

Harambee University

Introduction to Computer

Chapter Two

Introduction to Information Processing

Basic Data vs. Information.

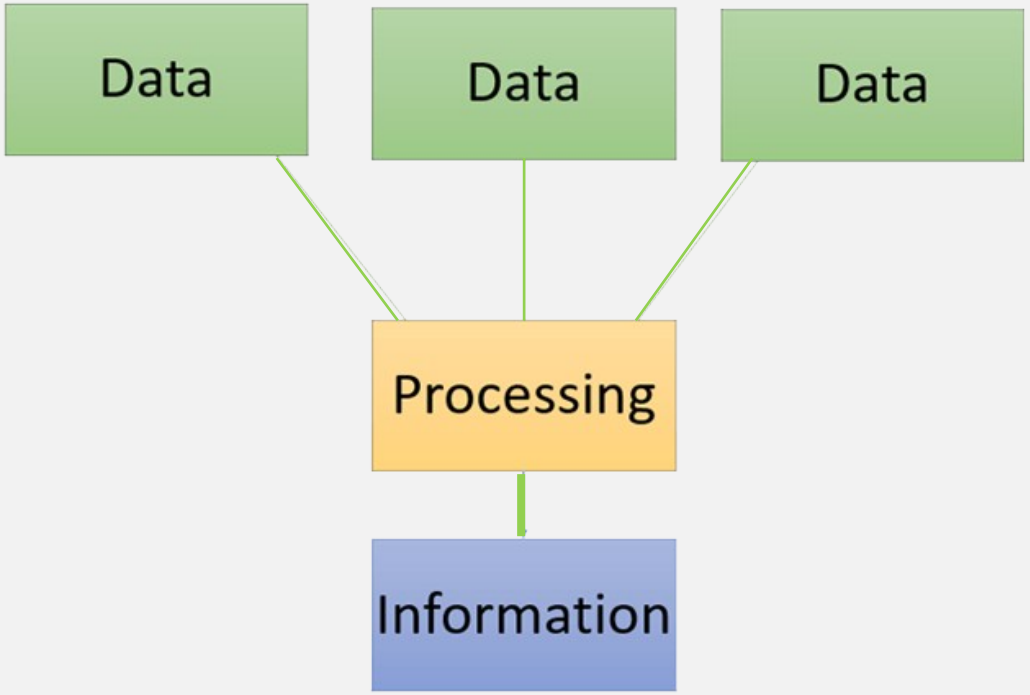
What Is Data?

- The term data is simply defined as “facts and figures”.
- Data is a raw and unorganized fact that required to be processed to make it meaningful.
- Data is always interpreted, by a human or machine, to derive meaning.
- Data is meaningless. Data contains numbers, statements, and characters in a raw form.

Cont...

What is information?

- Information is a set of data which is processed in a meaningful way according to the given requirement.
- Information is processed, structured, or presented in a given context to make it meaningful and useful.



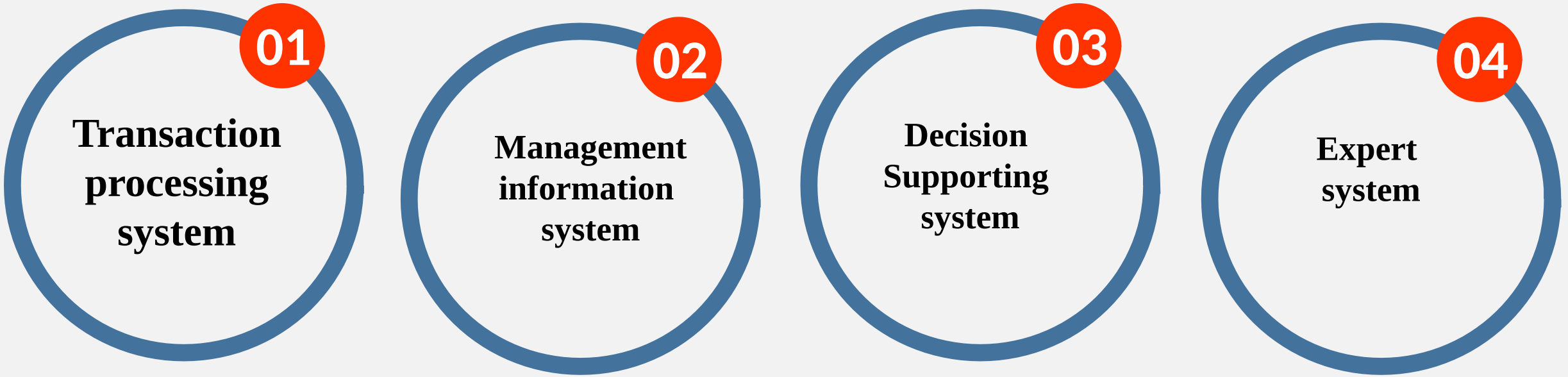
Data Vs Information

	Data	Information
Meaning	Data is raw, unorganized facts that need to be processed. Data can be something simple and seemingly random and useless until it is organized.	When data is processed, organized, structured or presented in a given context so as to make it useful, it is called information.
Example	Each student's test score is one piece of data.	The average score of a class or of the entire school is information that can be derived from the given data.

