# MANAJEMEN INFORMASI (TFC 356)

Pertemuan 3 – Data, Informasi dan Pengetahuan


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# WHAT ARE DATA, INFORMATION, AND KNOWLEDGE ?

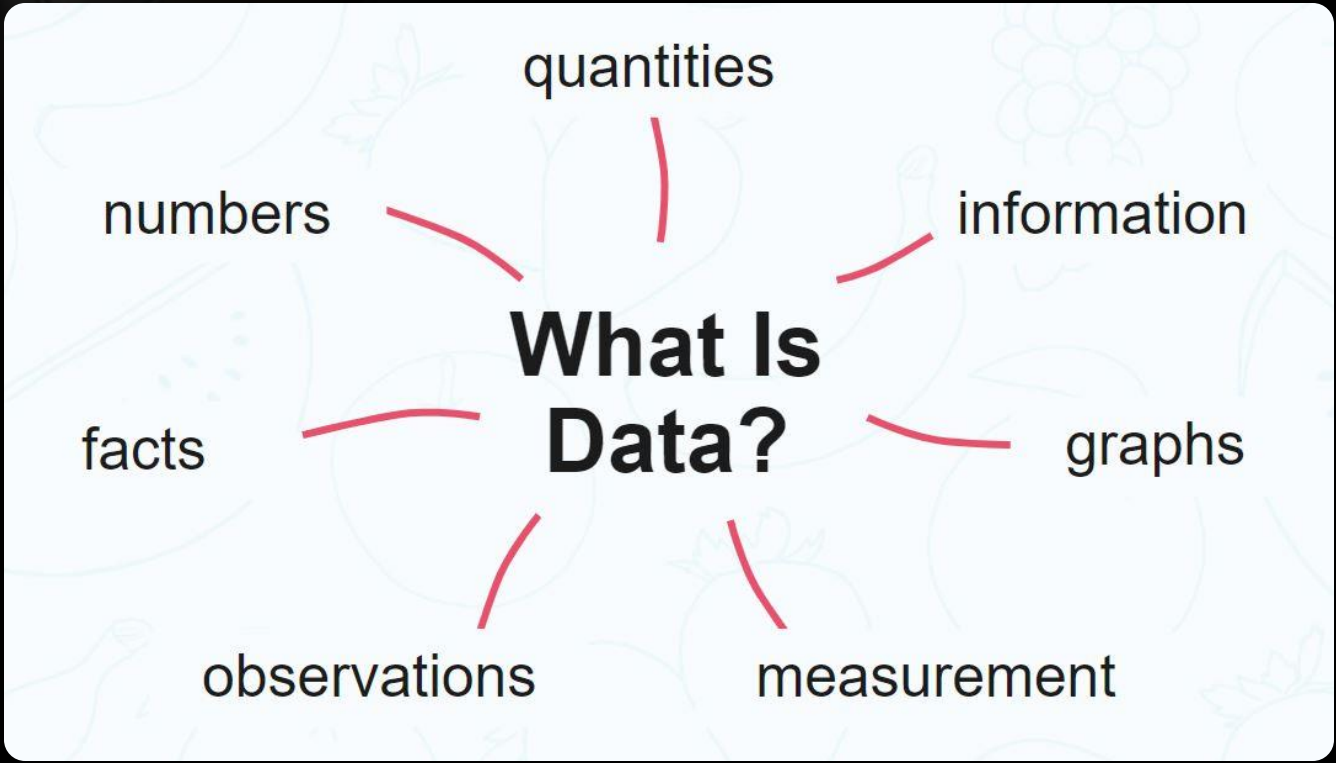
VS

VS

**Data** **Information** **Knowledge**

Data, information, and knowledge are often used interchangeably.
However, these terms represent different stages of value creation from data to decision-making.

