Algorithm and Data Structures

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Learning Objectives

At the end of this course, students will be able to

- describe how an algorithm works and/or how a data structure is constructed
- demonstrate the workflow of an algorithm
- select an algorithm or data structure for a specific application
- evaluate/compare the performance of algorithms or data structures
- create a computer program that implements a specified algorithm and/or data structure

Materials

1. Course Conditionals, Intro to Programming Tools
2. Class/objects
3. Array
4. Linked structure
5. Search algorithms

Materials ...(2)

6. Sort algorithms
7. Stacks and Queues
8. Hash Tables
9. Trees
10. *Graphs (optional)*

Evaluation

- Final Exam: 35 - 60%
- Mid semester exam: 20 - 40%
- Assignments: 20 - 40 %
- Presence in class: **None**

Resources

- Book:
  - Goodrich, Data Structures and Algorithms in Python
  - Necaise, Data Structures and Algorithms Using Python
- Laptop with Linux and PyCharm (or Windows works too)
- Internet quota

Course Conditionals

- Assignments in Group
- Time of Arrival (10 minutes)
  - if late, perform in front of the class (kultum)
- Each group needs to bring a laptop
- Each group needs to be prepared with internet quota, do not depend on campus bandwidth (yet!)