

# CSE225

CSE 225 - Data Structures and Algorithms

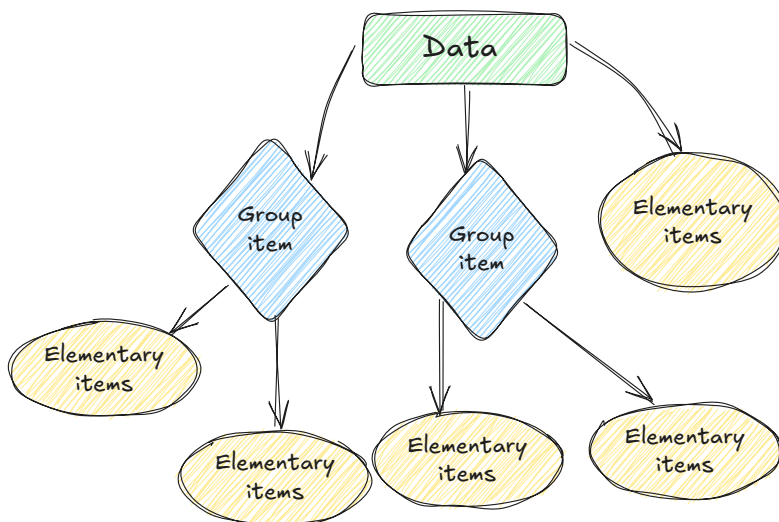
## Lecture 1

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### Data

Defined as **sets of values**, where a single unit of value/fact is referred to as a **data item**.

Single data items are called **elementary items**, data items that are a collection of elementary items are called **group items**



### Information

Defined as data that is organized according to some meaningful relation, usually thro. This is usually referred to as **processed data**.

Data is said to be **correctly** processed when:

- It arrives on **time**
- It is **accurate**
- It is **complete**

### Algorithms

An Algorithm is a procedure that takes **data** as input and provides a correct **output** within a finite **time**

Algorithms are usually specified in :

- English
- Pseudocode
- Computer program

## Data Structures

Storing information in a specific way according to a meaningful relation such that **efficient** and **effective** use of the data is possible.

An efficient data structure uses the minimum amount of memory and minimum amount of time to fetch data

A common data structure is a **List** which is an **ADT** (Abstract Data type)

Lists can:

- Store data items
- Read data items by position
- Modify data items

An Abstract Data Type is the core idea and concept of a data structure instead of its implementation.

Common Implementation of Lists are **Arrays** and **Linked Lists**

Lists can be:

- **Linear** - Data items arranged in an order
- **Non-Linear** - Data items arranged in a hierarchy instead of being arranged in order