# WHAT IS DATA?

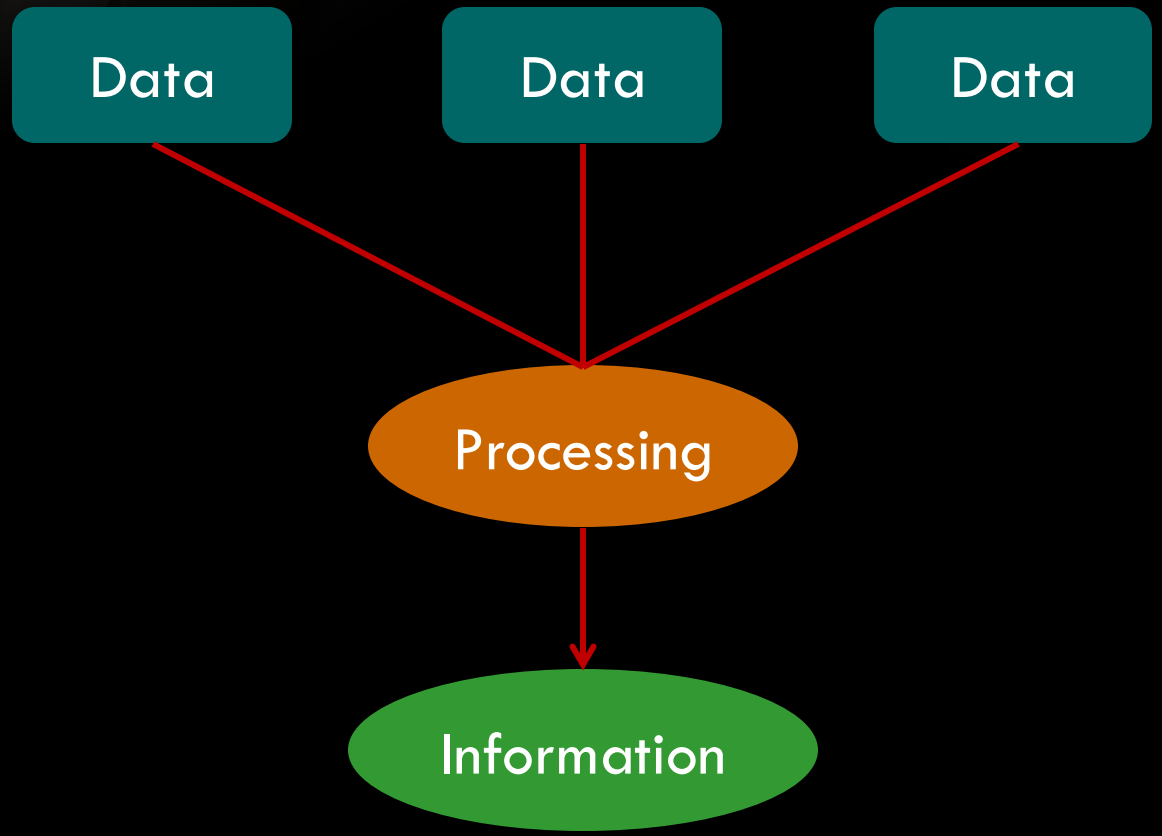



Data refers to raw, unprocessed facts and figures that lack context or interpretation on their own.

Data are the raw alphanumeric values obtained through different acquisition methods.

Data in their simplest form consist of raw alphanumeric values.

# WHAT IS INFORMATION?




Information is created when data are processed, organized, or structured to provide context and meaning.

Information is essentially processed data.

Unlike raw data, information is more comprehensible and provides context that aids in understanding the data.

