GLS UNIVERSITY

COMPUTER FUNDAMENTALS & INFORMATION TECHNOLOGY.
UNIT– I

Data v/s Information

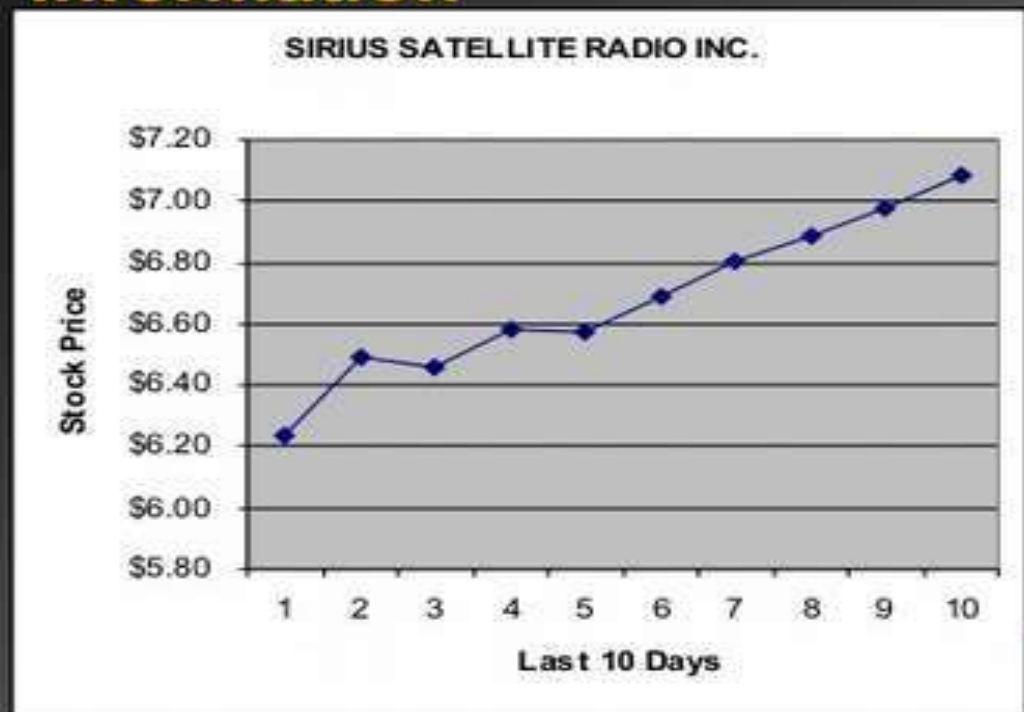| Data	Information
Data is a collection of unprocessed items, which include text, numbers, images, audio and video.	Information conveys meaning and is useful to people.
Data is unprocessed facts or mere figures	Information is processed data which has been made sense of
Data does not depend on information	Information depends on data and without it, information cannot be processed
Data is the raw material that is collected	Information is a detailed meaning generated from the data.

Data v/s Information

Data v/s Information

Data vs. Information (Example)

Data

NW843, MSP, ANC, 1140, 1444, 6.4, 757, 23

Information

Flight Information							
Flight	Origin	Destination	Departure	Arrival	Flight Time	Airplane	Gate
NW 843	Minneapolis (MSP)	Anchorage (ANC)	1140 AM	0244 PM	6 hr. 4 min.	Boeing 757	23

[Source: Hagg el at. 2004]

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Introduction to IT

Definition :
Information technology (IT) is a general term that describes any technology that helps to produce,manipulate, store,communicate and disseminate information

