CENG 301 – ALGORITHMS AND DATA STRUCTURES
Course Outline

INSTRUCTOR: Dr. Faruk Tokdemir

INSTRUCTION
Review of CENG230
Other C Structures: Text Files, Pointers, String Operations, Structs and Unions, Binary Files

INTRODUCTION TO DATA STRUCTURES
Classification of Data Structures
Definition and Terminology
System Software Life Cycle

SPACE AND TIME CONSIDERATIONS
The Big-O Notation
Simple Sorting Algorithms

LINKED LISTS
Singly Linked Lists
Array Based Implementation of Linked Lists
Pointer Based Implementation of Linked Lists
Doubly Linked Lists
Circular Linked Lists
Multiply Linked Lists

STACKS AND QUEUES
Basic Stack Operations
Infix, Postfix and Prefix Notation of Arithmetic Expressions
Conversions and Evaluations of Arithmetic Expressions
Basic Queue Operations Circular Queues

RECURSION
Recursion in C, Examples

TREE STRUCTURES
Binary Trees and Binary Search Trees
Basic Tree Operations
Traversing in a Binary Tree
Arithmetic Expressions in a Binary Tree
General Trees and Their Implementations

TENTATIVE GRADING
35% Midterm 1
40% Final
25% Projects, Homeworks, Attendance

Book available at the bookstore


RECOMMENDED READINGS FOR C PROGRAMMING

- C: How To Program by H.M. Deitel, P.J. Deitel, Prentice-Hall, 2001
- Problem Solving using C by Yuksel Uckan, McGraw-Hill, 1999
- Problem Solving and Program Design in C by J.R. Hanly, E.B. Koffman, Addison-Wesley, 1999

RECOMMENDED READINGS FOR DATA STRUCTURES

- Data Structures and Algorithm Analysis in C by M.A. Weiss, Addison-Wesley, 1997
- Data Structures and Program Design in C++ by R.L. Kruse and A.J. Ryba, Prentice Hall, 1999
- Data Structures, Algorithms & Software Principles in C by T.A. Standwitch, Addison-Wesley, 1995

Lecture hours: Tuesday 10:40-11:30 IE104 and Thursday 10:40-12:30 IE104