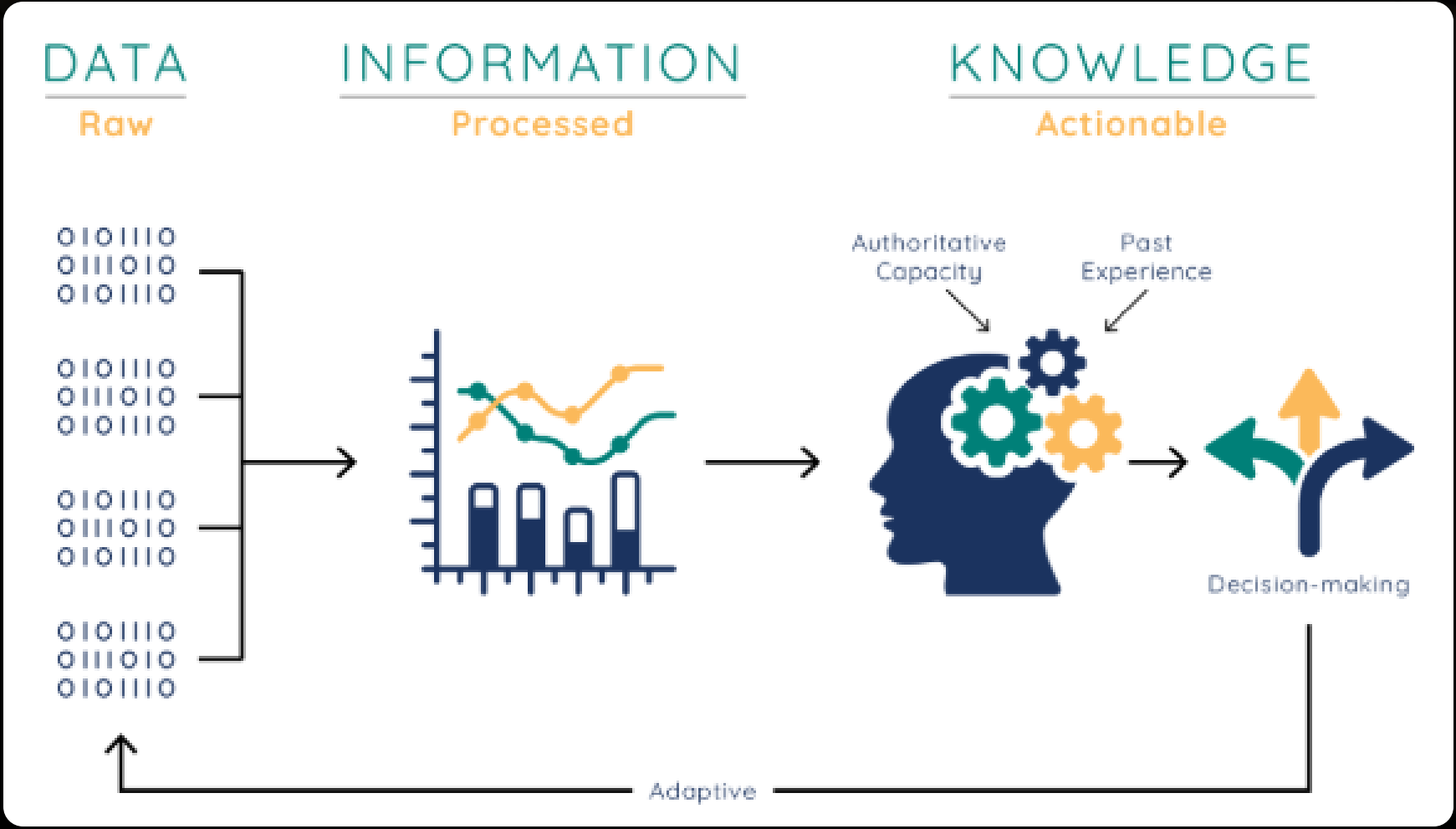
# WHAT IS KNOWLEDGE?


Knowledge is unique to each individual and is the accumulation of past experience and insight that shapes the lens by which we interpret, and assign meaning to, information.

For knowledge to result in action, an individual must have the authority and capacity to make and implement a decision.

Knowledge (and authority) are needed to produce actionable information that can lead to impact.