Examples : Telephones Televisions Appliances , Various handheld devices
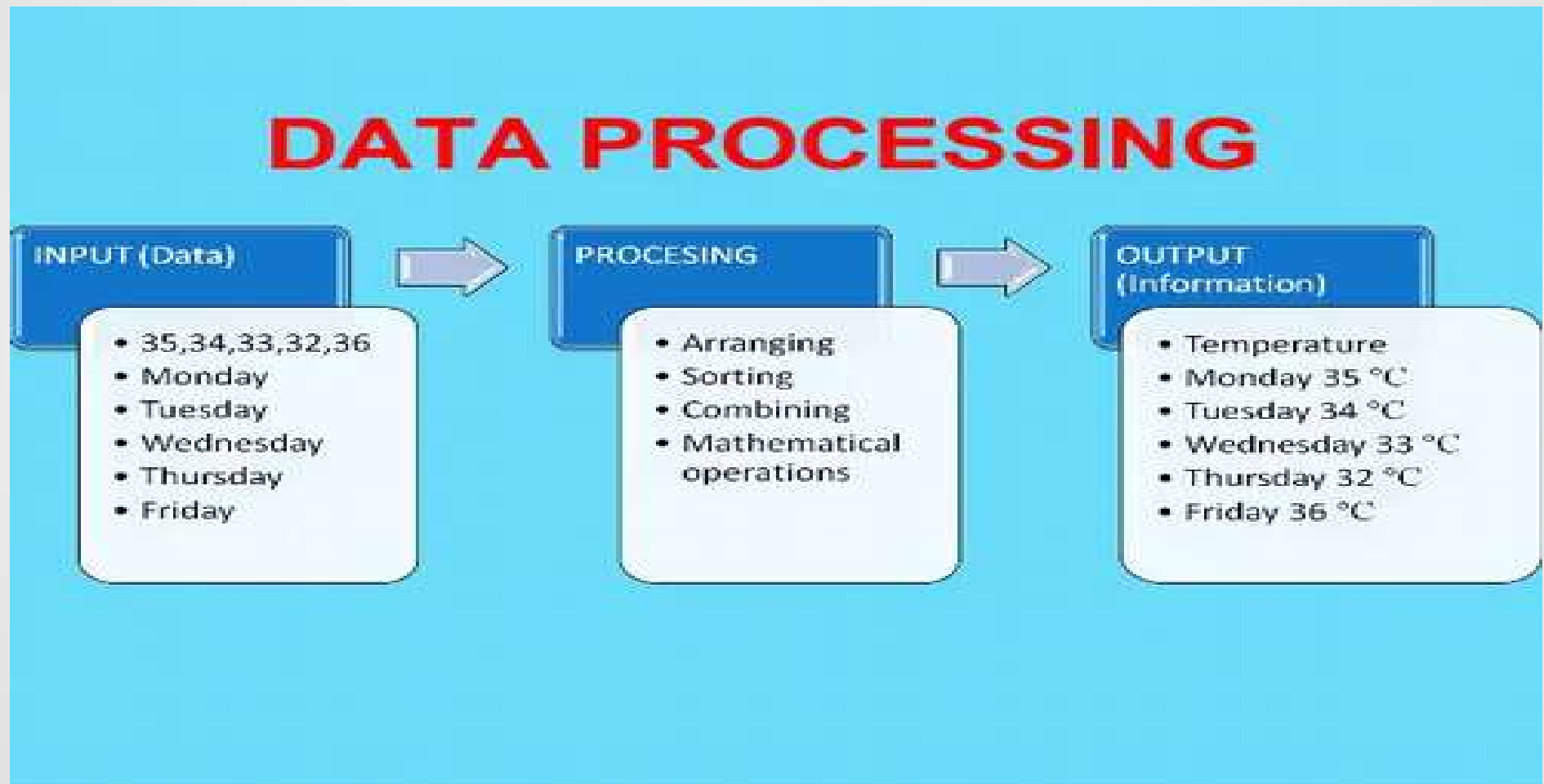
Data Process Cycle

Data processing cycle:

- It is **a sequence of steps or operations for processing data** i.e., processing raw data to the usable and readable form.
- The processing of data can be done by number of data processing methods and data processing systems.

Stages of Data Processing:

- Stages of data processing are: Input, Processing and Output

Stages of Data Processing:

Stages of Data Processing

Input:
- The raw data after collection needs to be fed in the cycle for processing. This is considered the first step and called input.

Processing:
- Once the input is provided the raw data is processed by a suitable or selected processing method.
- This is the most important step as it provides the processed data in the form of output which will be used further.

