COMP 202:
Data Structures and Algorithms

Department of Computer Science and Engineering
Kathmandu University

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Data Structures
and
Algorithms

What is a data structure?

A way of storing data for efficient use

What is a data structure?

A way of storing data for efficient use

Examples:

- Array

What is a data structure?

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Examples:

- Array,
- Linked list,
- Stack,
- Queue,
- Tree,
- Graph etc.

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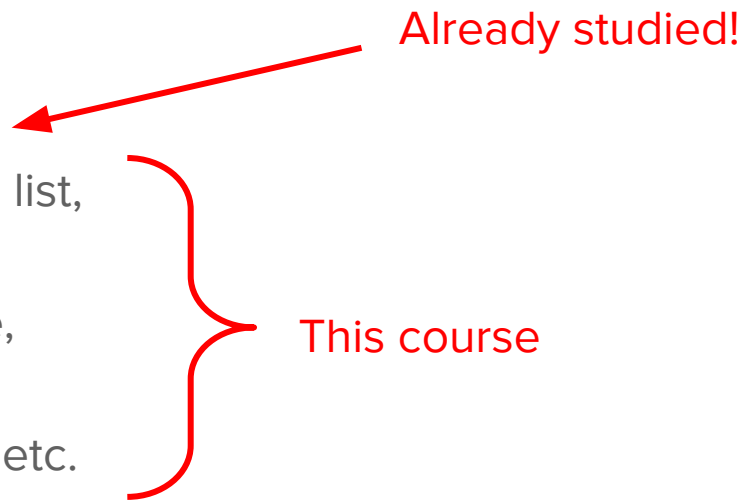
A way of storing data for efficient use

Examples:



What is an algorithm?

Any well-defined computational procedure that takes some value, or set of values, as input and produces some value, or set of values, as output.

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4. How to test a program

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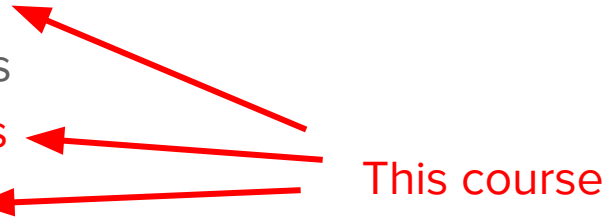

Syllabus

Chapters

1. The Analysis of Algorithms
2. Linear Data Structure – Stack
3. Linear Data Structure – Queue
4. Linear Data Structure – Linked list
5. Hierarchical Data Structure - Tree
6. Hierarchical Data Structure - Graph
7. Sorting
8. Searching and Hashing

Prerequisites

- Basic programming skill (**mainly C++**)
- Basic understanding of **object-oriented programming concepts**

Assignments

- Short and long assignments will be given during lecture
- Short assignments must be submitted in the next lecture
- Long assignments must be submitted in 3 weeks
- **All submissions must be handwritten**
- **No tolerance for copied assignments**

Labs

- The class will be divided into **two groups** for the lab sessions
- Each group will have lab sessions in **alternate weeks**
- 7 lab sessions have been planned
  - First lab: **Git**
  - Other labs: **implementation** of some data structures and algorithms in **C++**
- **Lab sheets/tasks** will be provided before the lab sessions and **students are required to go through them before coming to the lab**
- After each lab session, students must **submit a lab report within 2 weeks**
- **No tolerance for copied works**

Grading

- Internal Exam I = 10
- Internal Exam II= 10
- Quizzes = 5
- Assignments = 10
- Mini project = 10
- Viva = 5

Lab works will be graded for COMP208.

- Lab Attendance and reports = 60 (80%)
- Lab Exam = 15 (20%)

Books

1. Langsam, Y., Augenstein, M., & Tenenbaum, A. M. Data Structures using C and C++.
2. Horowitz, E., Sahni, S., & Anderson-Freed, S. Fundamentals of data structures.

Communication

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