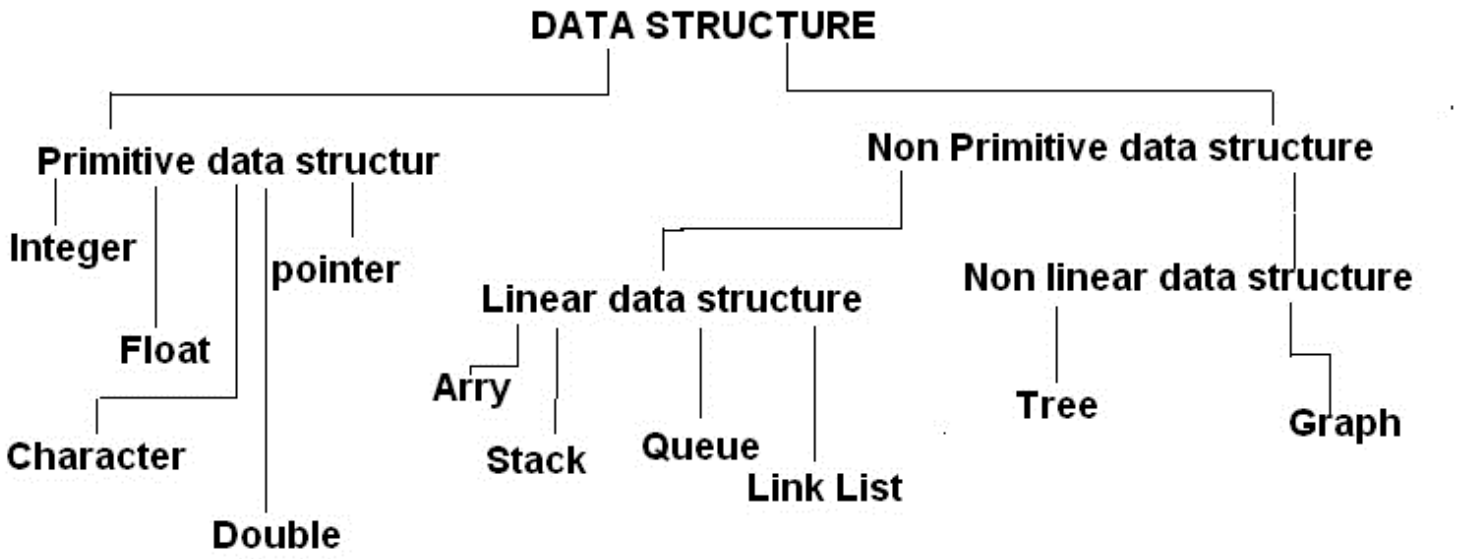
Fakultas Informatika
School of Computing
Telkom University

CCH1D4
STRUKTUR DATA

Introduction to Data Structure

Understanding
Data Structure and Algorithm



Classification of data structure

Organizing Data

- data structure is meant to be
  - **an organization for a collection of data items.**
  - **a way of organizing input data and operations which can be performed on this data**
- Organized data must be able to be searched, processed in any order, or modified
- The choice of data structure and algorithm can make the difference between a program running in a few seconds or many days.

Why Data Structure?

- In computer science, often the question is not how to solve a problem, but how to solve a problem **well**
- In this case, it means **Efficiency**
- Data structure is one of fundamental items to develop a good computer systems
  - You'll learn Computer efficiency more deeply at other subject
    (Design and Analysis of Algorithms)

Space-Time Tradeoffs and Efficiency

- trade-off between **speed** and **memory**
- To make a more powerful computers ➔ more complex applications.
- More complex applications demand more calculations

Selecting a Data Structure

- Analyze the problem to determine the resource constraints a solution must meet.
- Determine the basic operations that must be supported. Quantify the resource constraints for each operation.
- Select the data structure that best meets these requirements

Data structure classification

- Linear data structure
  - Stack
  - Queue
- Non-linear data structure
  - Tree
  - Graph

Question?

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THANK YOU