Information System

- Information system can be defined as a collection of software, hardware, and telecommunications network that people develop and use to gather, create, and distribute useful data, mainly in organizational settings.
- In other words, an information system means a collection of interrelated components which work together to gather, process, store, and break down the information to help decision making.

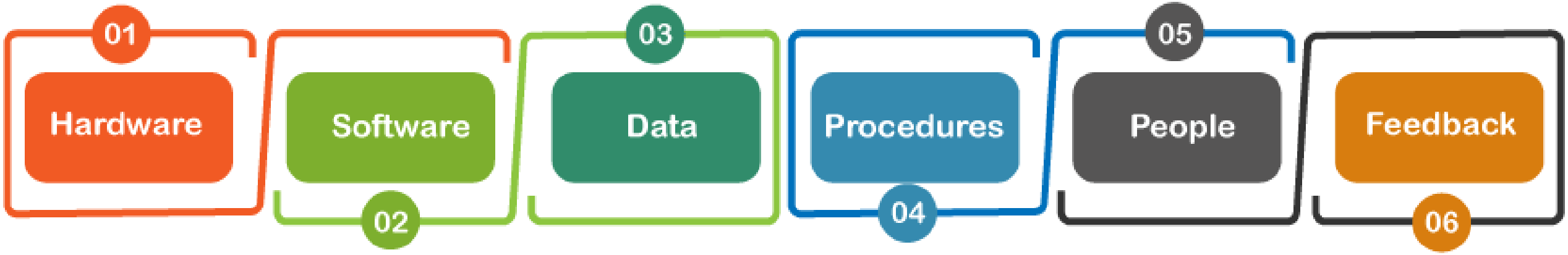
Types of Information System



Group Assignment

Write the above definitions

Components of Information System



- 1. Hardware
- Hardware means equipment and machinery.
- This category encompasses the computer and all of its supporting equipment in modern information systems.
- The supporting devices contain input and output devices, communication devices and storage device.

2. Software

- Software means computer programs as well as the manuals which support them.
- Computer program means the machine-readable instructions that tell circuitry in the system's hardware to work to generate helpful information from the data.
- In most cases, programs are stored on an input/output medium, such as a tape or disk.
- The software which is for pre-computer information systems comprised instruction for using them means the guidebook for a card catalog and the information regarding how the hardware was configured for use such as columns headings in the ledger book.

3. Data

- Data means facts that systems use to generate valuable knowledge.
- Data is usually stored in machine-readable form on tape or disk until the computer requires them.
- The data in pre-computer information systems is usually stored in a human-readable format.

4. Procedures

- Procedures mean rules which govern how an operation is performed in information system.
- "Procedures are for people what software is for hardware" is a general analogy that we used to clarify the importance of procedures in a system.

5. People

- Every system requires individuals if the system is to be beneficial.
- People are often the most neglected part of the system, and they are possibly the factor that has the greatest impact on the success or failure of information systems.

6. Feedback

- Another component of an information system is feedback, which determines that an information system can be offered with feedback. However, this component is not needed to function.

How Data is Processed?

- Broadly divided into 6 basic steps
- Data Collection
- Storage of Data
- Sorting of Data
- Processing of Data
- Data Analysis
- Data Presentation and conclusions



1. Data Collection

As already we have discussed the sources of data collection, the logically related data is collected from the different sources, different format, different types like from XML, CSV file, social media, images that is what structured or unstructured data and so all.



2. Storage of Data

- The collected data now need to be stored in physical forms like papers, notebooks, and all or in any other physical form.
- Now because of the data mining and big data, the collection of data is very huge even in structured or unstructured form.
- The data is to be stored in digital form to perform the meaningful analysis and presentation according to the application requirements.

3. Sorting of Data



- After the storage step, the immediate step will be sorting and filtering. The sorting and filleting are required to arrange the data in some meaningful order and filter out only the required information which helps in easy to understand visualize and analyze.



4. Processing of Data

- A series of processing or continuous use and processing performed on to verify, transform, organize, integrate, and extract data in a useful output form for farther use.



5. Data Analysis

- Data analysis is the process of systematically applying or evaluating data using analytical and logical reasoning to illustrate each component of the data provided and to get the concluded result or decision.



6. Data Presentation and Conclusions

- Once we come to the analysis result it can be represented into the different form like the chart, text file, excel file, graph and so all.

