CENG 310
Data Structures and Algorithms with Python

Introduction

Dr. Erdem KAYA

Department of Computer Engineering

Middle East Technical University

CENG 310

Instructor: Erdem KAYA

www.linkedin.com/in/erdemvis

Office: CENG A-202 (I'll barely be in office.)

Email: ekaya@metu.edu.tr

Lecture Hours:

10:40-11:30am on Mondays

1:40-3:30pm on Wednesdays

Web Page: Please follow ODTÜClass.

Playlist: -

Teaching Assistant: TBA

Course Description

Course Objectives

What you should expect as outcomes of this course:

- You will acquire intermediate level of knowledge about the most common abstractions for data collections.
- You will develop skills to develop and use data structures more efficiently.
- You will understand sorting and searching algorithms that are essential in computer sciences, and reflect on their performances from theoretical point of view.
- You will be able to utilize data structures and algorithms to solve more complex problems.

Course Description

Text Book and References

1. Goodrich-Tamassia-Goldwasser, Data Structures and Algorithms in Python, Wiley, 2013.
2. The Python Tutorial: https://docs.python.org/3/tutorial/
3. Necaise, Data Structures and Algorithms using Python, 2011.
4. Miller-Ranum, Problem Solving with Algorithms and Data Structures Using Python, 2nd Edition, 2011.

Grading

- Midterm: 20%
- Final Exam: 25%
- Homeworks and Assignments: 55%

- All assignments are to be your own work. No group projects or assignments are allowed.

Course Outline

- Python primer and overview of object-oriented programming [chapters 1&2]
- Algorithm analysis and recursion [chapters 3&4]
- Array-based Sequences [chapter-5]
- Stacks and queues [chapter 6]
- Linked Lists [chapter 7]
- Trees [chapter 8 & 11]
- Priority queues [chapter 9]
- Maps and Hash Tables [chapter 10]
- Sorting, searching, and selection [chapter 12]
- Graphs [chapter 14]

Prerequisites

CENG 240 Programming with Python for Engineers

Conduct

CENG310 will be conducted in both synchronous and asynchronous fashion.

Lecture videos will be uploaded as soon as the actual course takes place. In rare cases it can hang on to day after.

Office Hours/Contact

Lecturer office appointments can only be arranged via an e-mail only at weekends.

The best way to contact the lecturer is by sending e-mail: ekaya@metu.edu.tr