Output:
- This is the outcome and the raw data provided in the first stage is now "processed" and the data is useful and provides information and no longer called data.
- Output is also understood as meaningful information or useful information.
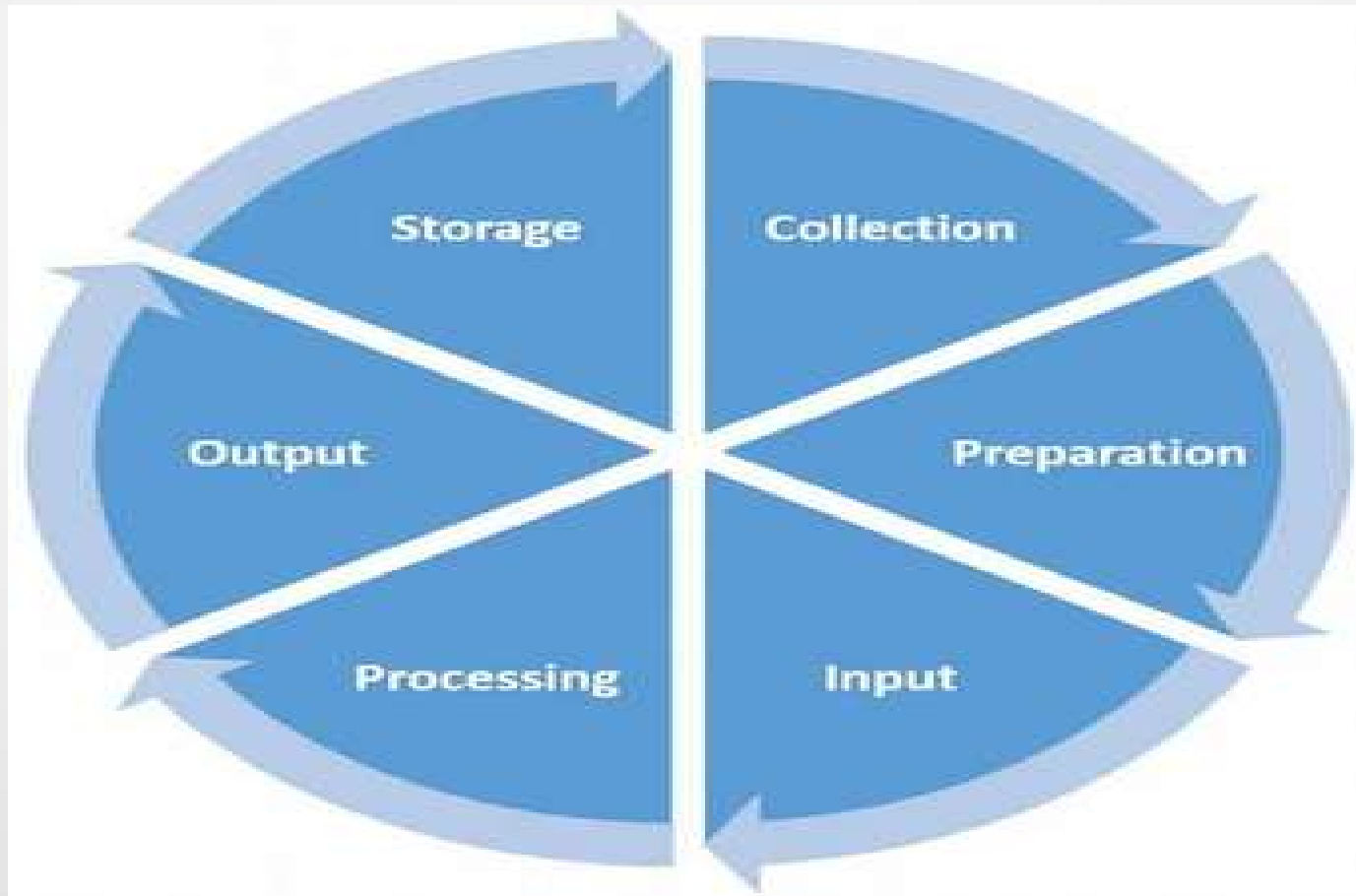
Stages of Data Processing Cycle

Data Processing Cycle:

- **Data processing have three broad stages** which have sub stages or steps involved.
- These are the steps/process required in between these three broad stages.
- These deal with the collection of data, choosing the processing methods, practicing data management best practices, information processing cycle, making use of processed data for the desired purpose.