# DATA VS INFORMATION VS KNOWLEDGE

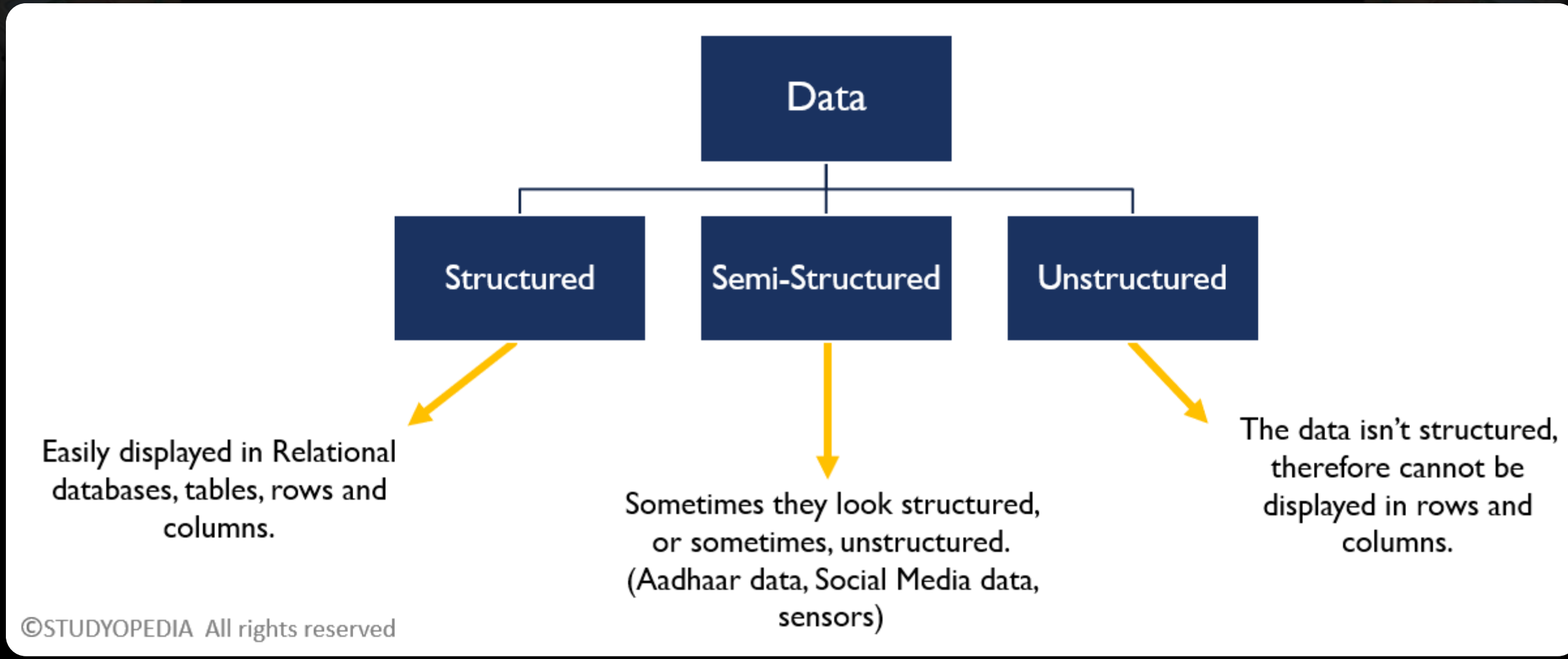


# CHARACTERISTICS OF DATA, INFORMATION, AND KNOWLEDGE

| Data | Information | Knowledge |
|---|---|---|
| Is objective | Should be objective | Is subjective |
| Has no meaning | Has a meaning | Has meaning for a specific purpose |
| Is unprocessed | Is processed | Is processed and understood |
| Is quantifiable, there can be data overload | Is quantifiable, there can be information overload | Is not quantifiable, there is no knowledge overload |

The flow from data to information and knowledge is not uni-directional.
The knowledge gained may reveal redundancies or gaps in the data collected.
As a result, an actionable insight may be to change the data collected, or how those data are converted into information, to better meet user needs.

