

Unit 1

ICT concepts and its role in the society.

Data

A collection of non-formal meaningless and disorganized items.

Forms of data:

- Text
- Video
- Audio

Classification of Data

1. Quantitative Data

Data that can be measured by numerically.

Ex: Numbers

2. Qualitative Data

Data that cannot be measured numerically.

Ex: Colors

Information

Data arranged to be meaningful to a relevant individual.

Qualities of Information:

- Is meaningful.
- Is fascinating.
- Updates prior knowledge.
- Is a medium of inter-communication
- While they are topical, they help decision making.

The relevance of information varies from one individual to another.

Knowledge

The skills and specialties acquired by an individual through education and experience.

Data Processing

The collection and manipulation of data to produce meaningful information

Data → Meaningful Process → Information

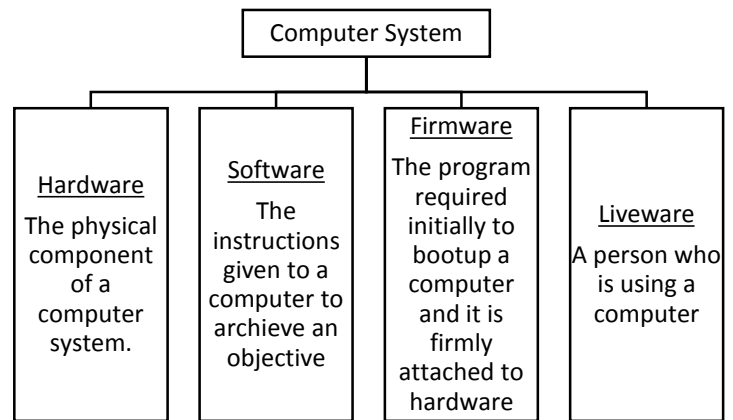
The Golden Rule of Information

- Information has a greatest value the moment it is created or at the moment it is received.
- The value of information will gradually decrease along with time.
- The information will finally become data.

Value of
Information



Classification of components of a computer system



Computer Hardware Classification

Differences between CRT and LCD

Cathode Ray Tube (CRT) Monitor

- Has a very high dynamic color range
- Uses electron beams to create the image on the screen
- Much cheaper
- Consumes a lot of energy
- Large size and weight

Liquid Crystal Display (LCD) Monitor

- Very compact and light
- Low power consumption
- Can be made in almost any size.
- Limited viewing angle
- Slow response times
- Dead pixels may occur

Printers

Impact Printers – Uses a striking head to transfer ink.

- Dot matrix printer
- Daisy wheel printer
- Line Printer

Non-Impact Printers – Uses different techniques other than striking.

- Inkjet Printer
- Laser Printer
- Dye-sublimation printer
- Thermal Printer

Considerations when selecting a printer.

- The quality of the hardcopy (DPI)
- The cost for a copy
- The time spent on a copy
- Noise when in use

Memory Types

Devices used to store data and information temporarily or permanently are called memory devices.

- Random Access Memory – Holds data and instructions before and after processing.
- Read only memory - The permanent memory which contains special instructions to boot up the computer stored by the manufacture.
- Backup storage – Non-volatile storage media which is used to store user's data.

The CPU consists of the following components

Central Processing Unit

- Control Unit – Controls all the functions decoding instructions.
- Arithmetic and logic unit – Mathematical operations and logical comparisons.
- Register Arrays – Temporarily store data until they are sent to the ALU.

- ✓ Copyright – The right of the author to copy, print and publicize material. It provides a protection against unauthorized copying.
- ✓ Copyrighted Software – Software that belongs to an owner who has the legal rights.
- ✓ Open Source Software – Software that does not have a copyright. Usually the source code is open for modification.
- ✓ Plagiarism – Presenting some other persons software, hardware, electronic documents as one's own.
- ✓ Licensed Software – Protected against copying. These belong to the category of intellectual property.

Data Processing Life Cycle

1. Data Gathering Methods

| Manual | Automatic |
|---------------------------|---|
| Keyboard, Mouse, touchpad | OMR : Optical Mark Reader OCR : Optical Character Reader MICR : Magnetic Ink Character Reader |

2. Data Validation

Ensuring the validity (clean, correct, and useful) of data.

| Type check | Presence check | Range check |
|-----------------------|---|---|
| Data type is checked. | Check for the presence of important data. | Check if data lie within correct range. |

Check Digit

A check digit is used for error detection.

Types of errors detected by the check digit.

- Single digit errors 1 → 2
- Transposition errors 12 → 21
- Twice errors 11 → 22
- Jump transposition errors 132 → 131
- Jump twin errors 131 → 232
- Phonetic errors 60 → 16

3. Data Verification

Verification is done to check if a copied data is the same as the original.

4. Data Processing

Manipulation of input data to obtain a desired output.

Data processing can be done in two ways.

| Batch Processing | Real Time Processing |
|--|--|
| Data collected for a period of time be processed batch-wise. Eg: Payroll system | Need to process within a certain amount of time (time bound). Eg: ATM |

5. Data Storage

Processed information should be stored for later use.

6. Output Information

After the results have been produced, they should be presented to the relevant parties.

| Soft Copy | Hard Copy |
|--|--|
| An electronic version of a document. Eg: Ms word file | A printed version of a document. Eg: A magazine |

ICT in Different fields

ICT tools applied in organizations.

- Presentation
- Telecommuting(Office, activities at home via ICT)
- Video Conferencing

ICT in the Advertising Field

- Product Advertising
- Business Advertising
- Service Advertising

ICT in the Education Sector

- Computer Aided Learning
- Computer based learning
- Computer based assessment

Issues related to ICT

1. Social Issues
2. Economic Issues
3. Environmental Issues
4. Ethical Issues
5. Legal Issues