Stages of Data Processing Cycle

Data Processing Cycle:
- Data cycle diagram is presented below. The steps include:

Stages of Data Processing Cycle

Data Collection:
- Data Collection process is the first step which provides the data.
- This data collection can be done in various ways by primary or secondary sources.
- This data might include census data, data acquired by GDP or other monetary figures, data about a number of industries, profit of a company, etc.
- Depending upon the data requirement its source must be identified from which data will be collected.
- Also identification of datasets and data items is done at this stage.

Stages of Data Processing Cycle

Preparation/ Sieving:
- Some people consider this as a part of processing but does not involve any processing.
- Preparation includes sorting and filtering of data which will finally be used as input.
- This stage required you to remove the extra or unusable data to make processing faster and better.
- This is a broad step in reducing the quantity of data to yield in a better result.
- It is also sometime referred as data cleaning.

Stages of Data Processing Cycle

Input:
- This is the feeding of collected data, raw and sieved data for processing.
- If the inputs is not given properly or entered wrong, then the result will be adversely affected.
- This is because software follows the rule of "Garbage in – garbage out."
- Utmost care should be taken to provide the right data and minimum errors in data entry.
- The quality of input will determine the quality of output.

Stages of Data Processing Cycle

Processing:
- This is the step where data is processed by electronic data processing, mechanical processing, processing system or other means.
- The processed data is one who gives information to the user and can be put to use.
- The raw data cannot be understood and thus needs processing which is done in this step.
- Processing of data may take time depending processing power, complexity of the data, computer systems and the volume of input data.
- The step of preparation mentioned above helps in making this process faster.

Stages of Data Processing Cycle

Output/ Result:
- This is the last step of the data processing cycle as the processed data is delivered in the form of information/ results in this step.
- Once the result or output is received, it may further be processed or interpreted.
- This is done by the user or software for further value addition.
- This output can also be used directly in presentations or the records.
- This output may even be saved as to be used as an input for further data processing which then becomes a part of a cycle which is being discussed.

Stages of Data Processing Cycle

<u>Output/ Result:</u>
- If this data is not used as input, then this complete process cannot be considered as cycle and will remain to be a one-time activity of data processing.
- For using this data as input, it must be stored or simultaneously be available for further processing.
- Data storage can be done by various means.

Stages of Data Processing Cycle

Storage:
- Once collected, the need for data entry emerges followed by storage.
- Storage can be done in physical form by use of papers, in notebooks or in any other physical form.
- With the emergence and growing emphasis on Computer System, Big Data & Data Mining, the data collection is large and storage is done in data center.
- A number of operations need to be performed for meaningful analysis and presentation.
- The data stored in digital form facilitates sharing, access control, security controls and its processing.

Components of IT

1. Computer Technology

2. Communication Technology

3. Media

Computer Technology

Definition :

Computer information technology (CIT) is the use and study of computers, networks, computer languages, and databases within an organization to solve real problems.

The major prepares   students for applications programming, networking, systems administration, and Internet development.

Computer Technology

- An electronic device that you can use to manipulate, store, retrieve, and process data.

Communication Technology

Definition :

- Information and communications technology (ICT) is an extended term for information technology (IT)

- It includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning

Communication Technology

Media

Objects on which data can be stored.

   These include :- hard disks, floppy disks, CD-ROMs, tapes. In
   computer networks, media refers to the cables linking workstations
   together.
   There are many different types of transmission media.
   1. Twisted-pair wire (normal electrical wire)
   2. Coaxial cable (the type of cable used for cable television)
   3. Fiber optic cable (cables made out of glass).

Media


Twisted Pair

Coaxial cable

Fibre Optic

Introduction to Computers

Introduction to Computers

COMPUTER:

- Its an electronic device which accepts input, processes data, stores data, and produces output

- Any kind of computers consists of HARDWARE AND SOFTWARE.