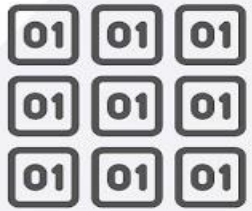
# CATEGORIES OF DATA



# CATEGORIES OF DATA

| Aspect | Structured Data | Semi-Structured Data | Unstructured Data |
|---|---|---|---|
| Organization | Highly organized with a predefined structure, typically in tables and rows, like a spreadsheet. | Some degree of structure but less rigid than structured data. Uses tags or elements for hierarchy. | Lacks a predefined organizational form and specific format. |
| Machine-Readability | Easily machine-readable. | Moderately machine-readable. | Challenging for machines. |
| Examples | Relational databases, spreadsheets. | HTML, JSON files, XML, YAML, log files, NoSQL databases. | Images, videos, audio, documents, social media, emails, chat, presentations. |

## Structured data




### Characteristics

Predefined data models
Easy to search
Text-based
Shows what's happening

### Resides in

Relational databases
Data warehouses

### Stored in

Rows and columns

### Examples

Dates, phone numbers, social security numbers, customer names, transaction info

## Unstructured data

### Characteristics

No predefined data models
Difficult to search
Text, pdf, images, video
Shows the why

### Resides in

Applications
Data warehouses and lakes

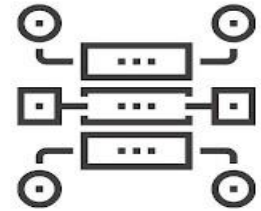
### Stored in

Various forms

### Examples

Documents, emails and messages, conversation transcripts, image files, open-ended survey answers

## Semi-structured data



### Characteristics

Loosely organized
Meta-level structure that can contain unstructured data
HTML, XML, JSON

### Resides in

Relational databases
Tagged-text format

### Stored in

Abstracts & figures

### Examples

Server logs, tweets organized by hashtags, emails sorting by folders (inbox; sent; draft)

