**. ([www.google.com](http://www.google.com))



*Microsoft Internet Explorer web browser displaying the webpage for the Google search engine.*

***PRACTICAL ACTIVITY: Open a web browser and use the Google search engine to search about the various uses of ICTs in society today.***



# 3. Implications of Using ICTs

- **Sub Topic Objectives:**
- discusses the implications of using ICTs.
- - social / ethical
- - economic
- - political
- - environmental
- (Green Computing)
- - security, reliability and resilience of computer systems



# Positive Implications of Using Computers to Society

- Created and widened employment opportunities e.g.; software engineers, computer teachers, technicians, etc.
- Improved education and research by simplifying teaching and learning. E.g. abstract content can be made real through cyber science technology – others are computer aided teaching and computer aided learning, presentations software, etc.
- Improved entertainment and leisure through computer games, music, etc for people to refresh and make-up.
- Improved communication and collaboration through computer networks. Improved health services where computers facilitate recording, monitoring, and diagnosis for patients.



# Positive Implications of Using Computers to Society

- Improved security through computer managed gates and monitoring of commercial and domestic premises, detecting and controlling crime by police.
- Reduced production time and manufacturing processes through computer aided manufacturing and computer aided designing which have greatly improved the quantity and quality of life.
- Improved customer services delivery and care eg networked computers provide 24/7 on-line services like credit cards Improved business and investment opportunities.
- Improved data and document production, storage and manipulation.



# Negative Implications of Using Computers to Society



- Computer related crime e.g. forgeries, cyberbullying, Piracy etc.
- Increased cost of production as computers are very expensive to buy and maintain. Computer experts can as well be expensive to hire.
- They are many health hazards e.g. can cause eye defects, Tendonitis, RSI, etc.
- Electronic fraud: Stealing money electronically through practices like Credit card cloning and illegal money transfers.
- Impact on Environment: Computer manufacturing processes and computer waste are depleting natural resources and polluting the environment.
- Hacking: Unauthorized access into computers possibly to access information, compromising privacy. e.g. Wikileaks
- Virus threats which has made data storage and safety very unreliable.





# Negative Implications of Using Computers to Society

- Loss of employment as they take over job assignments for semi and less skilled job functions.
- Deaths and accidents due to computer malfunctioning or explosion.
- Erosion of human integrity and creativity as even the smallest calculation is assigned to the computer. Other cases are Forgeries, GMFs, test tube children, etc.
- Loss of man-hours as some workers go for unproductive computer based leisure at the expense of their work. Cyber terrorism.
- Moral Decay: The internet has websites with content such as pornography, which have a bad impact on the users especially the young children.



# Health concerns of computer use

- Computer vision syndrome (CVS)—eye and vision problems.
- Repetitive strain injury (RSI)  
Carpal tunnel syndrome (CTS)—inflammation of nerve that connects forearm to palm.
- Tendonitis—inflammation of tendon due to repeated motion.
- Computer addiction—when computer consumes entire social life





# Health concerns of computer use

## TECHNIQUES TO EASE EYESTRAIN



- Every 10 to 15 minutes, take an eye break.
  - Look into the distance and focus on an object for 20 to 30 seconds.
  - Roll your eyes in a complete circle.
  - Close your eyes and rest them for at least one minute.
- Blink your eyes every five seconds.
- Place your display device about an arm's length away from your eyes with the top of the screen at eye level or below.
- Use large fonts.
- If you wear glasses, ask your doctor about computer glasses.
- Adjust the lighting.





# What is **GREEN** COMPUTING?

- Green computing is concerned with reduction of electricity and environmental waste while using computers.

## **GREEN COMPUTING SUGGESTIONS**

1. Use computers and devices that comply with the ENERGY STAR program.
2. Do not leave the computer running overnight.
3. Turn off the monitor, printer, and other devices when not in use.
4. Use paperless methods to communicate.
5. Recycle paper.
6. Buy recycled paper.
7. Recycle toner cartridges.
8. Recycle old computers and printers.
9. Telecommute (saves gas).





# ***UACE Sub - ICT***

**End of Topic 1:**

**Introduction to Computing**

**Next Topic2: Computer Management**