Types of data process

- On the basis of steps they performed or process they performed
  - Batch Processing (In batches)
  - Real-time processing (In a small time period or real-time mode)
  - Online Processing (Automated way enter)
  - Multiprocessing (multiple data sets parallel)
  - Time-sharing (multiple data sets with time-sharing)

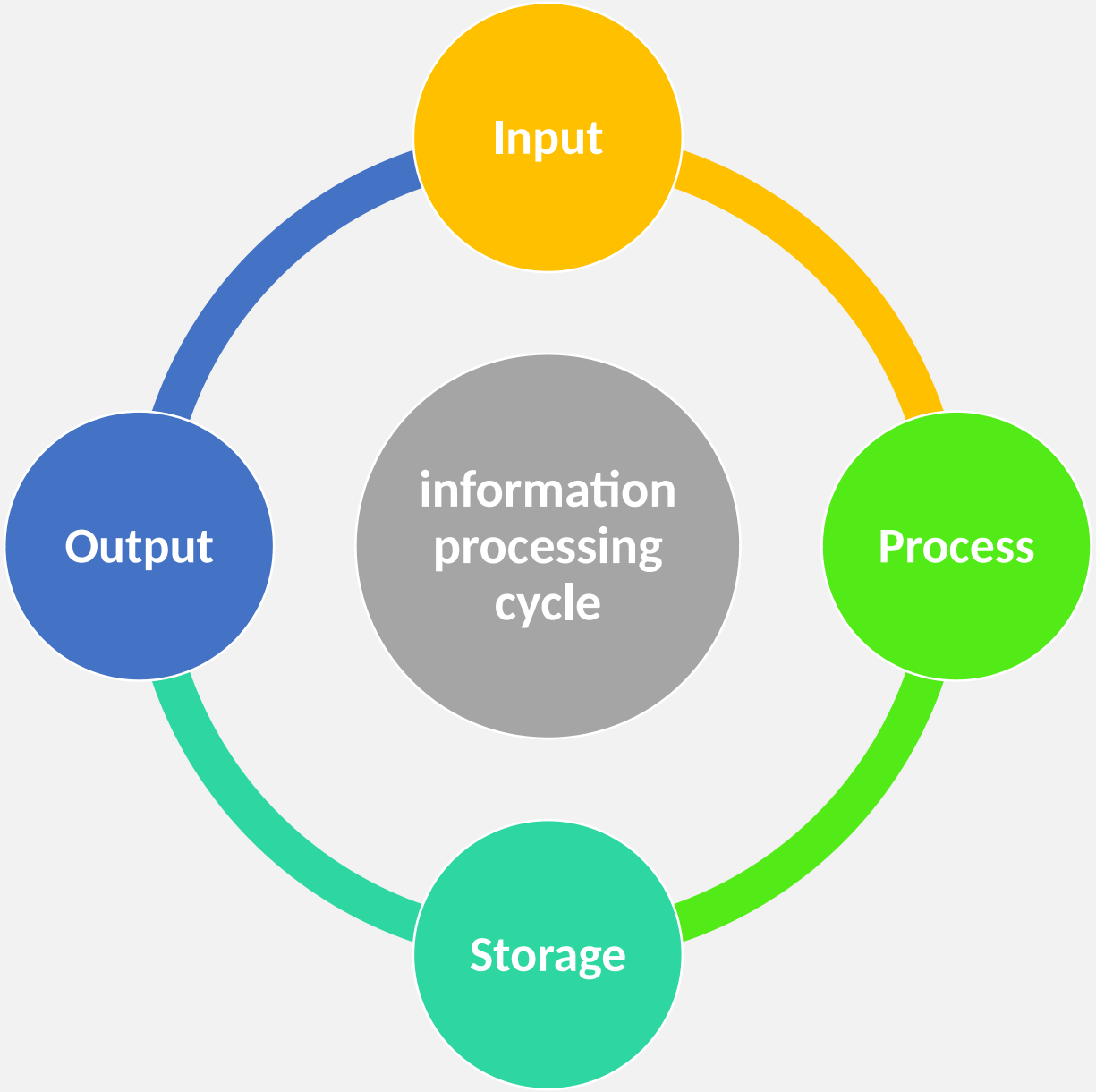
What is Information Processing?

- Information processing is the process of changing or converting information into meaningful information.
- It is processed, organized or classified data which is useful for the receiver.
- Information is the processed data which may be used “**as it is**” or may be put to use along with more data or information.

Cont…

- Information is useful & meaningful only if it has these characteristics:
- **Timely** − Information should be available when required, a delay in obtaining information renders it useless.
- **Accuracy** − Accuracy of information has a significant impact on the decision-making. Possibilities of even slightest errors should be minimized.
- **Completeness** − Information should be complete. Incomplete information causes incorrect and unintended results.
- **Comprehensive** – Information which is incomprehensible is useless for the receiver. This becomes a case of information failure as the sender sent the information, but it was of no use for the receiver, thus is not considered as “information.”

Information processing cycle



Information processing cycle

1. **Input**: Computer receives data and instructions.
2. **Process:** Computer applies instructions to data to produce information (organized Data).
3. **Storage:** Saving the information for a subsequent use or use in future.
4. **Output:** Computer sends information to people in a usable format.


Thank you