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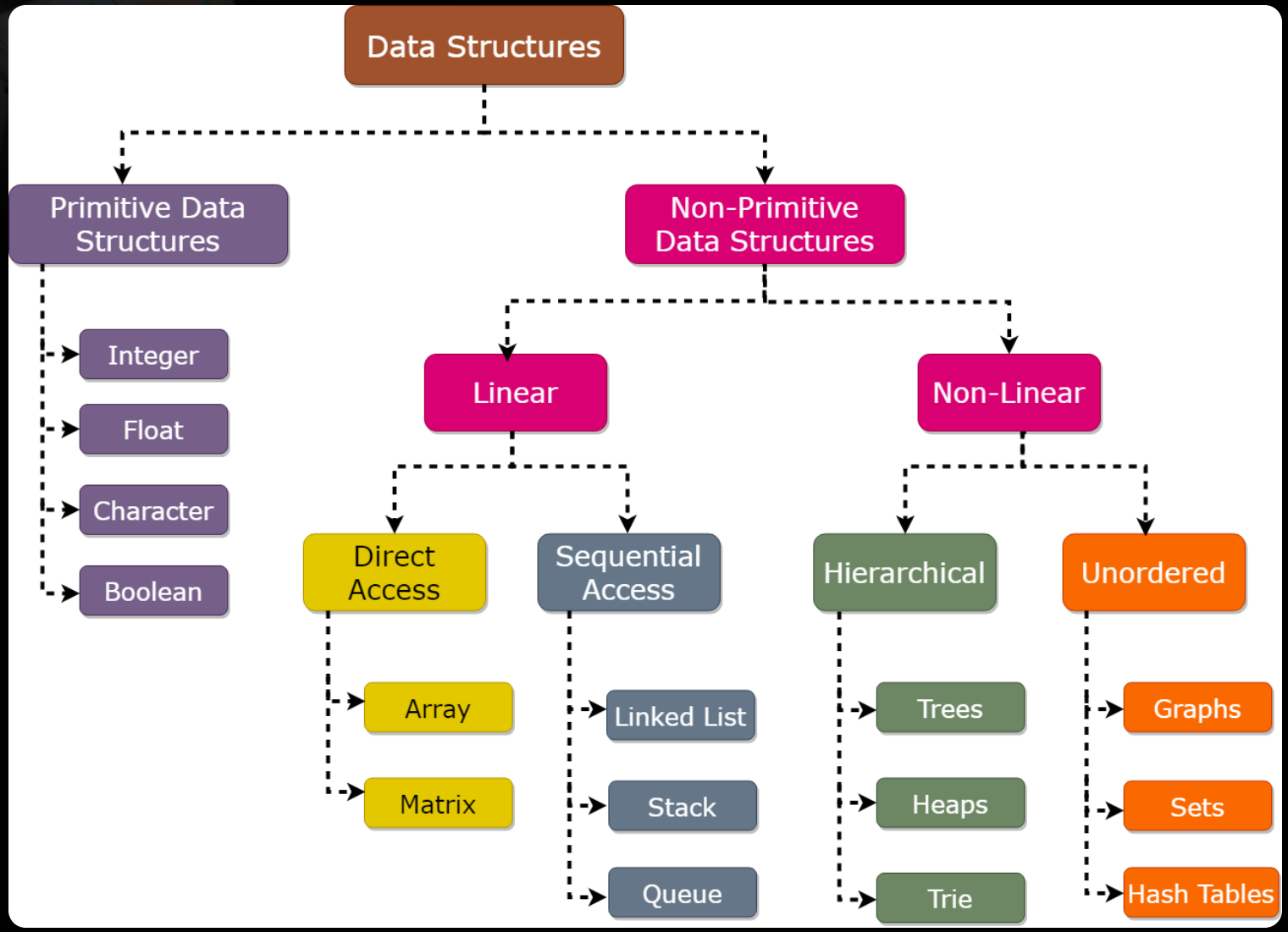
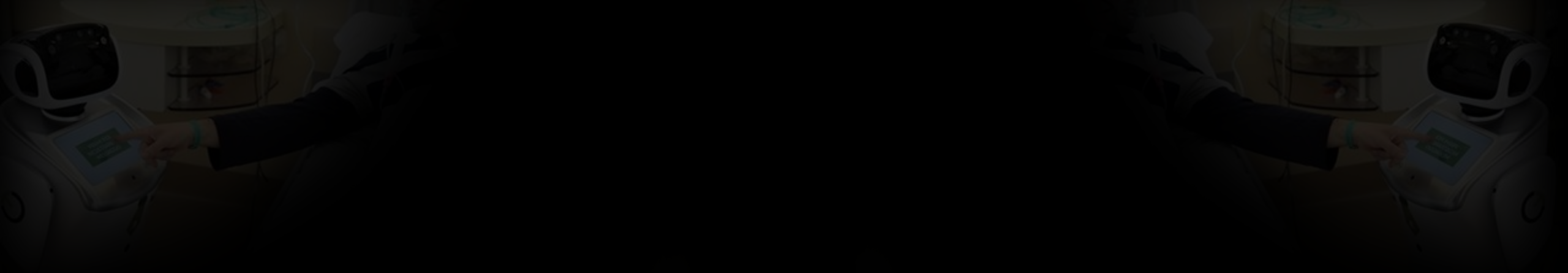
# CATEGORIES OF DATA




1. **Primitive Data Structures:** These are basic data structures that include Integers, Float, Character, and Boolean.
2. **Non-Primitive Data Structures:** These are more complex data structures and are further classified into:
   a. **Linear Data Structures:** In these data structures, data elements are arranged sequentially. Examples include arrays, linked lists, stacks, and queues.
   b. **Non-Linear Data Structures:** Here, data elements aren't placed in a sequence. Examples are graphs and trees



# ANY QUESTION ?