

# CENG 112 Data Structures

## Course Introduction

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# Course Objectives

- At the end of this course, you will be able to
  - convert a problem definition into a programming challenge,
  - devise a data structures-based solution to this challenge,
  - implement the solution in a robust and efficient way,
  - test and improve your solution/implementation,
  - using an object-oriented programming language.
- You will become comfortable in selecting/using data structures.
- You will be familiar with their concrete implementation in Java.

# Course Topics

- Abstract Data Types (ADTs)
- Arrays, Bags, Stacks
- Queues
- Linked Lists
- Binary Search Trees
- Hash Tables
- Heaps
- Dictionaries (Maps)

# Course Material

- This course covers fundamental data structures.
- Course material will be available at @MS Teams platform
- Announcements will be made via @MS Teams and you will be assumed that you read them.
- Main Textbook:
  - Data Structures and Abstractions with Java, Frank M. Carrano and Timothy M. Henry, Fourth edition, Pearson
- Supplementary Textbook:
  - Introduction to Programming in Java: An Interdisciplinary Approach by R. Sedgewick and K. Wayne

# Github Links for Source Code

- <https://github.com/srsandy/Data-Structures-and-Algorithms-in-Java-2nd-Edition-by-Robert-Lafore>
- <https://github.com/anthonymsimon/java-ds-algorithms>
- <https://github.com/rampatra/Algorithms-and-Data-Structures-in-Java>
- <https://github.com/Freecodnix18-9/Data-Structure-algorithms-in-Java>
- <https://github.com/TrainingByPackt/Data-Structures-and-Algorithms-in-Java/tree/master/src/main/java/com/packt/datastructuresandalg>
- <https://github.com/humbertodias/java-data-structures-algorithms/tree/master/src/main/java/dsa>
- <https://github.com/dvp236/Data-Structures>
- <https://github.com/TheAlgorithms/Java/tree/master/DataStructures>

# Instruction

## Instructor

- Dr. Cüneyt F. Bazlamaçcı

## Teaching Assistants

- Samet Tenekeci
- Dilek Öztürk
- Emre Dinçer

## The Chain of Information Sources

- Textbook → Online Resources → Assistants → Instructor

# Grading

- 2 MT exams, total 40%
- Final Exam 40%
- Homework Assignments
  - 4 Homeworks, each 5%

# Suggestions

- Learn using Eclipse IDE as soon as possible
- Many useful youtube videos on Java, Eclipse, and Data Structures
- Many useful github repositories with source code on Data Structures
- Write code every day
- There is no best programming language
- Don't forget that this course is on Data Structures but not on Java