

Homework 3:

DUE DATE: Tuesday, March 22nd, 11.55 PM EST

Scope: Binary Search Trees, Number-Theoretic Algorithms, Elementary Graph Algorithms

CMPSCI 311

Prof. Ramesh Sitaraman

Instructions:

1. NO LATE SUBMISSIONS ALLOWED.
2. Upload the completed homework in PDF via Moodle per the following instructions.
 - (a) There are 5 problems below: 4 regular and one extra credit. Upload five separate files, one per problem.
 - (b) Only PDFs can be uploaded. No other document format may be used.
3. As a general rule, justify every answer by showing steps or writing down a proof.
4. Unless stated otherwise, assume that:
 - (a) Problem numbers are from the textbook (Cormen-Leiserson-Rivest-Stein, Third edition). Please do not use an older version of the book since both the problems and page numbering may have changed.
 - (b) You must answer all parts of a question, unless specified otherwise.
 - (c) Each problem carries equal points. All parts within a problem carry equal share of the points, and all subparts within a part carry equal share of the points.
5. Homework Collaboration Policy: You may discuss the problems with other students. The focus of the discussions must be to exchange ideas and gain a better understanding of the problem and possible solutions. However, each student must write up the solutions completely independently. Please note down names of students you discussed the problem with. **You may not look at the web, prior solution writeups, or any other such potential source for solutions.** Cheating will be dealt with severely as per university policy.
6. The extra credit problem carries 25 additional points out of 100.

Homework Problems [25 points each]:

1. (a) Problem 12.2-4 on page 293.
(b) Problem 12.2-5 on page 293.
2. (a) Problem 31.2-2 on page 938.
(b) Problem 31.2-8 on page 939.
3. (a) Problem 31.6-2 on page 958.
(b) Problem 31.7-1 on page 964.
4. (a) Problem 22.1-3 on page 592.
(b) Problem 22.3-2 on page 610.

Extra Credit Problem [25 points]:

5. Problem 22.4-5 on page 615.