

CENG 707 – Data Structures and Algorithms

Course Outline, Fall 2004

INSTRUCTOR: Dr. Faruk Tokdemir

INTRUDUCTION

Review of CENG230
Other C Structures : Text Files, Pointers,
String Operations, Strucs 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

20 % Midterm 1
25 % Midterm 2
35 % Final
20 % Projects, Homeworks, Attendance

Book available at the bookstore

- Data Structures Using C and C++ by Y. Langsam, M.J. Augenstein, A.M , Tenenbaum, Prentice-Hall, 1996

RECOMMENDED READINGS FOR C PROGRAMMING

- C: How To Program by H.M. Deitel, P.J. Deitel, Prentice-Hall, 2001
- Applications, Programming in C by R. Johnsonbaugh and M. Kalin, Macmillan, 1989
- 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