

Tentative Homework Problems
CS 24, Spring 2024
Eighth Edition

About the required reading

focus only on those sections of the text which pertain to
the definitions or assigned problems

work backwards as follows:

for each definition, read enough of the text to understand the definition

for each homework problem, read enough of the text to do that problem

Functions

Section 2.3 Functions

definitions

function

domain

codomain

range

image (of an element)

pre-image (of an element)

one-to-one (injective)

onto (surjective)

one-to-one correspondence (bijection)

composition

floor

ceiling

inverse function

problems

2-20 (even), 58, 60

Appendix 2 Exponential and Logarithmic Functions

logarithmic function to the base b

1,2,3,5,6

Complexity

Section 3.2 big-O

big-O, big-Omega, big-Theta

2, 4, 8ab, 10, 12, 14, 20-28 (even), 36, 37

Section 3.3

problem specification, algorithm description, algorithm analysis

time complexity function

solvable, worst-case polynomial time complexity, tractable, P, NP, NP-complete

Recursive Functions

Section 5.3 Recursive Definitions and Induction

2,6,8,12,20,37

Section 5.4 Recursive Algorithms

24, 25, 26, 27 (fast modular exponentiation)

Section 8.1

2,4,6,8,19,30

Section 8.2

linear, homogeneous recurrence relation of degree k with constant coefficients

2,4,5,8

Section 8.3

8,10,11,14,15,16

Graph Theory

Section 10.1

simple undirected graph (from class)

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Section 10.2

adjacent, incident, connect, degree, complete, bipartite, subgraph,

induced subgraph

K_n , C_n , W_n , Q_n , $B_{m,n}$

1,5,13,18,19,21-26,35,37-43,61-65

Section 10.3

adjacency list, adjacency matrix, graph isomorphism

1,2,5,6,9,29,38-48,58,63

Section 10.4

path, component

1,3,4,5,19,20,21,22,23,24,25,26,27

Section 10.5

Euler circuit, Hamilton circuit

1,2,4,6,7,8,30,31,32,33,34,35,36

Section 10.6

2-7

Problems/Algorithms/Analysis

Traveling Salesman

Halting Problem

Towers of Hanoi

Graph Isomorphism

Euler Circuit

Hamilton Circuit

Shortest Path