- Computer can be defined as "An electronic and electromechanical device"

- It intakes raw data, manipulates it and gives accurate output in the form of information.
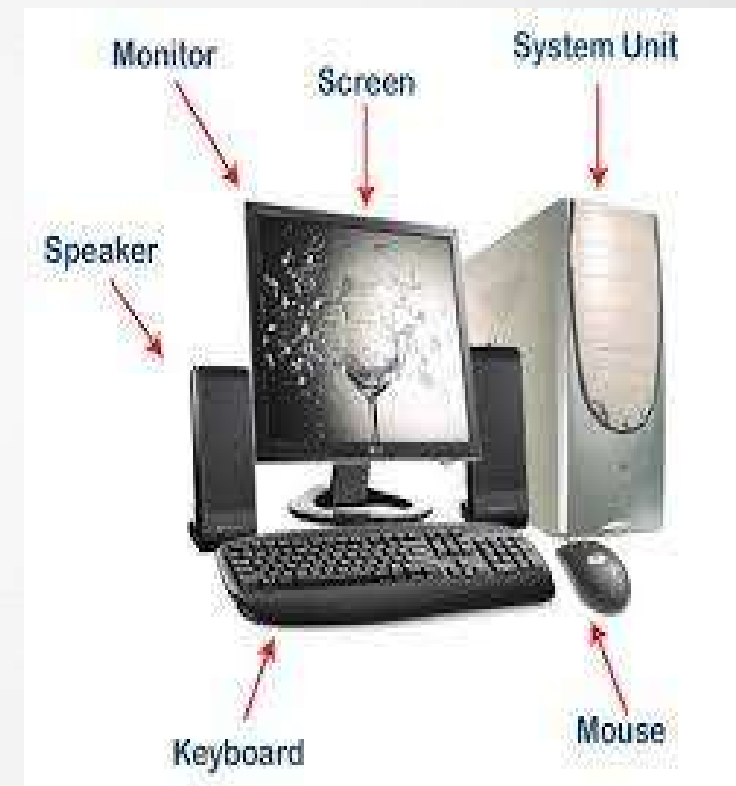
Characteristics of Computer

Main characteristics of the computer can be summarized as:

1.**Speed:** Computer is very fast and accurate device. It can process millions and millions of instructions within seconds.

2.**Accuracy:** Computer results are highly accurate.

3.**Memory:** Computers have a large amount of memory to hold a very large amount of data or information.

4.**Diligence:** Computer is free from problems like lack of concentration, and confusions & tiredness.

5.**Versatility:** We can perform different types of tasks on computer. It is therefore versatile in nature.

6.**Power of Remembrance:** Unlike humans, computer can store thingsfor unlimited period of time.

Types of Computer

There are two basic kinds of computers:

- Analog Computer
- Digital Computer
- Hybrid computer
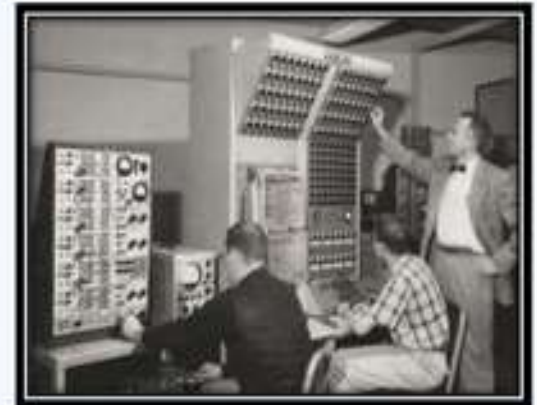
Analog computers

➤ Analog computers are analog devices. That is, they have continuous states rather than discrete numbered states.

➤ An analog computer can represent fractional values exactly, with no round off.

➤ They handle or process information, which is of physical nature.

➤ Examples: Computers in Chemical plants monitoring temperatures, pressures, voltage, etc.

Now these days, we rarely came across of analog computers in routine life.

Digital Computer

❖ A digital computer uses discrete states.

❖ A binary digital computer uses digits and process data, which is essentially in a binary state.

❖ Example: Personal Computers, scientific calculators, etc.

Hybrid Computer

✓ It refers to computer that contain both digital and analog circuit.

✓ For Example: A digital thermometer converts the temperature (analog signals) and gives the output of measurement in digits (digital signal)

Advantages & Disadvantages of Computer

Advantages	Disadvantages
• It makes our work easier, faster and accurate. • It saves our cost and time while collecting, manipulating and storing large amount of data • It helps in worldwide communication.	• It is harmful to health, it affects eyesight and backbones if we work too long. • It creates unemployment. • It makes people dumb and dull.