

Assignment Set 8 (Uploaded on September xx, 2014)

Clarification deadline date: October 21, 2014

Submission deadline date: October 23, 2014

Problem 1 [AVL tree]: Write C code for the following problem:

Write code for the following problems on AVL tree:

Given a set  $S$  of real numbers (there can be repetition)

(a) create an AVL tree  $T$  from  $S$ ;

(b) insert an element into  $T$ ;

(c) delete an element from  $T$ ; if an element occurs multiple number of times, delete all its occurrences;

(d) implement binary search on  $T$ ; if an element  $x$  occurs multiple number of times, report the number of occurrences.

(e) given an element  $x$ , find the predecessor and successor of  $x$  in  $T$ ; among the elements in  $T$ , the predecessor of  $x$  is the greatest number strictly less than  $x$ , and the successor

of  $x$  is the least number strictly greater than  $x$ ; if there are

multiple occurrences, report the number of such occurrences.

[Marks: 50 (a) + 80{(b) to (e); 20x4} + 20 {Good programming habits} = 150]

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Naming conventions for program files.  $xx$  is your roll number:

For Problem 1:

The name of the src file for problem 1 of assignment 8 should be

`cs14xx-assign8-src-prog1.c`.

The name of the app file for problem 1 of assignment 8 should be

`cs14xx-assign8-prog1.c`.

The name of the include file for problem 1 of assignment 8 should be

`cs14xx-assign8-prog1.h`.

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At the top of each of your program files, add the following. If you are writing multi-file programs, then each file should have it.

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/*-----  
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Name:  
Roll Number:  
Date of Submission:  
Deadline date:  
Program description:  
Acknowledgements:  
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```